SITE ASSESSMENT

For Large Livestock Operation Proposals (300 Animal Units or more)

1.0 Purpose

The set up, or expansion, of a livestock operation that has 300 Animal Units or more is subject to **Part 7 of *The Planning Act***. This includes consideration as a conditional use by the municipal council or planning district board. It also includes a review by the Technical Review Committee (TRC) appointed by the Minister of Local Government. The **Technical Review Committee Regulation** requires a site assessment to help the committee do its review and allow people who will be affected by the livestock operation to comment on the proposal.

2.0 Assistance

For assistance in completing the Site Assessment Form please refer to the following.

For links to resources, click on the **highlighted underlined items.**

For additional information on a particular item, please click on the (?) **"Learn More"** icon.

For definitions, click on the **Glossary of Terms**.

For help with mapping, contact your **Community and Regional Planning Regional Office**.

For additional help, contact the **Technical Review Coordination Unit**.

3.0 Description of Livestock Operation

Operation legal name, if other than the owner's name:

GROUP WESTCO INC.

Operation location (project site): E 1/2 OF SE 15-4- 3 E

Rural Municipality (RM) of De Salaberry

Legal description: section, township, range or river lot(s)
E 1/2 OF SE 15-4- 3 E

Manitoba Premises Identification Number: Application Submitted to MAFRD GO

Municipal tax roll number(s): 6600000 TX

Show the location of the operation (project site) on a location map. (See **Location Map** for example).

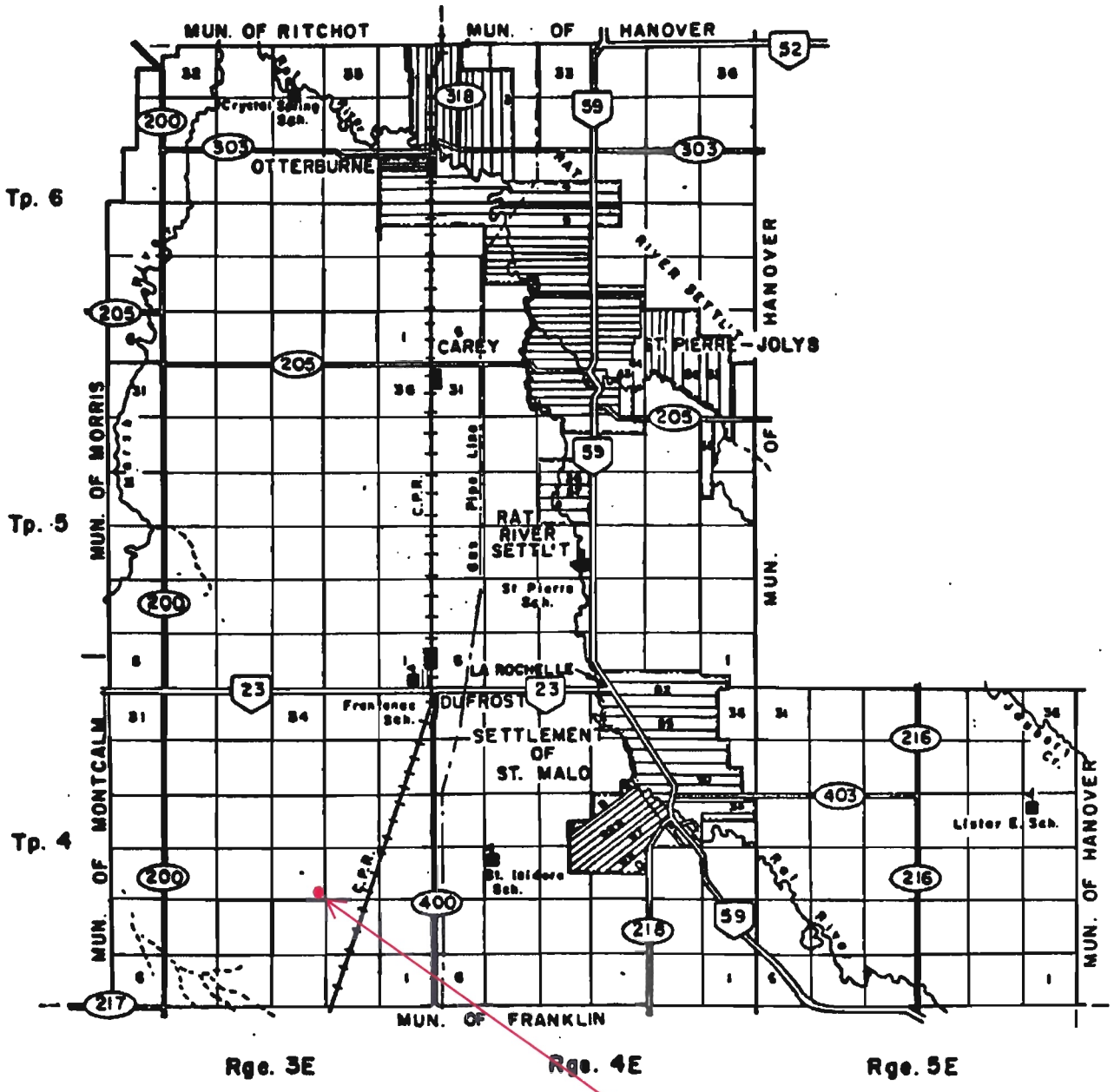
☒ Location Map attached

NO. 22

MUN. OF DE SALABERRY

PROVINCE OF MANITOBA
HIGHWAYS DEPARTMENT
DESIGN OFFICE
WPG., AUG. 1968
SCALE: 1" = 3 MI.

REVISED JUNE 1979



PROV. TRUNK HIGHWAYS 23
PROVINCIAL ROADS 200
RAILWAYS

Group Westco
E 1/2 of SE15-4-3E
R.M. of De Salaberry

4.0 Nature of Project

■ **New operation**

☐ **Expansion of existing operation**

State if any existing buildings will be replaced or demolished. If existing buildings will be reused or expanded, state how they will be reused or expanded.

_____

_____

_____

5.0 Proposed Type and Size of Operation

State the proposed type and size of the operation. (See Animal Units Calculation Table.)

Type of operation (Column B from Animal Units Calculation Table)	**Existing number of animals** (Column C from Animal Units Calculation Table)	**Total Animal Units** (Column F from Animal Units Calculation Table)
CHICKEN BROILERS	0	1060

■ Animal Units Calculation Table attached

6.0 Animal Confinement Facilities

Outdoor Confined Livestock Area

To ensure that it can be built in a way that the environment is protected, a permit is required for construction and expansion of confined livestock areas for operations with 300 Animal Units or more. Permits are required by the Livestock Manure and Mortalities Management Regulation (MR 42/98), under *The Environment Act*.

Confined Livestock Area: ☐ outdoor seasonal feeding area ☐ feedlot ■ not applicable

Indoor Barn/Animal Housing

Indoor Animal Housing: ■ barn ☐ other (describe) _____ ☐ not applicable

Animal Units Calculation Table

A	B	C	D	E	F	G
Animal Type	**Type of Operation**	**Existing Number of Animals**	**Proposed Additional Number of Animals**	**Animal Units per Head**	**Total Animal Units**	**Annual Confinement Period (Days)**
Dairy [1]	Mature cows (lactating and dry) including associated livestock			2	-	
	Mature cows (lactating and dry)			1.35	-	
	Heifers (0 to 3 months)			0.16	-	
	Heifers (4 to 13 months)			0.41	-	
	Heifers (> 13 months)			0.87	-	
	Bulls			1.35	-	
	Veal calves			0.13	-	
Beef	Beef cows including associated livestock			1.25	-	
	Backgrounder			0.5	-	
	Summer pasture / replacement heifers			0.625	-	
	Feeder cattle			0.769	-	
Pigs	Sows - farrow to finish (234-254 lbs)			1.25	-	
	Sows - farrow to weanling (up to 11 lbs)			0.25	-	
	Sows - farrow to nursery (51 lbs)			0.313	-	
	Boars (artificial insemination units)			0.2	-	
	Weanlings, Nursery (11-51 lbs)			0.033		
	Growers / Finishers (51-249 lbs)			0.143	-	
Chickens	Broilers		212,000	0.005	1,060.00	244
	Roasters			0.01	-	
	Layers			0.0083	-	
	Pullets			0.0033	-	
	Broiler breeder pullets			0.0033	-	
	Broiler breeder hens			0.01	-	
Turkeys	Broilers			0.01	-	
	Heavy Toms			0.02	-	
	Heavy Hens			0.01	-	
Horses	Mares			1.333	-	
Sheep	Ewes			0.2	-	
	Feeder lambs			0.063	-	
Other Livestock	Type:				-	
	Type:				-	
				Total AUs	**1,060.00**	

Footnotes:

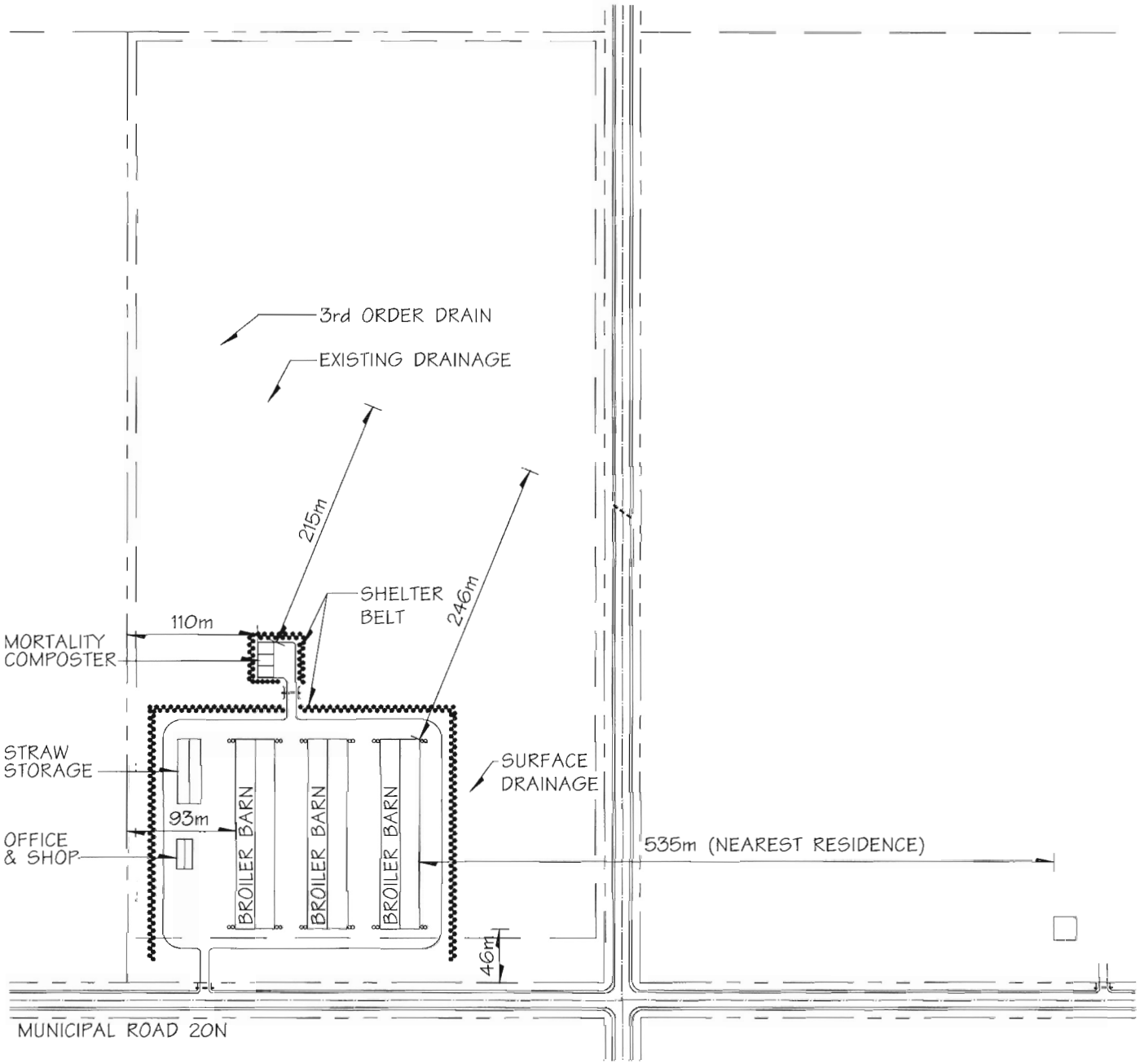
[1] There are 2 methods for calculating animal units for dairy (Farm Practices Guidelines for Dairy Producers in Manitoba, 1995). You can enter the total number of mature cows in the milking herd under the "Mature cows (lactating and dry) including associated livestock" category and the animal units will be calculated by multiplying this number by 2. This calculation assumes 85 lactating, 15 dry, 12 heifers (0 to 3 months), 36 heifers (4 to 13 months) and 50 heifers (> 13 months) for an operation with 100 mature cows. "Associated livestock" includes all of the heifer calves and replacement heifers. Alternatively, you can enter animal numbers in the individual categories (mature cows, heifers (0 to 3 months), heifers (4 to 13 months) and heifers (> 13 months)) and they will be summed at the bottom of the table. Bulls and veal calves are always calculated separately.

For all other livestock or operation types please inquire with your
Manitoba Agriculture, Food and Rural Initiatives GO office to determine the animal units per head.
www.gov.mb.ca/agriculture/contact/agoffices.html

A permit under the Livestock Manure and Mortalities Management Regulation is not required for an indoor housing area or barn unless there is a manure storage facility within the building (an under barn storage capable of storing manure for 30 days or more).

Show all existing, proposed buildings and additions to existing buildings on the project site plan. See **Project Site Plan example** and the Project ***Site Plan Guide*** for help creating your site plan.

☐ Project Site Plan attached



PROJECT SITE LAYOUT - MOST EASTERLY 80 ACRES OF SE¼ 15-4-3E

PROPERTY LINE

LIMITING DISTANCE (PROPERTY SETBACK) LINE

DGH ENGINEERING LTD.
PROFESSIONAL SERVICE - PRACTICAL SOLUTIONS
12 AVIATION BLVD, ST. ANDREWS, MB R1A 3N5
PHONE: [204] 334-6848 FAX: [204] 334-6955

CLIENT: GROUP WESTCO

PROJECT: POULTRY FACILITIES

SHEET TITLE: PROJECT SITE LAYOUT

PROJECT No.: 13-6-3083-001-30 | DRAWN BY: . | DATE: JAN 2014 | SHEET: . | REV. R00

DWG. SCALE: 1:5000 | DESIGNED BY: . | REV. DATE: .

7.0 Environmental Farm Planning
Environmental farm planning is a voluntary, confidential self-assessment process designed to help farm managers identify the environmental strengths and weaknesses of their operations.

Do you have an **Environmental Farm Plan** ☐ yes ■ no

If so, is it current (completed within past 5 years) ☐ yes ☐ no

8.0 Water

Project Sites Unsuitable for Development

To protect water quality, the **Nutrient Management Regulation** (MR 62/2008), under *The Water Protection Act*, prohibits the set up or expansion of nutrient generating facilities in Nutrient Management Zone 4 (Agriculture Capability Class 6, 7 and unimproved organic soils) and Nutrient Buffer Zones. Nutrient generating facilities include barns, confined livestock areas and manure storage facilities.

Nutrient Buffer Zone as defined in section 3(3) of the regulation includes areas of land along water bodies such as rivers, lakes, streams and drains.

The proposed indoor housing area, barn, confined livestock area and/or manure storage facility:
will ☐
will not ■
be located within Nutrient Management Zone 4 (Class 6, 7 and unimproved organic soils) or any Nutrient Buffer Zone.

Determine the agriculture capability class(es) of the project site, and its limitations. This information is available from Manitoba Agriculture, Food and Rural Initiatives (MAFRI) at 204-945-3869 in Winnipeg. Alternatively, operations with GIS mapping software can access information through **Manitoba Land Initiative** (MLI) website. In addition, information from MLI can also be viewed on Google Earth. Both the download for Google Earth and the registration for MLI are free. Click **here** for instructions under the MLI website.

Water Source
To be sustainable, a livestock operation must have access to a sufficient quantity and quality of water for livestock.

Water source for operation:

- ☐ pipeline (public)
- ☐ water co-operative
- ☐ proposed well
- ■ Blue Clay Colony existing well
- ☐ river
- ☐ lake
- ☐ dugout (dimensions : ____ x ___ x ____)

If using an existing well, provide a copy of the water well log and logs for other wells on the property. Logs can be obtained from Manitoba Conservation and Water Stewardship by calling (204) 945-7418 in Winnipeg; 1-800-214-6497 toll free.

Source Water Analysis Reports

Annual livestock source water monitoring analysis reports must be submitted to Manitoba Conservation and Water Stewardship for any operations of 300 Animal Units or more.

If an existing livestock operation of 300 Animal Units or more, have you submitted an annual source water monitoring report for the current calendar year? ☐ yes ☐ no

Will livestock have direct access to surface water (not including dugouts)? ☐ yes ■ no

If **yes**, identify:
Name of the surface water feature: _____

List any steps that will be taken to prevent direct access of livestock to the water body.

Barn C/W concrete floor

_____

Water Requirements

Protecting the interests of domestic users and the environment, in addition to existing licensees, is the intended purpose of the water rights licensing scheme.

In order to protect the sustainability of water sources, all operations using more than 25,000 litres (5,499 imperial gallons) per day must possess a Water Rights Licence required by the Water Rights Regulation (MR 126/87) under *The Water Rights Act.*

For more information on the Water Rights Licensing process, contact the Water Use Licensing Section at (204) 945-3983 in Winnipeg; 1-800-214-6497 toll free.

Water Use
To calculate the total water use, go to the Water Requirement Calculation Table.

Maximum daily use: 7,420 ■ imperial gallons or ☐ litres
Maximum annual use: 2,708,300 ☐ acre-feet or ☐ cubic decameters

■ Water Requirement Calculation Table attached

Groundwater (Contamination Risk Protection)

Improper storage and handling of manure or mortalities increases the risk of contaminating groundwater. Beneficial management practices (BMP), mitigation measures and requirements for the permit process reduce this risk. Soil testing, manure management planning and proper engineering, along with construction and management of manure storage structures reduce the risk of contaminating groundwater.

Water Requirement Calculation Table

Livestock	Number	IG/day per animal in winter	IG/day per animal in summer	IG/day (Imperial gallons per day)
Beef/Dairy/Bison				
Feeder/heifer/steer (600 lb.)		5	9	-
Feeder (900 lb.)		7	12	-
Feeder (1250 lb.)		10	15	-
Cow/calf pair		12	15	-
Dry cow		10	12	-
Milking cow		25	30	-
Bison		8	10	-
Horses				
Horses		8	11	-
Hogs				
Sow (Farrow/wean)		6.5		-
Dry Sow/Boar		4		-
Feeder		3		-
Nursery (33 lb.)		2		-
Chickens				
Broilers	212,000	0.035		7,420
Roasters/Pullets		0.04		-
Layers		0.055		-
Breeders		0.07		-
Turkeys				
Turkey Growers		0.13		-
Turkey Heavies		0.16		-
Sheep/Goats				
Sheep/Goats		2		-
Ewes/Does		3		-
Lambs/Kids (90 lb.)		1.6		-
		TOTAL (IG/day)		7,420

Other consumption values:

Normal household consumption:
40-55 IG/day per person or
(180-250 l/day/person)

Hydrant flow:
10 imperial GPM (45 l/min)

Unit Conversions		
Total per day	Total per year	Unit
7,420	2,708,300	IG
33,731	12,311,932	litres
0.034	12	cubic decametres (dam^3)

Conversion Factor: 1 IGPM = 4.546 l/m

Check off the mitigation measures used for the existing components of the operation that may pose a risk of contamination. Also check off any measures that may be used with the proposed components for this expansion, if applicable:

	Existing	Proposed
Manure is stored in a storage facility built by permit or registered by Manitoba Conservation and Water Stewardship	☐	N/A
Storage includes leachate collection	☐	N/A
Earthen storage has between 400 and 500 days storage	☐	N/A
Steel/concrete tank has between 250 and 500 days storage	☐	N/A
Manure storage facility meets required setbacks	☐	N/A
Field storage (solid manure) locations are changed annually	☐	Y
Field storage meets required setbacks	☐	Y
All application fields are soil tested annually for nitrate-N and Olsen phosphorus	☐	Y
All manure is applied according to a manure management plan	☐	Y
Licensed commercial manure applicator is used to apply manure	☐	N
Abandoned wells have been properly sealed	☐	N/A

Other:

Building in Flood Areas

The **Livestock Manure and Mortalities Management Regulation** prohibits an operator from putting a manure storage facility within the boundaries of the 100-year flood plain elevation. **Manure storage facilities** that are constructed with protection for a flood-water level at least 0.6 meters higher than the 100-year flood water level are exempt.

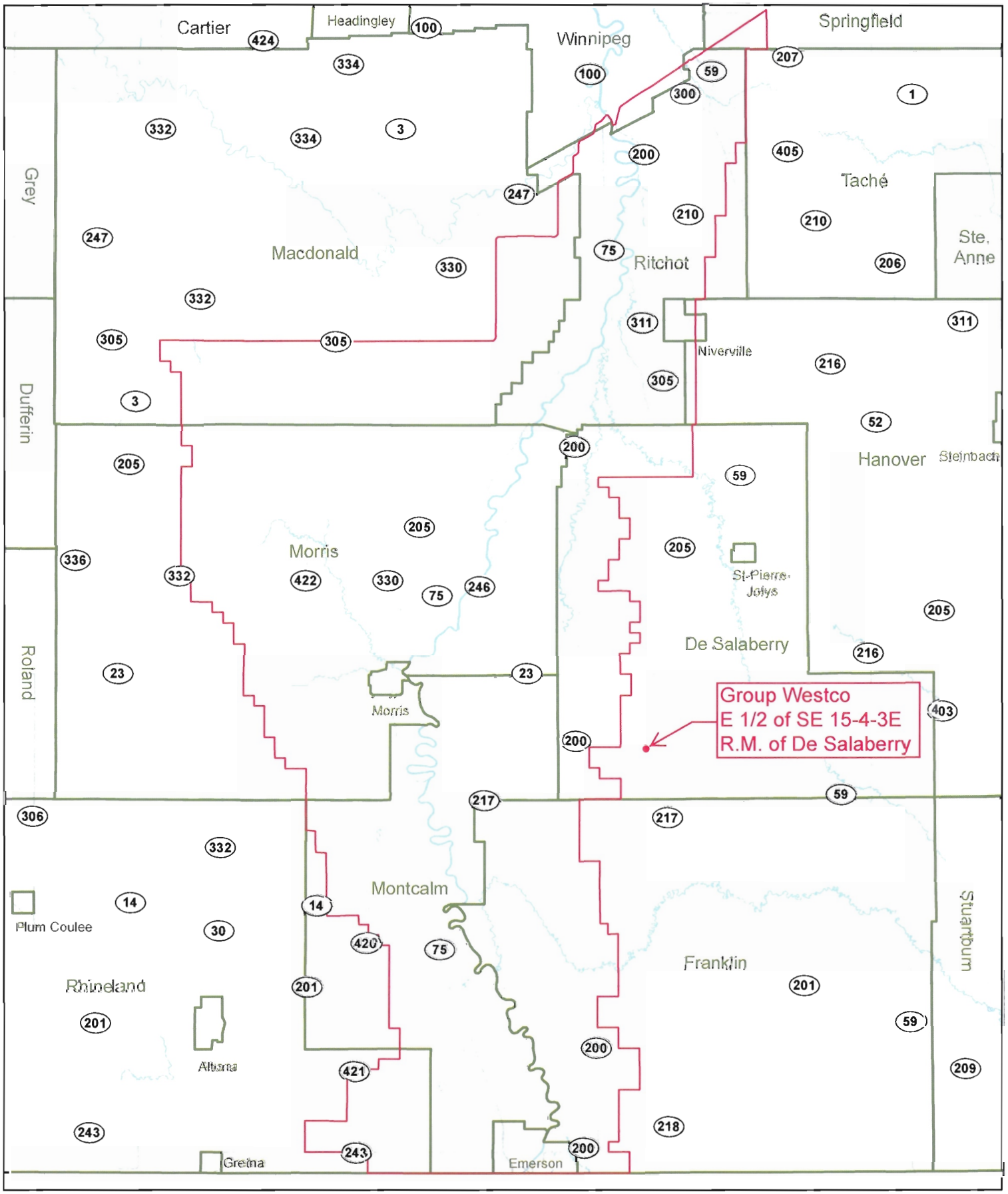
The **Designated Flood Area Regulation** under *The Water Resources Administration Act* requires a Designated Flood Area Permit before a proposed structure (such as a barn) can be built within a Designated Flood Area.

The flood protection level for structures located within a Designated Flood Area is the site specific design flood level plus freeboard, as provided by the Hydraulic Forecasting Branch of Manitoba Infrastructure and Transportation. Contact the Hydrologic Forecasting Branch at (204) 945-2121 in Winnipeg; 1-800-214-6497 toll free.

The proposed site:

is ☐ is not ■

located in a Designated Flood Area: **Red River Valley Designated Flood Area** or **Lower Red River Designated Flood Area**



Red River Designated Flood Area

Manitoba
Dept. of Local Government

Note: At the time a permit is issued, verification is needed to ensure any proposed structure(s) are located within the 100-year flood plain elevation; or at an elevation set by Manitoba Infrastructure and Transportation.

Watershed Management Planning
Integrated watershed management planning is a co-operative effort by local residents, stakeholders and governments to create a long term plan to manage water and land-based activities for watersheds.

What are the names of the **watershed** and **sub-watershed** where the livestock operation and the fields identified for manure application are located?

Name of watershed(s): RAT RIVER

Name of sub-watershed(s): MARSH RIVER

Name of **Integrated Watershed Management Plan** for the proposed project site, if applicable: RAT RIVER IWMP

For more on Integrated Watershed Management Planning, call Watershed Planning and Programs at (204) 945-7408 in Winnipeg; 1-800-214-6497 toll free.

9.0 Manure

The **Livestock Manure and Mortalities Management Regulation** sets requirements for the use, management and storage of livestock manure in agricultural operations, to ensure it is handled in an environmentally sound manner. For more information on this, call Manitoba Conservation and Water Stewardship at (204) 619-2230 in Winnipeg.

Improper storage, handling and/or land application of manure can contaminate water and/or cause unacceptable odours for neighbours. The following is used to assess the manure management system.

Manure Type
The type of manure generated and used by the operation influences storage, handling and land application options available.

What type(s) of manure will be generated?

☒ solid ☐ semi-solid ☐ liquid

Manure Volume or Weight
Manure production can be estimated using the Manure Production Calculator Table. The sizing of the manure storage is the responsibility of the operator and must be constructed in accordance with the **Livestock Manure and Mortalities Management Regulation**. Design and construction of a manure storage facility is dependent on the type of structure; earthen manure storage facilities must have between 400 and 500 days capacity, a steel or concrete storage tank must have between 250 and 500 days capacity. This ensures the facility has sufficient capacity eliminating the need for winter application.

What will be the total volume or weight of manure generated annually by the livestock operation? (See **Manure Production Calculator Table**.)

liquid volume:_____ solid weight: 5,215,200 lb

☒ Manure Production Calculator Table attached

Manure Storage Type and Capacity

The type of storage system used will affect the capacity requirements for the manure storage facility or field storage area.

What type of **manure storage facility** will be used by the operation?

☐ under-barn concrete ☐ **earthen manure storage** ☐ concrete tank(s)
☐ steel tank(s) ☒ **field storage** ☐ **molehill**

Provide the dimensions of the existing and/or proposed manure storage facilities, if applicable. (See **Existing and Proposed Manure Storage Facility Dimensions Table**.)

☐ Existing and Proposed Manure Storage Facility Dimensions Table attached

Odour Control Measures (project site)

Barns and manure storage facilities can be significant sources of livestock odours. The use of manure storage covers and shelterbelts can reduce this, particularly for neighbours in the vicinity of the operation.

What odour control measures are you planning to use?

Manure storage cover: ☐ yes ☒ no

Type of cover: _____

Shelterbelt planting: ☒ yes ☐ no ☐ existing shelterbelt

Other measures (specify): _____

Manure Treatment

Under *The Environment Act,* the director must not issue a permit for the modification, expansion, or construction of a manure storage facility accommodating an increase in the number of animal units for pigs, unless the manure is treated using anaerobic digestion or another environmentally sound treatment that is similar to or better than anaerobic digestion, according to Manitoba Conservation and Water Stewardship.

Does your proposal include anaerobic digestion or another environmentally sound treatment for manure?

☐ yes ☒ no ☐ not applicable

Animal Type (A)	Animal Sub-type (B)	Daily Manure Production				Production Period [2] (Days) (G)	Number of Animals [3] (Capacity) (H)	Total Manure Volume (ft^3) (FxGxH)	Total Manure Volume for Semi-Solid and Liquid Manure (Imp Gal)
		References (C)	Manure Type (D)	Default Manure Production (ft^3/animal/day) (E)	Operation Manure Production [1] (ft^3/animal/day) (F)				
Dairy (milking cows[4] and associated livestock)	Free Stall	Table 6, pg 59, FPGs for Dairy 1995	Semi-Solid [5]	3.5				-	0.0
			Solid	3.4				-	
			Liquid [5]	3.5				-	0.0
	Tie Stall		Semi-Solid [5]	3.6				-	0.0
			Solid	3.5				-	
			Liquid [5]	3.6				-	0.0
	Loose Housing		Solid	3.0				-	
	Milking Parlour Manure and Washwater		Liquid	0.5					
Beef	Beef cows including associated livestock	pg 117, FPGs for Hogs 1998	Solid	1.2				-	
	Backgrounder (200 day)		Solid	0.73				-	
	Summer pasture / replacement heifers		Solid	0.85				-	
	Feeder cattle		Solid	1.1				-	
Pigs	Sows - farrow to finish (234 - 254 lbs)	MAFRI website, FPGs for Pigs 2007	Liquid	2.3				-	0.0
	Sows - farrow to wean (up to 11 lbs)		Liquid	0.8				-	0.0
	Sows - farrow to nursery (51 lbs)		Liquid	1				-	0.0
	Weanlings, Nursery (11 - 51 lbs)		Liquid	0.1				-	0.0
	Grower / Finisher (51 - 249 lbs)		Liquid	0.25				-	0.0

Animal Type	Type of Operation		Yearly Manure Production		Production Period [2] (Days)	Number of Birds [3] (Capacity)	Total Manure Volume (ft^3) (F/365xGxH)	Total Manure Volume for Semi-Solid and Liquid Manure (Imp Gal)
			Default Manure Production (ft^3/year/bird space)	Operation Manure Production [1] (ft^3/year/bird space)				
Chickens	Broilers – floor [6]	Table 3, pg 85, FPGs for Poultry 2000	1.23	1.23	365	212,000	260,760	
	Broiler breeder hens [7]		2.3				-	
	Broiler breeder pullets [6]		0.99				-	
	Roasters – floor [6]		1.16				-	
	Layers – cage [8]		2.33				-	
	Layers – floor [7]		1.68				-	
	Layers – solid pack [9]						-	
	Pullets – cage [8]		0.71				-	
	Pullets – floor [6]		0.75				-	
	Pullets – solid pack [9]						-	
Turkeys	Broilers [6]	Table 3, pg 85, FPGs for Poultry 2000	2.83				-	
	Heavy toms [6]		5.58				-	
	Heavy hens [6]		3.32				-	

Sizing of a manure storage facility in accordance with all requirements of the *Livestock Manure and Mortalities Management Regulation* (M.R. 42/98) is the responsibility of the operator.

Instructions and footnotes:

[1] ENTER the manure production estimate for your operation. If no estimate is available, use the default value provided in colum E. References for default daily and yearly manure production are provided in column C.

[2] ENTER the number of days worth of manure that will be produced. For earthen manure storage facilities the minimum storage requirement is 400 days. For steel and concrete manure storage facilities the minimum storage requirement is 250 days.

[3] ENTER the total number of animals or birds that the operation can hold (e.g. barn or feedlot capacity).

[4] Milking cows includes all lactating and dry cows.

[5] Default manure production estimates for semi-solid and liquid dairy manure include manure and washwater from the milking parlour.

[6] 2 inches of wood shavings or 4 inches of straw placed on floor. Manure and litter removed from barn at 25% moisture content, with a density of 20 lb/ft^3

[7] One-third litter floor, two-thirds slatted floor. Manure and litter removed from barn at 40% moisture content, with a density of 25 lb/ft^3

[8] Manure removed from barn at 90% moisture content with a density of 59 lb/ft^3

[9] Poultry operations using litter (solid pack) must provide an estimate of yearly manure production

If yes, please describe _____

Manure Application Method

The Livestock Manure and Mortalities Management Regulation requires the registration of annual manure management plans for new or expanding operations with 300 Animal Units or more.

Does the operation currently file an annual Manure Management Plan with Manitoba Conservation and Water Stewardship? (For operations with 300 Animal Units or more, only)

☐ yes ■ no

Manure application methods and the season in which manure is applied affect odour, nutrient availability, crop response, land base requirements and the risk of water contamination.

Proposed application method:

☐ broadcast ■ broadcast and incorporation within 48 hours ☐ injection

The Livestock Manure and Mortalities Management Regulation prohibits the application of manure from November 10 of one year to April 10 of the following year (winter application).

Time of year for application: ☐ spring ☐ summer ■ fall

The Livestock Manure and Mortalities Management Regulation puts restrictions on fall application of manure in the Red River Valley Special Management Area.

The proposed spread fields:

are ■

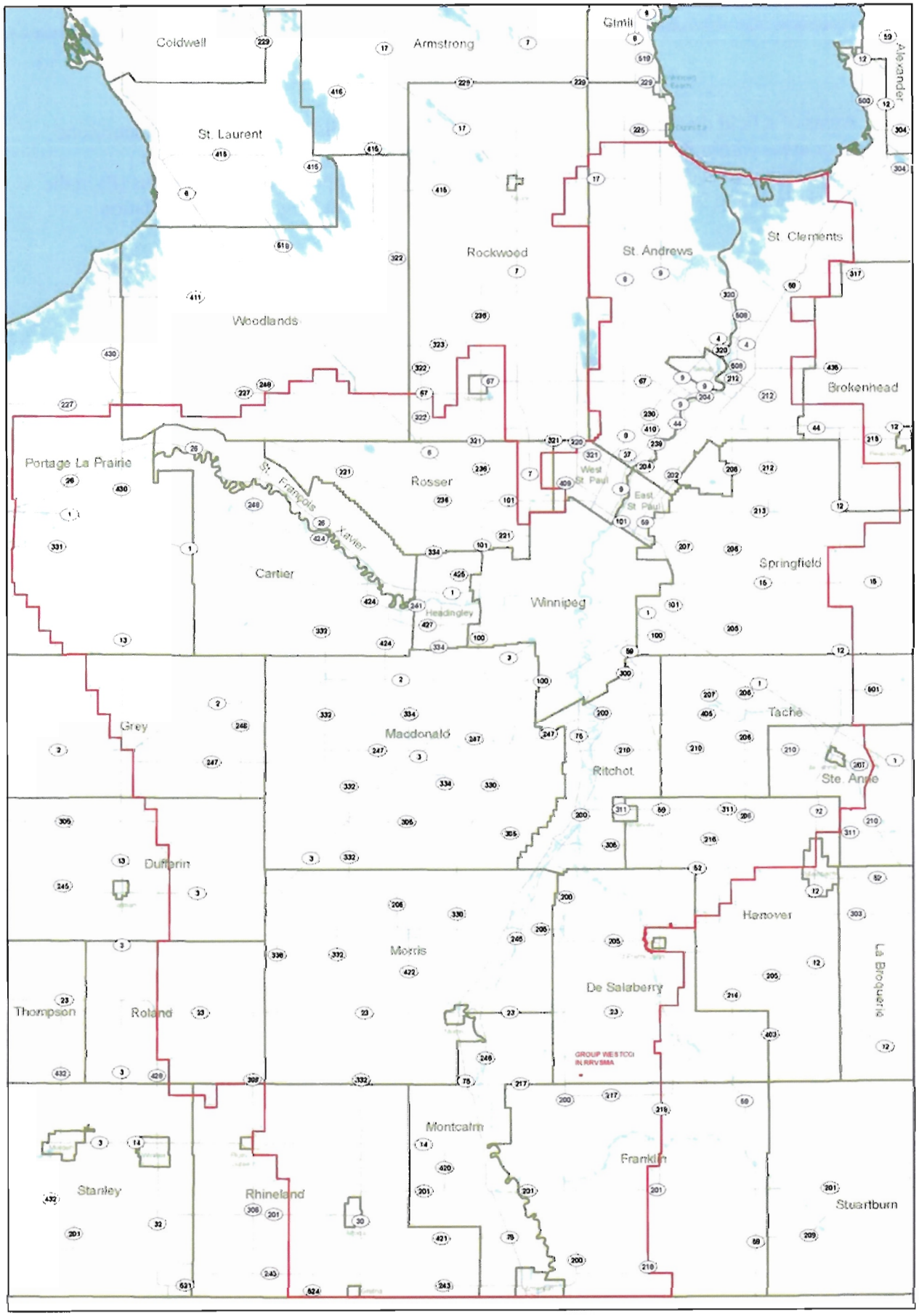
are not ☐

in the Red River Valley Special Management Area.

Land Available for Manure Application

The land available for manure application includes all suitable land (owned, leased or under agreement) that is available to the operation for manure application.

Under the Livestock Manure and Mortalities Management Regulation and the Nutrient Management Regulation, application of nutrients is not permitted on Agriculture Capability Class 6, 7 and unimproved organic soils (Nutrient Management Zone 4) and within Nutrient Buffer Zones.



Red River Valley

Special Management Area

Municipal Boundaries
Provincial Roadways
Red River Valley Special Management Area

Manitoba
Dept. of Local Government

Areas of a field that are Class 6, 7, unimproved organic soils (Nutrient Management Zone 4) or areas within the nutrient buffer zones are considered unsuitable for manure application. In addition, fields with 60 parts per million (ppm) Olsen phosphorus (P) in the top six inches (15 centimetres) of soil cannot be included in the land base calculation.

Nutrients cannot be applied within the Nutrient Buffer Zones as outlined in the Nutrient Management Regulation (62/2008) and illustrated in the **Setback Requirements From Water Features Table**.

Has the setback area for all water features been observed and excluded from land base calculations for this operation?

☑ yes ☐ no

Use the **Manure Application Field Characteristics Table** to determine the following:

Total suitable area available for manure application	4093

[X] Manure Application Field Characteristics Table attached

Copies of **soil test reports** that are no more than 12 months old must also be included with this submission.

[X] Soil test reports for the required area for manure application attached.

Land Required for Manure Application

Long term, land base requirements for manure application are calculated based on estimates of the quantity of nutrients (nitrogen and phosphorus) excreted by livestock and the removal of nutrients by the proposed crops.

Phosphorus

The quantity of phosphorus excreted by the livestock depends on the type, number and size of livestock, the quantity and availablility of phosphorus fed to the livestock and the amount retained by the livestock.

The removal of phosphorus by crops depends on the crops grown and the historical crop yield averages. (See the **Crop Rotation Table**).

The **Livestock Manure and Mortalities Management Regulation** requires that "sufficient land is available to the operator to implement an appropriate manure management plan" before Manitoba Conservation and Water Stewardship will issue a permit for a manure storage facility.

"*Certain Areas*" are defined by the **Livestock Manure and Mortalities Management Regulation** (M.R. 42/98) as areas where the amount of phosphorus in the manure produced annually by livestock in an area of not less than 93.24 km^2 is greater than two times the annual crop removal rate of P_2O_5 in that area. Currently the rural municipalities of Hanover and La Broquerie are considered to be "*certain areas*".

A livestock operation is considered to be located within a "*certain area*" if any part of the operation is located within the "*certain area*". This may include, but not limited to, barn(s), confined livestock area(s), field storage location(s), manure storage facility(ies), and/or spread filed(s).

MANURE APPLICATION FIELD CHARACTERISTICS TABLE

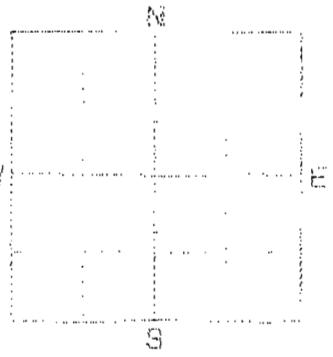
	A	B	C	D	E	F	G	H	I	J	K
Field ID	Legal Description	Rural Municipality	O/L/A	Total Acreage	Setbacks, including features	Net Acreage for Manure Application	Agriculture Capability Class and Subclass	Soil Nitrate (lb/acre) 0-24 inches	Soil Phosphorus (ppm Olsen P) 0-6 inches	Development Plan By-law	Zoning
1	S 5-4-3E	De Salaberry	Owned /used by Blue Clay	320	Order 3 drain	310	2W	48	28	Agriculture 2 Area (2194-04)	Agriculture 2 (2208-05)
3	NE 5-4-3E	De Salaberry		180	Order 3 drain	172	3W	19	35		
8	W 11-4-3E	De Salaberry		320	railway	312	3W	54	26		
11	N 15-4-3E	De Salaberry		320	Order 3 drain	310	3W	24	14		
12	W ½ of W16-4-3E	De Salaberry		160		156	3W	31	3		
14	SW 13-4-3E	De Salaberry		160		156	3W	28	23		
17	NE 7-4-3E	De Salaberry		160		156	2W	13	12		
19	N+SE 26-4-2E	Montcalm		477	yard	473	3W	27	15	Rural Area (472/93)	Agriculture General (512/95)
20	NE 27-4-2E	Montcalm		160		156	2W	28	22		
21	SW 23-4-2E	Montcalm		160		156	3W	37	16		
22	SE 22-4-2E	Montcalm		160		154	3W	16	23		
32N	N+SW 27-4-3E	De Salaberry	A	480		479	3W	18	7	Agriculture 2 Area (2194-04)	Agriculture 2 (2208-05)
32SE	SE 27-4-3E	De Salaberry	A	160		159	3W	22	8		
33	22-4-3E	De Salaberry	A	640	yard	626	3W	37	4		
34	S 23-4-3E	De Salaberry	A	320		318	3W	136	28		
2	NW 5-4-3 E	De Salaberry	Owned/used by Blue Clay Colony	80	drain	75	2W				
4	NW 6-4-3 E	De Salaberry		160		156	3W				
5	N 4-4-3 E	De Salaberry		320		316	2W, 3W				
6	9-4-3 E	De Salaberry		640	Blue Clay Colony site	480	2W, 3W				
7	10-4-3 E	De Salaberry		640		632	3W				
9	SE 11-4-3 E	De Salaberry		160	railway	156	3W				
15	N 29-4-4 E	De Salaberry		320	yard	314	3W				
16	NW 32-4-3 E	De Salaberry		160		156	3W				
17	NE 6-4-3 E	De Salaberry		160		156	2W				
18	NE 31 -3-3 E	Franklin		160	yard	153	3W			Rural Policy Area1 (10-09)	Rural 1 (14-11)
10	¾ of S 15-4-3 E	De Salaberry		240		238	3W			Agriculture 2 Area (2194-04)	Agriculture 2 (2208-05)
10	E ½ of SE 15-4-3 E	De Salaberry	O	80	Group Westco site	42	3W				
					Total Net Acreage	4093 with test 2874 without test Total 6967 acres					

Cargill

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID **22**
SAMPLE ID
FIELD NAME **Marsh**
COUNTY
TWP **4** RANGE **2E**
SECTION **22** QTR **SE** ACRES **160**
PREV. CROP **Soybeans**



SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: **CA0418**
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB **R0G 1K0**

REF # **723892** BOX # **0**
LAB # **NW103453**

Date Sampled

Date Received **10/11/2013**

Date Reported **10/15/2013**

Nutrients In The Soil		Interpretation
Nitrate	0-6" 10 lb/ac 6-24" 6 lb/ac 0-24" 16 lb/ac	
Phosphorus	Olsen 23 ppm	
Potassium	553 ppm	
Chloride	0-24" 80 lb/ac	
Sulfur	0-6" 12 lb/ac 6-24" 36 lb/ac	
Boron	0.8 ppm	
Zinc	1.37 ppm	
Iron	116.3 ppm	
Manganese	5.0 ppm	
Copper	2.42 ppm	
Magnesium	1655 ppm	
Calcium	4370 ppm	
Sodium	55 ppm	
Org.Matter	6.2 %	
Carbonate(CCE)	0.2 %	
Soil Salts	0-6" 0.47 mmho/cm 6-24" 0.78 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Canola-bu			Barley			Oats		
YIELD GOAL			YIELD GOAL			YIELD GOAL		
50 BU			80 BU			120 BU		
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band/Maint.			Band/Maint.			Band/Maint.		
	LB/ACRE	APPLICATION		LB/ACRE	APPLICATION		LB/ACRE	APPLICATION
N	144		N	93		N	89	
P_2O_5	45	Band *	P_2O_5	38	Band *	P_2O_5	30	Band *
K_2O	0		K_2O	10	Band (Starter)*	K_2O	10	Band (Starter)*
Cl		Not Available	Cl	0		Cl	0	
S	17	Band	S	7	Band (Trial)	S	7	Band (Trial)
B	1	Broadcast	B	0		B	0	
Zn	0		Zn	0		Zn	0	
Fe	0		Fe	0		Fe	0	
Mn	0		Mn	0		Mn	0	
Cu	0		Cu	0		Cu	0	
Mg	0		Mg	0		Mg	0	
Lime	0		Lime	0		Lime	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 6.4 6-24" 7.6		37.3 meq	(65-75) 58.6	(15-20) 36.9	(1-7) 3.8	(0-5) 0.6	(0-5)

General Comments: Clays/Clay Loams (CEC range = 30+) (Fine)

Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 45 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 2: * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 38 K2O = 40 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 3: * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 30 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Cargill

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID **21**
SAMPLE ID
FIELD NAME **Bluff**
COUNTY
TWP **4** RANGE **2E**
SECTION **23** QTR **SW** ACRES
PREV. CROP **Wheat-Winter**

N / W / E / S

SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: **CA0418**
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB **R0G 1K0**

REF # **659320** BOX # **0**
LAB # **NW75994**

Date Sampled | Date Received **09/27/2013** | Date Reported **10/7/2013**

Nutrient In The Soil		Interpretation
Nitrate 0-6"	28 lb/ac	
Nitrate 6-24"	9 lb/ac	
Nitrate 0-24"	37 lb/ac	
Olsen	16 ppm	
Phosphorus	639 ppm	
Potassium	52 lb/ac	
Chloride 0-6"	23 lb/ac	
Chloride 6-24"	54 lb/ac	
Sulfur	0.9 ppm	
Boron	1.68 ppm	
Zinc	133.3 ppm	
Manganese	6.9 ppm	
Copper	2.17 ppm	
Iron	1555 ppm	
Sodium	4879 ppm	
Soluble Salts	40 ppm	
Org. Matter	8.0 %	
Carbonate (CCE)	0.4 %	
Soil Salts 0-6"	0.56 mmho/cm	
Soil Salts 6-24"	0.97 mmho/cm	

1st Crop Choice		
Soybeans		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	***	
P_2O_5	44	Band *
K_2O	0	
S	0	
Zn	5	Band (Trial)
B	0	
Cu	0	
Fe	0	
Mn	0	
Cl	0	
Lime	0	

2nd Crop Choice		
Barley		
YIELD GOAL		
100 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	118	
P_2O_5	47	Band *
K_2O	10	Band (Starter)*
S	0	
Zn	5	Band (Trial)
B	0	
Cu	0	
Fe	0	
Mn	0	
Cl	0	
Mg	0	
Lime	0	

3rd Crop Choice		
Corn-Grain		
YIELD GOAL		
160 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	155	
P_2O_5	64	Band *
K_2O	10	Band (2x2) *
Cl		Not Available
Zn	5	Band (Trial)
B	0	
Cu	2	Band (Trial)
Fe	0	
Mn	0	
Mg	0	
Mo	0	
Lime	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Ranges)				
			% Ca	% Mg	% K	% Na	% H
0-6" 6.3		39.2 meq	(65-75)	(15-20)	(1-7)	(0-5)	(0-5)
6-24" 7.8			62.3	33.1	4.2	0.4	

General Comments: Clays/Clay Loams (CEC range = 30+) (Fine)

Crop 1: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. The risk of the development of iron chlorosis on soybeans on this field is moderate based on the salt and carbonate levels. Crop Removal: P2O5 = 44 K2O = 75 AGVISE Band/ Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them. Soybeans may respond to nitrogen on fields testing less than 60 lb/ac with a limited soybean history.

Crop 2: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 47 K2O = 50 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

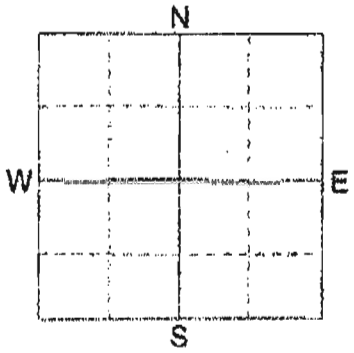
Crop 3: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 64 K2O = 43 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Cargill

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 19
SAMPLE ID
FIELD NAME Dupuis
COUNTY
TWP 4 RANGE
SECTION 26 QTR N1/2 & SE ACRES
PREV. CROP Wheat-Winter



SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: CA0418
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB R0G 1K0

REF # 659319 BOX # 0
LAB # NW51854

Date Sampled | Date Received 09/09/2013 | Date Reported 10/7/2013

Nutrient In The Soil		Interpretation
Nitrate	0-6" 21 lb/ac 6-24" 6 lb/ac 0-24" 27 lb/ac	Very High
Phosphorus	Olsen 15 ppm	Very High
Potassium	515 ppm	Very High
Chloride	0-24" 180 lb/ac	
Sulfur	0-6" 22 lb/ac 6-24" 60 lb/ac	Very High
Boron	1.0 ppm	Very High
Zinc	1.66 ppm	Very High
Iron	121.2 ppm	Very High
Manganese	8.6 ppm	Very High
Copper	2.46 ppm	Very High
Magnesium	1390 ppm	Very High
Calcium	4587 ppm	Very High
Sodium	53 ppm	Very High
Org. Matter	6.9 %	Very High
Carbon Dioxide	0.4 %	
Salts	0-6" 0.55 mmho/cm 6-24" 0.79 mmho/cm	Very High

1st Crop Choice		
Barley		
YIELD GOAL		
80 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE	APPLICATION	
N	97	
P2O5	38	Band *
K2O	10	Band (Starter)*
S	0	
Zn	5	Band (Trial)
B	0	
Mn	0	
Fe	0	
Cu	0	
Mg	0	
Ca	0	
Na	0	
Cl	0	

2nd Crop Choice		
Barley		
YIELD GOAL		
100 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE	APPLICATION	
N	128	
P2O5	47	Band *
K2O	10	Band (Starter)*
S	0	
Zn	5	Band (Trial)
B	0	
Mn	0	
Fe	0	
Cu	0	
Mg	0	
Ca	0	
Na	0	
Cl	0	

3rd Crop Choice		
Corn-Grain		
YIELD GOAL		
160 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE	APPLICATION	
N	165	
P2O5	64	Band *
K2O	10	Band (2x2) *
S		Not Available
Zn	5	Band (Trial)
B	0	
Mn	2	Band (Trial)
Fe	0	
Cu	0	
Mg	0	
Ca	0	
Na	0	
Cl	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Ranges)				
			% Ca	% Mg	% K	% Na	% H
0-6" 6.3 6-24" 8.0		36.1 meq	(65-75) 63.6	(15-20) 32.1	(1-7) 3.7	(0-5) 0.6	(0-5)

General Comments: Clays/Clay Loams (CEC range = 30+) (Fine)

Crop 1: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 38 K2O = 40 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 2: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 47 K2O = 50 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

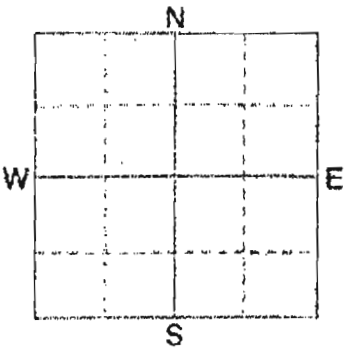
Crop 3: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 64 K2O = 43 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Cargill®

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 20
SAMPLE ID
FIELD NAME Ghislain
COUNTY
TWP 4 RANGE
SECTION 27 QTR NE ACRES
PREV. CROP Wheat-Winter



SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: CA0418
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB R0G 1K0

REF # 659318 BOX # 0
LAB # NW51869

Date Sampled | Date Received 09/09/2013 | Date Reported 10/7/2013

Nutrient In The Soil		Interpretation
Nitrate-N	0-6" 32 lb/ac 6-24" 6 lb/ac	
Sulfate-S	0-24" 28 lb/ac	
Olsen Phosphorus	22 ppm	
Potassium	534 ppm	
Chloride	0-24" 240 lb/ac	
Sulfur	0-6" 34 lb/ac 6-24" 90 lb/ac	
Boron	1.1 ppm	
Zinc	1.89 ppm	
Iron	125.0 ppm	
Manganese	9.3 ppm	
Copper	2.49 ppm	
Calcium	1421 ppm	
Magnesium	5761 ppm	
Sodium	53 ppm	
Organic Matter	7.4 %	
Soluble Salts	0.7 %	
Saturated Paste EC	0-6" 0.69 mmho/cm 6-24" 0.57 mmho/cm	

1st Crop Choice: Barley		
YIELD GOAL		
80 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	96	
P2O5	38	Band *
K2O	10	Band (Starter)*
Cl	0	
S	0	
B	0	
Zn	0	
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Na	0	

2nd Crop Choice: Barley		
YIELD GOAL		
100 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	127	
P2O5	47	Band *
K2O	10	Band (Starter)*
Cl	0	
S	0	
B	0	
Zn	0	
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Na	0	

3rd Crop Choice: Corn Grain		
YIELD GOAL		
160 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	164	
P2O5	64	Band *
K2O	10	Band (2x2) *
Cl		Not Available
S	0	
B	0	
Zn	2	Band (Trial)
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Na	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 6.5 6-24" 8.0		42.2 meq	(65-75) 68.2	(15-20) 28.0	(1-7) 3.2	(0-5) 0.5	(0-5)

General Comments: Clays/Clay Loams (CEC range = 30+) (Fine)

Crop 1: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 38 K2O = 40 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

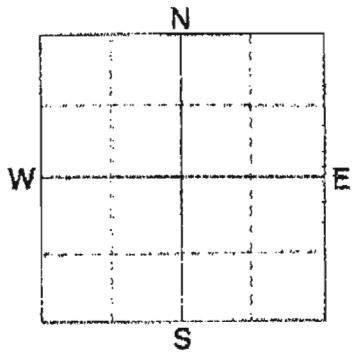
Crop 2: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 47 K2O = 50 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 3: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 64 K2O = 43 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 11
SAMPLE ID
FIELD NAME Zimmer
COUNTY
TWP 4 RANGE 3E
SECTION 15 QTR N1/2 ACRES
PREV. CROP Wheat-Winter



SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: CA0418
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB ROG 1K0

REF # 659316 BOX # 0
LAB # NW76014

Date Sampled | Date Received 09/27/2013 | Date Reported 10/7/2013

Nutrient In The Soil		Interpretation
Nitrate	15 lb/ac 9 lb/ac 24 lb/ac	
Chloride	14 ppm	
Potassium	507 ppm	
Phosphorus	92 lb/ac	
Sulfur	24 lb/ac 108 lb/ac	
Silver	1.2 ppm	
Zinc	1.92 ppm	
Iron	26.0 ppm	
Manganese	1.5 ppm	
Copper	2.57 ppm	
Magnesium	2440 ppm	
Calcium	6463 ppm	
Sodium	85 ppm	
Organic Matter	6.1 %	
Carbonates	4.6 %	
Soil Salts	0.71 mmho/cm 0.64 mmho/cm	

1st Crop Choice		
Barley		
YIELD GOAL		
80 BU.		
SUGGESTED GUIDELINES		
Band/Maint.		
	LB/ACRE	APPLICATION
N	100	
P2O5	38	Band *
K2O	10	Band (Starter)*
Cl	0	
S	0	
B	0	
Zn	0	
Fe	0	
Mn	0	
Cu	0	
Mg	0	

2nd Crop Choice		
Barley		
YIELD GOAL		
100 BU.		
SUGGESTED GUIDELINES		
Band/Maint.		
	LB/ACRE	APPLICATION
N	131	
P2O5	47	Band *
K2O	10	Band (Starter)*
Cl	0	
S	0	
B	0	
Zn	0	
Fe	0	
Mn	0	
Cu	0	
Mg	0	

3rd Crop Choice		
Oats		
YIELD GOAL		
120 BU.		
SUGGESTED GUIDELINES		
Band/Maint.		
	LB/ACRE	APPLICATION
N	96	
P2O5	30	Band *
K2O	10	Band (Starter)*
Cl	0	
S	0	
B	0	
Zn	0	
Fe	0	
Mn	0	
Cu	0	
Mg	0	

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (ideal Range)				
			%Ca	%Mg	%K	%H	%Na
0-6" 8.0 6-24" 8.5		54.3 meq	(65-75) 59.5	(15-20) 37.4	(1-7) 2.4	(0-5) 0.7	(0-5)

General Comments: Texture is not estimated on high pH soils.

Crop 1: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 38 K2O = 40 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 2: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 47 K2O = 50 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

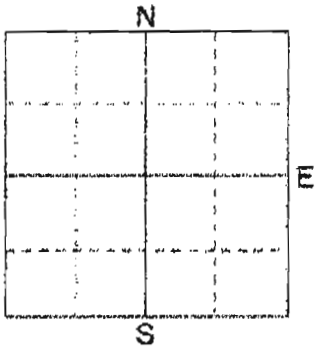
Crop 3: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 30 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Cargill

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 14
SAMPLE ID
FIELD NAME Catellier
COUNTY
TWP 4 RANGE 3E
SECTION 13 QTR SW ACRES
PREV. CROP Wheat-Winter



SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: **CA0418**
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB R0G 1K0

REF # **659317** BOX # **0**
LAB # **NW71710**

Date Sampled | Date Received **09/25/2013** | Date Reported **10/7/2013**

Nutrient In The Soil		Interpretation	1st Crop Choice		2nd Crop Choice		3rd Crop Choice	
		Very Low Low Med High	Barley		Barley		Soybeans	
			YIELD GOAL		YIELD GOAL		YIELD GOAL	
			80 BU		100 BU		50 BU	
			SUGGESTED GUIDELINES		SUGGESTED GUIDELINES		SUGGESTED GUIDELINES	
			Band/Maint.		Band/Maint.		Band/Maint.	
			LB/ACRE	APPLICATION	LB/ACRE	APPLICATION	LB/ACRE	APPLICATION
0-6"	22 lb/ac		N 96		N 127		N ***	
6-24"	6 lb/ac		P_2O_5 38	Band *	P_2O_5 47	Band *	P_2O_5 44	Band *
0-24"	28 lb/ac		K_2O 10	Band (Starter)*	K_2O 10	Band (Starter)*	K_2O 0	
Nitrate			Ca 0		Ca 0		Ca 0	
Chloride	23 ppm		Mg 0		Mg 0		S 5	Band (Trial)
Phosphorus			S 0		S 0		Zn 0	
Potassium	498 ppm		Zn 0		Zn 0		Mn 0	
0-24"	72 lb/ac		Mn 0		Mn 0		Fe 0	
Chloride			Fe 0		Fe 0		Cu 0	
0-6"	18 lb/ac		Cu 0		Cu 0		B 0	
6-24"	114 lb/ac		B 0		B 0			
Sulfur								
Boron	1.3 ppm							
Zinc	1.21 ppm							
Manganese	24.2 ppm							
Iron	1.6 ppm							
Copper	2.39 ppm							
Aluminum	2000 ppm							
Calcium	6313 ppm							
Sodium	57 ppm							
Organic Matter	6.4 %							
Carbonate Content	2.9 %							
0-6"	0.63 mmho/cm							
6-24"	0.71 mmho/cm							
Soil pH								

Soil pH	Buffer pH	Cation Exchange Capacity	Base Saturation (Typical Ranges)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.9		49.8 meq	(65-75)	(15-20)	(1-7)	(0-5)	(0-5)
6-24" 8.3			63.4	33.5	2.6	0.5	

General Comments: Texture is not estimated on high pH soils.

Crop 1: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 38 K2O = 40 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

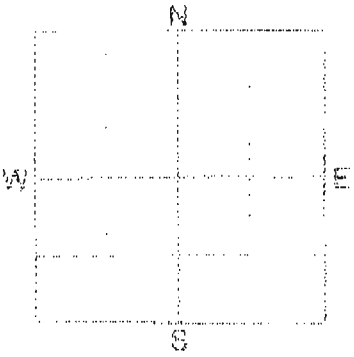
Crop 2: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 47 K2O = 50 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 3: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. The risk of the development of iron chlorosis on soybeans on this field is high based on the salt and carbonate levels. Crop Removal: P2O5 = 44 K2O = 75 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them. Soybeans may respond to nitrogen on fields testing less than 60 lb/ac with a limited soybean history.

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 03
SAMPLE ID
FIELD NAMERM
COUNTY
TWP 4 RANGE 3E
SECTION 5 QTRNE ACRES 180
PREV. CROPSoybeans



SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: CA0418
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB R0G 1K0

REF # 723897 BOX # 0
LAB # NW103504

Date Sampled | Date Received 10/11/2013 | Date Reported 10/15/2013

Soil Test Results			Interpretation
Nitrate	0-6"	13 lb/ac	
	6-24"	6 lb/ac	
	0-24"	19 lb/ac	
Phosphorus	Olsen	35 ppm	
Potassium		649 ppm	
Chloride	0-24"	92 lb/ac	
Sulfur	0-6"	14 lb/ac	
	6-24"	36 lb/ac	
Boron		1.1 ppm	
Zinc		1.67 ppm	
Iron		35.1 ppm	
Manganese		2.3 ppm	
Copper		2.62 ppm	
Magnesium		1678 ppm	
Calcium		5634 ppm	
Sodium		55 ppm	
Org.Matter		6.4 %	
Carbonate(ECE)		0.9 %	
Soil Salts	0-6"	0.61 mmho/cm	
	6-24"	0.65 mmho/cm	

1st Crop Choice			2nd Crop Choice			3rd Crop Choice		
Canola-bu			Canola-bu			Oats		
YIELD GOAL			YIELD GOAL			YIELD GOAL		
50 BU			40 BU			120 BU		
SUGGESTED GUIDELINES			SUGGESTED GUIDELINES			SUGGESTED GUIDELINES		
Band/Maint.			Band/Maint.			Band/Maint.		
LB/ACRE		APPLICATION	LB/ACRE		APPLICATION	LB/ACRE		APPLICATION
N	141		N	106		N	86	
P_2O_5	45	Band *	P_2O_5	36	Band *	P_2O_5	30	Band *
K_2O	0		K_2O	0		K_2O	10	Band (Starter)*
Cl		Not Available	Cl		Not Available	Cl	0	
S	17	Band	S	17	Band	S	7	Band (Trial)
B	0		B	0		B	0	
Zn	0		Zn	0		Zn	0	
Fe	0		Fe	0		Fe	0	
Mn	0		Mn	0		Mn	0	
Cu	0		Cu	0		Cu	0	
Mg	0		Mg	0		Mg	0	
Lime			Lime			Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.4		44.1 meq	(65-75) 63.0	(15-20) 31.7	(1-7) 3.8	(0-5) 0.5	(0-5)
6-24" 8.2							

General Comments: Clays/Clay Loams (CEC range = 30+) (Fine)

Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 45 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 2: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 36 K2O = 18 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

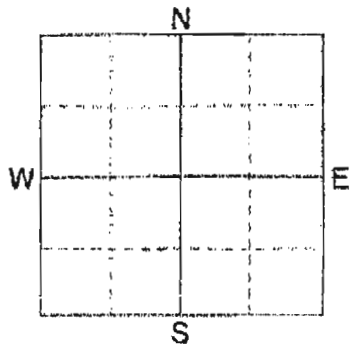
Crop 3: * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 30 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Cargill®

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 12
SAMPLE ID
FIELD NAME **Angus**
COUNTY
TWP **4** RANGE **3E**
SECTION **16** QTR **W1/2 of W1/2** ACRES
PREV. CROP **Wheat-Spring**



SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: **CA0418**
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB ROG 1K0

REF # **692277** BOX # **0**
LAB # **NW75991**

Date Sampled | Date Received **09/27/2013** | Date Reported **10/7/2013**

Nutrient In The Soil		Interpretation
Nitrate-N 0-6"	16 lb/ac	Very High
Nitrate-N 6-24"	15 lb/ac	Very High
Nitrate-N 0-24"	31 lb/ac	Very High
Chloride	3 ppm	Very High
Phosphorus	579 ppm	Very High
Potassium 0-24"	40 lb/ac	Very Low
Sulfate-S 0-6"	48 lb/ac	Very High
Sulfate-S 6-24"	36 lb/ac	Very High
Boron	1.2 ppm	Very High
Zinc	0.67 ppm	Very High
Iron	26.2 ppm	Very High
Manganese	1.5 ppm	Very High
Copper	2.08 ppm	Very High
Magnesium	2143 ppm	Very High
Calcium	6442 ppm	Very High
Sodium	67 ppm	Very High
Organic Matter	6.2 %	Very High
Carbonates (CCE)	2.5 %	Very High
Salinity 0-6"	0.59 mmho/cm	Very High
Salinity 6-24"	0.57 mmho/cm	Very High

1st Crop Choice		
Canola-bu		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	144	
P_2O_5	55	Band *
K_2O	0	
S		Not Available
Zn	10	Band
B	0	
Mn	2	Band (Trial)
Fe	0	
Cu	0	
Cl	0	
Mg	0	
Na		

2nd Crop Choice		
Soybeans		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	***	
P_2O_5	50	Band *
K_2O	0	
S	0	
Zn	0	
B	0	
Mn	2	Band (Trial)
Fe	0	
Cu	0	
Cl	0	
Mg	0	
Na		

3rd Crop Choice		
Oats		
YIELD GOAL		
120 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	80	
P_2O_5	40	Band *
K_2O	10	Band (Starter)*
S	0	
Zn	0	
B	0	
Mn	2	Band (Trial)
Fe	0	
Cu	0	
Cl	0	
Mg	0	
Na		

Soil pH	Buffer pH	Cation Exchange Capacity	Base Saturation (Typical Range) %Ca	%Mg	%K	%Na	%H
0-6" 7.9		51.8 meq	(65-75) 62.1	(15-20) 34.4	(1-7) 2.9	(0-5) 0.6	(0-5)
6-24" 8.6							

General Comments: Texture is not estimated on high pH soils.

Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 45 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 2: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. The risk of the development of iron chlorosis on soybeans on this field is moderate based on the salt and carbonate levels. Crop Removal: P2O5 = 44 K2O = 75 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them. Soybeans may respond to nitrogen on fields testing less than 60 lb/ac with a limited soybean history.

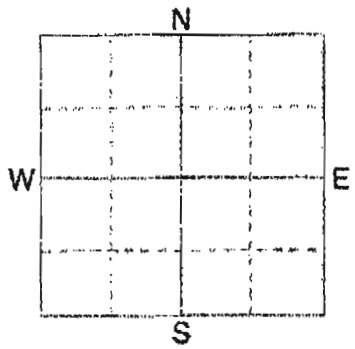
Crop 3: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 30 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Cargill

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID **17**
SAMPLE ID
FIELD NAME **Hope**
COUNTY
TWP **4** RANGE **3E**
SECTION **7** QTR **NE** ACRES **160**
PREV. CROP **Barley**



SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: **CA0418**
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB **R0G 1K0**

REF # **692279** BOX # **0**
LAB # **NW75969**

Date Sampled | Date Received **09/27/2013** | Date Reported **10/7/2013**

Nutrient In The Soil		Interpretation
Nitrate-N	0-6" 7 lb/ac 6-24" 6 lb/ac	
Sulfate-S	0-24" 13 lb/ac	
Phosphorus (Olsen)	12 ppm	
Potassium	519 ppm	
Chloride	0-6" 84 lb/ac	
Sulfur	0-6" 22 lb/ac 6-24" 72 lb/ac	
Boron	1.0 ppm	
Zinc	0.94 ppm	
Iron	71.3 ppm	
Manganese	4.0 ppm	
Copper	2.72 ppm	
Calcium	1982 ppm	
Sodium	6236 ppm	
Soluble Salts	70 ppm	
OM	6.3 %	
Calcium Carbonate Equiv.	1.2 %	
Soluble Salts	0-6" 0.7 mmho/cm 6-24" 0.64 mmho/cm	

1st Crop Choice		
Canola-bu		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE	APPLICATION	
N	162	
P_2O_5	45	Band *
K_2O	0	
S		Not Available
Zn	15	Band
Fe	0	
Mn	2	Band (Trial)
Cu	0	
B	0	
Mo	0	
Lime		

2nd Crop Choice		
Soybeans		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE	APPLICATION	
N	***	
P_2O_5	44	Band *
K_2O	0	
S	0	
Zn	5	Band (Trial)
Fe	0	
Mn	2	Band (Trial)
Cu	0	
B	0	
Mo	0	
Lime		

3rd Crop Choice		
Oats		
YIELD GOAL		
120 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE	APPLICATION	
N	107	
P_2O_5	30	Band *
K_2O	10	Band (Starter)*
S	0	
Zn	0	
Fe	0	
Mn	2	Band (Trial)
Cu	0	
B	0	
Mo	0	
Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	Base Saturation (Values in Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.1 6-24" 7.8		49.3 meq	(65-75) 63.2	(15-20) 33.5	(1-7) 2.7	(0-5) 0.6	(0-5)

General Comments: Clays/Clay Loams (CEC range = 30+) (Fine)

Crop 1: * Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 45 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.**

Crop 2: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. The risk of the development of iron chlorosis on soybeans on this field is moderate based on the salt and carbonate levels. Crop Removal: P2O5 = 44 K2O = 75 AGVISE Band/ Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them. Soybeans may respond to nitrogen on fields testing less than 60 lb/ac with a limited soybean history.

Crop 3: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 30 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Cargill

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 01
SAMPLE ID
FIELD NAME Blue Clay
COUNTY
TWP 4 RANGE 3E
SECTION 5 QTR S1/2 ACRES
PREV. CROP Wheat-Winter

N / W / E / S

SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: CA0418
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB R0G 1K0

REF # 659295 BOX # 0
LAB # NW75957

Date Sampled
Date Received 09/27/2013
Date Reported 10/7/2013

Nutrient In The Soil			Interpretation
Nitrate	0-6"	33 lb/ac	
	6-24"	15 lb/ac	
	0-24"	48 lb/ac	
Phosphorus	Olsen	28 ppm	
Potassium		598 ppm	
Chloride	0-24"	72 lb/ac	
Sulfur	0-6"	24 lb/ac	
	6-24"	60 lb/ac	
Boron		1.3 ppm	
Zinc		1.45 ppm	
Iron		43.9 ppm	
Manganese		2.4 ppm	
Copper		2.48 ppm	
Magnesium		1781 ppm	
Calcium		6082 ppm	
Sodium		67 ppm	
Org. Matter		6.7 %	
Carbonate (CCE)		2.0 %	
Sol. Salts	0-6"	0.78 mmho/cm	
	6-24"	0.65 mmho/cm	

	1st Crop Choice		2nd Crop Choice		3rd Crop Choice	
	Corn-Grain		Corn-Grain		Canola-bu	
	YIELD GOAL		YIELD GOAL		YIELD GOAL	
	140 BU		160 BU		45 BU	
	SUGGESTED GUIDELINES		SUGGESTED GUIDELINES		SUGGESTED GUIDELINES	
	Band/Maint.		Band/Maint.		Band/Maint.	
	LB/ACRE	APPLICATION	LB/ACRE	APPLICATION	LB/ACRE	APPLICATION
N	120		144		110	
P_2O_5	56	Band *	64	Band *	41	Band *
K_2O	10	Band (2x2) *	10	Band (2x2) *	0	
Cl		Not Available		Not Available		Not Available
S	5	Band (Trial)	5	Band (Trial)	15	Band
B	0		0		0	
Zn	0		2	Band (Trial)	0	
Fe	0		0		0	
Mn	0		0		0	
Cu	0		0		0	
Mg	0		0		0	
Lime						

	Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range) % Ca	% Mg	% K	% Na	% H
0-6"	7.4		46.8 meq	(65-75) 64.9	(15-20) 31.2	(1-7) 3.3	(0-5) 0.6	(0-5)
6-24"	8.2							

General Comments: Clays/Clay Loams (CEC range = 30+) (Fine)

Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 56 K2O = 38 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 2: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 64 K2O = 43 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

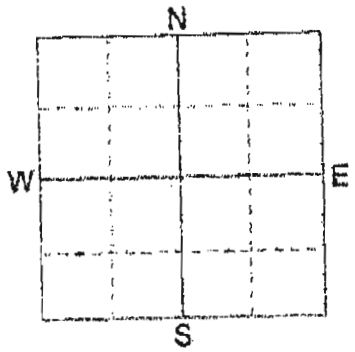
Crop 3: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 41 K2O = 20 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Cargill®

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID 08
SAMPLE ID
FIELD NAME Silo
COUNTY
TWP 4 RANGE 3E
SECTION 11 QTR W1/2 ACRES
PREV. CROP Wheat-Winter



SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: CA0418
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB R0G 1K0

REF # 659315 BOX # 0
LAB # NW75971

Date Sampled | Date Received 09/27/2013 | Date Reported 10/7/2013

Nutrient In The Soil		Interpretation
0-6"	36 lb/ac	
6-24"	18 lb/ac	
0-24"	54 lb/ac	
Olsen	26 ppm	
Potassium	714 ppm	
0-24"	340 lb/ac	
0-6"	48 lb/ac	
6-24"	276 lb/ac	
Sulfur		
Boron	1.3 ppm	
Zinc	3.07 ppm	
Iron	42.5 ppm	
Manganese	2.9 ppm	
Copper	2.56 ppm	
Magnesium	2230 ppm	
Calcium	5915 ppm	
Sodium	103 ppm	
Org. Matter	6.6 %	
Carbonate (CCE)	1.2 %	
0-6"	0.75 mmho/cm	
6-24"	0.87 mmho/cm	
Soil Salts		

1st Crop Choice		
Soybeans		
YIELD GOAL		
40 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE	APPLICATION	
N	***	
P_2O_5	35	Band *
K_2O	0	
	0	
	0	
B	0	
Zn	0	
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Limit		

2nd Crop Choice		
Soybeans		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE	APPLICATION	
N	***	
P_2O_5	44	Band *
K_2O	0	
	0	
	0	
B	0	
Zn	0	
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Limit		

3rd Crop Choice		
Wheat-Spring		
YIELD GOAL		
60 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE	APPLICATION	
N	108	
P_2O_5	38	Band *
	10	Band (Starter)*
S	0	
	0	
B	0	
Zn	0	
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.4		50.4 meq	(65-75) 58.6	(15-20) 36.8	(1-7) 3.6	(0-5) 0.9	(0-5)
6-24" 8.3							

General Comments: Clays/Clay Loams (CEC range = 30+) (Fine)

Crop 1: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. The risk of the development of iron chlorosis on soybeans on this field is moderate based on the salt and carbonate levels. Crop Removal: P2O5 = 35 K2O = 60 AGVISE Band/ Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them. Soybeans may respond to nitrogen on fields testing less than 60 lb/ac with a limited soybean history.

Crop 2: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. The risk of the development of iron chlorosis on soybeans on this field is moderate based on the salt and carbonate levels. Crop Removal: P2O5 = 44 K2O = 75 AGVISE Band/ Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them. Soybeans may respond to nitrogen on fields testing less than 60 lb/ac with a limited soybean history.

Crop 3: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 38 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Cargill

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID **32 N SW**
SAMPLE ID
FIELD NAME **32 N SW**
COUNTY
TWP **4** RANGE **3E**
SECTION **27** QTR **SW / N1/2** ACRES **480**
PREV. CROP **Soybeans**

N / W / E / S

SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: **CA0418**
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB **R0G 1K0**

REF # **696738** BOX # **0**
LAB # **NW92622**

Date Sampled | Date Received **10/07/2013** | Date Reported **10/15/2013**

Nutrient In The Soil		Interpretation (Med / High)
Nitrate 0-6"	12 lb/ac	
Nitrate 6-24"	6 lb/ac	
Nitrate 0-24"	18 lb/ac	
Phosphorus Olsen	7 ppm	
Potassium	632 ppm	
Chloride 0-24"	60 lb/ac	
Sulfur 0-6"	20 lb/ac	
Sulfur 6-24"	264 lb/ac	
Boron	1.3 ppm	
Zinc	0.91 ppm	
Iron	37.3 ppm	
Manganese	2.1 ppm	
Copper	2.23 ppm	
Magnesium	2457 ppm	
Calcium	7095 ppm	
Sodium	61 ppm	
Org.Matter	5.2 %	
Carbonate(CCE)	3.6 %	
Sol. Salts 0-6"	0.59 mmho/cm	
Sol. Salts 6-24"	0.63 mmho/cm	

1st Crop Choice		
Canola-bu		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	142	
P_2O_5	45	Band *
K_2O	0	
Cl		Not Available
S	15	Band
B	0	
Zn	2	Band (Trial)
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

2nd Crop Choice		
Wheat-Spring		
YIELD GOAL		
60 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	129	
P_2O_5	38	Band *
K_2O	10	Band (Starter)*
Cl	0	
S	0	
B	0	
Zn	2	Band (Trial)
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

3rd Crop Choice		
Oats		
YIELD GOAL		
120 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	87	
P_2O_5	32	Band *
K_2O	10	Band (Starter)*
Cl	0	
S	0	
B	0	
Zn	2	Band (Trial)
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.8 6-24" 8.5		57.8 meq	(65-75) 61.3	(15-20) 35.4	(1-7) 2.8	(0-5) 0.5	(0-5)

General Comments: Texture is not estimated on high pH soils.

Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 45 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 2: * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 38 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

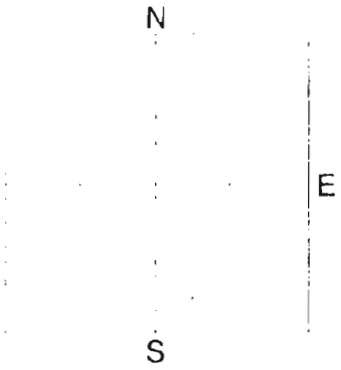
Crop 3: * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 30 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Cargill®

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID **32 - SE**
SAMPLE ID
FIELD NAME **32 - SE**
COUNTY
TWP **4** RANGE **3E**
SECTION **27** QTR **SE** ACRES **160**
PREV. CROP **Soybeans**



SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: **CA0418**
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB **R0G 1K0**

REF # **696737** BOX # **0**
LAB # **NW93247**

Date Sampled | Date Received **10/07/2013** | Date Reported **4/23/2014**

Nutrient In The Soil		Interpretation (Low / Med / High)
Nitrate	0-6" 13 lb/ac 6-24" 9 lb/ac 0-24" 22 lb/ac	
Phosphorus	Olsen 8 ppm	
Potassium	514 ppm	
Chloride	0-24" 156 lb/ac	
Sulfur	0-6" 26 lb/ac 6-24" 264 lb/ac	
Boron	1.2 ppm	
Zinc	0.96 ppm	
Iron	50.3 ppm	
Manganese	3.1 ppm	
Copper	2.36 ppm	
Magnesium	2277 ppm	
Calcium	4814 ppm	
Sodium	86 ppm	
Org.Matter	7.0 %	
Carbonate(CCE)	1.1 %	
Sol. Salts	0-6" 0.72 mmho/cm 6-24" 0.89 mmho/cm	

1st Crop Choice		
Canola-bu		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	138	
P_2O_5	45	Band *
K_2O	0	
Cl		Not Available
S	15	Band
B	0	
Zn	2	Band (Trial)
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

2nd Crop Choice		
Wheat-Spring		
YIELD GOAL		
60 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	125	
P_2O_5	38	Band *
K_2O	10	Band (Starter)*
Cl	0	
S	0	
B	0	
Zn	2	Band (Trial)
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

3rd Crop Choice		
Oats		
YIELD GOAL		
120 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	83	
P_2O_5	31	Band *
K_2O	10	Band (Starter)*
Cl	0	
S	5	Band (Trial)
B	0	
Zn	2	Band (Trial)
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.2 6-24" 8.3		44.7 meq	(65-75) 53.8	(15-20) 42.4	(1-7) 2.9	(0-5) 0.8	(0-5)

General Comments: Clays/Clay Loams (CEC range = 30+) (Fine)

Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 45 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 2: * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 38 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 3: * Caution: Seed Placed Fertilizer Can Cause Injury * Nitrogen is credited 15 lbs for the previous crop. Nitrogen credits may need to be adjusted based on local conditions. Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 30 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Cargill

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID **33**
SAMPLE ID
FIELD NAME
COUNTY
TWP **4** RANGE **3E**
SECTION **22** QTR **ALL** ACRES
PREV. CROP **Wheat-Spring**

N W E S

SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: **CA0418**
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB **R0G 1K0**

REF # **696736** BOX # **0**
LAB # **NW94893**

Date Sampled | Date Received **10/08/2013** | Date Reported **10/15/2013**

Nutrient In The Soil		Interpretation (Low / Med / High)
Nitrate	0-6" 25 lb/ac 6-24" 12 lb/ac 0-24" 37 lb/ac	
Phosphorus	Olsen 4 ppm	
Potassium	486 ppm	
Chloride	0-24" 28 lb/ac	
Sulfur	0-6" 56 lb/ac 6-24" 126 lb/ac	
Boron	1.2 ppm	
Zinc	0.49 ppm	
Iron	31.7 ppm	
Manganese	1.8 ppm	
Copper	2.08 ppm	
Magnesium	2250 ppm	
Calcium	6400 ppm	
Sodium	53 ppm	
Org.Matter	5.6 %	
Carbonate(CCE)	5.6 %	
Sol. Salts	0-6" 0.92 mmho/cm 6-24" 0.69 mmho/cm	

1st Crop Choice		
Canola-bu		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	138	
P_2O_5	53	Band *
K_2O	0	
Cl		Not Available
S	10	Band
B	0	
Zn	2	Band (Trail)
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

2nd Crop Choice		
Soybeans		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	***	
P_2O_5	48	Band *
K_2O	0	
Cl	0	
S	0	
B	0	
Zn	2	Band (Trail)
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

3rd Crop Choice		
Oats		
YIELD GOAL		
120 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	83	
P_2O_5	38	Band *
K_2O	10	Band (Starter)*
Cl	12	Broadcast
S	0	
B	0	
Zn	2	Band (Trial)
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" 7.7 6-24" 8.4		52.2 meq	(65-75) 61.3	(15-20) 35.9	(1-7) 2.4	(0-5) 0.4	(0-5)

General Comments: Texture is not estimated on high pH soils.

Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 45 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 2: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. The risk of the development of iron chlorosis on soybeans on this field is very high based on the salt and carbonate levels. Crop Removal: P2O5 = 44 K2O = 75 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them. Soybeans may respond to nitrogen on fields testing less than 60 lb/ac with a limited soybean history.

Crop 3: 26 lbs of 0-0-60 = 12 lbs of Chloride" * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 30 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Cargill

Soil Analysis by Agvise Laboratories
(http://www.agvise.com)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID **34**
SAMPLE ID
FIELD NAME
COUNTY
TWP **4** RANGE **3E**
SECTION **23** QTR **S1/2** ACRES
PREV. CROP **Wheat-Spring**

N / W / E / S

SUBMITTED FOR:
BLUE CLAY FARMS

SUBMITTED BY: **CA0418**
CARGILL-MORRIS
2 MILE ROAD
BOX 460
MORRIS, MB **R0G 1K0**

REF # **723899** BOX # **0**
LAB # **NW103495**

Date Sampled | Date Received **10/11/2013** | Date Reported **10/15/2013**

Nutrient In The Soil		Interpretation (Low / Med / High)
Nitrate 0-6"	43 lb/ac	
Nitrate 6-24"	93 lb/ac	
Nitrate 0-24"	136 lb/ac	
Phosphorus Olsen	28 ppm	
Potassium	511 ppm	
Chloride 0-24"	300 lb/ac	
Sulfur 0-6"	34 lb/ac	
Sulfur 6-24"	210 lb/ac	
Boron	1.3 ppm	
Zinc	2.72 ppm	
Iron	25.2 ppm	
Manganese	1.5 ppm	
Copper	2.61 ppm	
Magnesium	2282 ppm	
Calcium	6502 ppm	
Sodium	119 ppm	
Org.Matter	5.9 %	
Carbonate(CCE)	5.8 %	
Sol. Salts 0-6"	0.87 mmho/cm	
Sol. Salts 6-24"	0.91 mmho/cm	

1st Crop Choice		
Canola-bu		
YIELD GOAL		
50 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	39	
P_2O_5	45	Band *
K_2O	0	
Cl		Not Available
S	15	Band
B	0	
Zn	0	
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

2nd Crop Choice		
Canola-bu		
YIELD GOAL		
40 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	7	
P_2O_5	36	Band *
K_2O	0	
Cl		Not Available
S	15	Band
B	0	
Zn	0	
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

3rd Crop Choice		
Oats		
YIELD GOAL		
120 BU		
SUGGESTED GUIDELINES		
Band/Maint.		
LB/ACRE		APPLICATION
N	10	
P_2O_5	30	Band *
K_2O	10	Band (Starter)*
Cl	0	
S	0	
B	0	
Zn	0	
Fe	0	
Mn	0	
Cu	0	
Mg	0	
Lime		

Soil pH	Buffer pH	Cation Exchange Capacity	% Base Saturation (Typical Range)				
			% Ca	% Mg	% K	% Na	% H
0-6" **7.8**		53.4 meq	(65-75)	(15-20)	(1-7)	(0-5)	(0-5)
6-24" **8.4**			**60.9**	**35.6**	**2.5**	**1.0**	

General Comments: Texture is not estimated on high pH soils.

Crop 1: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 45 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 2: ** Chloride yield data is limited for this crop. * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 36 K2O = 18 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop 3: * Caution: Seed Placed Fertilizer Can Cause Injury * Many crops may respond to a starter application of P & K even on high soil tests. Crop Removal: P2O5 = 30 K2O = 23 AGVISE Band/Maintenance guidelines will build P & K test levels to the medium range over many years and then maintain them.

Crop Rotation and Nutrients Removal

Crop	P_2O_5	N	Units	Yield	Units	Acreage	Removal	
							P_2O_5	N
Alfalfa	13.8	58	lb/ton		ton/ac		-	-
Barley Grain	0.42	0.97	lb/bu	67.3	bu/ac	454	12,832.76	29,637.57
Barley Silage	11.8	34.4	lb/ton		ton/ac		-	-
Canola	1.04	1.93	lb/bu	33.2	bu/ac	504	17,402.11	32,294.30
Corn Grain	0.44	0.97	lb/bu	95.3	bu/ac	327	13,711.76	30,228.21
Corn Silage	12.7	31.2	lb/ton		tons/ac		-	-
Dry Edible Beans	1.39	4.17	lb/cwt		cwt/ac		-	-
Fababeans	1.79	5.02	lb/cwt		cwt/ac		-	-
Flax	0.65	2.13	lb/bu	19.9	bu/ac	589	7,618.72	24,965.94
Grass Hay	10	34.2	lb/ton		tons/ac		-	-
Lentils	1.03	3.39	lb/cwt		cwt/ac		-	-
Oats	0.26	0.62	lb/bu	99.1	bu/ac	402	10,357.93	24,699.68
Peas	0.69	2.34	lb/bu	24.5	bu/ac	605	10,227.53	34,684.65
Potatoes	0.09	0.32	lb/cwt		cwt/ac		-	-
Rye	0.45	1.06	lb/bu		bu/ac		-	-
Soybeans	0.84	3.87	lb/bu	32.4	bu/ac	356	9,688.90	44,638.13
Sunflower	1.1	2.8	lb/cwt		cwt/ac		-	-
Wheat - Spring	0.59	1.5	lb/bu	48.1	bu/ac	454	12,884.07	32,756.10
Wheat - Winter	0.51	1.04	lb/bu	73	bu/ac	402	14,966.46	30,519.84
					Total	4093	109,690.23	284,424.43
				Removal per acre			26.80	69.49

1. Crop nutrient removal and crop rotation information: www.gov.mb.ca/agriculture/environment/
2. Target yield: crops insurnce data in the area.

In "*certain areas*" it is Manitoba Conservation and Water Stewardship policy to consider a manure storage facility permit if the operation shows it has access to sufficient suitable land to apply manure at a rate equivalent to one times the crop removal rate of phosphorus.

Is the livestock operation located in "*certain areas*"?

☐ yes ☒ no

In areas which are not considered to be "*certain areas*", Manitoba Conservation and Water Stewardship may issue a manure storage facility permit, if the operation shows it has access to sufficient suitable land to apply manure at a rate equivalent to two times the crop removal rate of phosphorus.

For more information on obtaining a manure storage facility permit, please contact Manitoba Conservation and Water Stewardship, Environmental Approvals branch at (204) 945-5081.

Use the **Land Base Calculator** to calculate the minimum area required for manure application.

Total minimum area required for manure application at two times crop removal, for operations outside of Hanover and La Broquerie	1383 acres (Total requirement of Blue Clay Colony and Group Westco: 3032 acres)
Total minimum area required for manure application at one times crop removal, for operations within Hanover and La Broquerie AND For the long-term sustainability of operations outside of Hanover and La Broquerie	2766 acres (Total requirement of Blue Clay Colony and Group Westco:6063 acres)

For more information on completing land base calculations, call Manitoba Agriculture, Food and Rural Initiatives (MAFRI) at (204) 945-3869 in Winnipeg.

[x] Land Base Calculator attached

Land Base Requirement Summary

By comparing the land **available** for manure application with the land **required** for manure application, state whether sufficient suitable land for manure application:

[ ] has not been identified

[x] has been identified for two times the crop removal rate of phosphorus (for operations outside of the RMs of Hanover or La Broquerie)

[ ] has been identified for one times the crop removal rate of phosphorus (for operations within the RMs of Hanover and La Broquerie)

Land Base Requirement

Farm Excretion

Livestock pecies		Livestock place	N (lb/year)	P_2O_5 (lb/year)	Operation
pig	Gestating Sow	-	-	-	-
	Nursing Sow	-	-	-	-
	Gilts	-	-	-	-
	Boars	-	-	-	-
	Sows, farrow to 5 kg	-	-	-	-
	Sows, farrow to 23 kg	-	-	-	-
	Sows, farrow to finish	450	92,880	62,506	Blue Clay Colony
	Weanlings	-	-	-	-
	Growers/finishers	-	-	-	-
chicken	Broilers	212,000	66,596	74,135	Group Westco
	Broiler Breeder Pullets	18,500	6,756	7,520	Blue Clay Colony
	Broiler Breeder Hens	-	-	-	-
eggs	Layer Pullets	-	-	-	-
	Layer Hens	-	-	-	-
	Breeder Pullets	-	-	-	-
	Breeder Hens	-	-	-	-
turkey	Broiler Hens (0-9 wks)	-	-	-	-
	Hens (0-11 wks)	-	-	-	-
	Heavy Hens (0-14 wks)	11,670	17,287	18,328	Blue Clay Colony
	Light Toms (0-12 wks)	-	-	-	-
	Toms (0-13 wks)	-	-	-	-
	Heavy Toms (0-15 wks)	-	-	-	-
	Breeding Hen Growers (0-30 wks)	-	-	-	-
	Breeding Hens (30-60 wks)	-	-	-	-
	Breeding Tom Grower (0-18 wks)	-	-	-	-
	Breeding Tom Grower (0-30 wks)	-	-	-	-
	Breeding Tom (30-60 wks)	-	-	-	-
Total			183,520	162,489	

Crop Removal

Nitrogen (N lb/acre)	69.49
Phosphorus (P_2O_5 lb/acre)	26.80

Land Base Requirement Estimate	Blue Clay and Group Westco	Group Westco only
Extimate Based on	Acres	Acres
Nitrogen (N removal)	2,641	958
Phosphorus (2 X P_2O_5 removal)	3,032	1,383
Phosphorus (1 X P_2O_5 removal)	6,063	2,766

This calculator was provided by MAFRI and was revised by DGH Engineering Ltd. to adapt Group Westco project. (see Appendix A for the source of animal nutrient excretion data)

Long-Term Environmental Sustainability

The Government of Manitoba has included phosphorus as a nutrient by which applications of manure, synthetic fertilizer and municipal waste sludge to agricultural lands may be limited.

Over the short-term for fields with low phosphorus, regulations allow manure to be applied to meet the nitrogen requirements of the crop. This often results in over-application of phosphorus and a build-up of phosphorus in soils. When soil test phosphorus levels reach 60 ppm Olsen P, manure application rates must consider how much phosphorus will be removed in the harvested portion of the crop. At 60 to 119 ppm Olsen P, the amount of phosphorus that can be applied cannot exceed twice (two times) what the crop can remove in order to slow the build-up of soil phosphorus. Once soil test phosphorus levels reach 120 ppm Olsen P, applications of phosphorus are restricted to no more than what the crop can remove (one times) in order to stop further soil test phosphorus build-up. At 180 ppm Olsen P, no additional phosphorus may be applied.

It should be noted that soil-test phosphorus levels of 60 ppm Olsen P or greater are agronomically very high and at these levels most crops will not benefit from additional phosphorus beyond starter phosphorus. As phosphorus levels build up in soils, the concentration of phosphorus in runoff increases.

Therefore, to remain environmentally sustainable over a long-term planning horizon of 25 years or more, phosphorus applications from applied manure and other nutrient sources such as commercial fertilizers must be balanced with crop removal to avoid further build-up in soils. Consequently, sufficient land must be available in relatively close proximity to the operation to balance phosphorus applications with crop phosphorus removals (one times) so that manure treatment and export of phosphorus from the region is not required.

[X] I acknowledge that up to 2766 acres acres/hectares (one times crop removal from table above) may be required for the long term environmental sustainability of the operation.

10.0 Mortalities (Dead Animal) Disposal

The **Livestock Manure and Mortalities Management Regulation** sets requirements for the use, management and storage of livestock mortalities in agricultural operations. It helps ensure livestock mortalities are handled in an environmentally sound manner. Winter application of composted mortalities is prohibited.

Type of disposal:
- ☐ rendering
- ☒ composting
- ☐ incineration (in approved incinerator only)

Mass Mortalities

☐ A plan for **mass mortalities** is in place.

What steps will be taken in the case of mass mortalities?
MB Conservation will be contacted to provide direction with respect to clean up activities and appropriate disposal land fill site. Composting is a consideration, subject to cause of mortality.

11.0 Project Site Description: Land Use Planning Considerations

For assistance contact your **Community and Regional Planning Regional Office**.

Development Plan and Zoning Bylaw

The Planning District or Municipal Development Plan and Zoning By-law adopted under ***The Planning Act,*** set policy and regulations for the use and development of land. A proposed livestock operation must comply with the requirements of this bylaw. In the absence of a By-law, the **Provincial Planning Regulation** under ***The Planning Act*** applies.

Development Plan

Every Development Plan must contain a livestock operation policy (LOP) that identifies areas where new or expanded livestock operations may be allowed. It must also set general standards for the location and setback of livestock operations. Identifying the Development Plan's land use designation and policies (for the planning district or municipality that affect the site) will help confirm the project site's compliance. The Development Plan designations for the spread fields (if something other than agricultural) will indicate the potential loss of the fields in the future due to possible development.

Name of Planning District	RM of De Salaberry Development Plan
Development Plan by-law number	2194-04
Land use designation of project site	Agriculture 2 Area
Livestock operation policies – quote supportive policy numbers	9.0.5 and 9.1.1.c.ii
Other Development Plan policies – quote supportive policy numbers	N/A
Non-supportive Development Plan policies	N/A

[x] The Development Plan livestock operation policies support the size and location of the proposed operation.

[x] The Development Plan designations support the long term use of the proposed spread fields.

Zoning By-law

Identifying the zoning for the project site, the proposed spread fields and the related zoning provisions, helps determine the project's compliance and the minimum separation distances needed between the operation and property boundaries and other natural features and land uses. The zoning bylaw contains specific regulations that govern location and setback of livestock operations.

What are the minimum project site requirements stated in the Zoning By-law?

	Project site dimensions	Minimum zoning bylaw site requirements
Minimum site area	80 acres	80 acres
Minimum site width	1320 ft.	N/A
Minimum front yard	150 ft.	125 ft.
Minimum side and rear yard	140 ft.	25 ft.

If any project (front, side or rear) yard site dimensions are less than the Zoning By-law minimum, a Variation Order from the Municipality will be required.

Separation Distances (Zoning Bylaw or Provincial Planning Regulation)
Using the proposed size of the operation (see **Animal Units Calculation Table**) and the type of animal housing and manure storage facility, complete the following table.

Indicate the distance from:

a. earthen manure storage facility or b. feedlot and
c. animal confinement facility or d. non-earthen manure storage facility…

…to the following land use features (if applicable)	**Indicate minimum separation distance required in the zoning bylaw or Provincial Planning Regulation (Check appropriate box(es)**		**If land use feature is less than the minimum separation distance**	
	☐ a. ☐ b.	☒ c. ☒ d.	Provide actual distance	Provide location or name of feature (e.g. Red River)
Residence/ dwelling		1230 (feet)	1750 (feet)	nearest residence
Designated area (non-agricultural)		6600 (feet)	12 miles	Town of Saint Malo
Surface water		1000 (feet)	3 miles	Marsh River
Surface watercourse		328 (feet)	705 (ft)	Ste. Elizabeth Drain
Crown land		N/A	> 1 mile	
Wildlife Management Area		N/A	Not in immediate area	
Livestock operation		N/A	4200 feet	Hog Barn (NW8-4-3E)
Other significant features/land uses				

If Crown Lands are located within one mile, provide coding. Information can be obtained from the Interdepartmental Operations Crown Lands Plans through the **Manitoba Legislative Library** or contact Manitoba Conservation and Water Stewardship at (204) 619-2230.

If undesignated Crown Lands will be used for manure spreading purposes, including the laying of pipe or clearing activity, and use will require a Crown Lands General Permit disposition for the use and access of the subject Crown Lands Parcel(s).

In cases where minimum separation distances are not stated in the Zoning By-law or Development Plan, the minimum separation distances in the **Provincial Planning Regulation** apply.

Note: If any separation distance is less than the zoning by-law minimum, a Variation Order will be required from the Municipality.

Setback Distances (Livestock Manure and Mortalities Management Regulation)
Using the following table to indicate the distance from:

Feature	Structure	Minimum setback distance required	Provide actual distance (m)	Provide location or name of feature (e.g. Red River)
Surface watercourse, sinkhole, spring, or well	Manure storage facility	100 m	N/A	
	Field storage	100 m	>100 m	Ste. Elizabeth Drain
	Composting site	100 m	215 m	Ste. Elizabeth Drain
	Confined livestock area	100 m	N/A	
Property Line	Manure storage facility	100 m	N/A	
	Composting site	100 m	110 m	
	Confined livestock area	100 m	N/A	

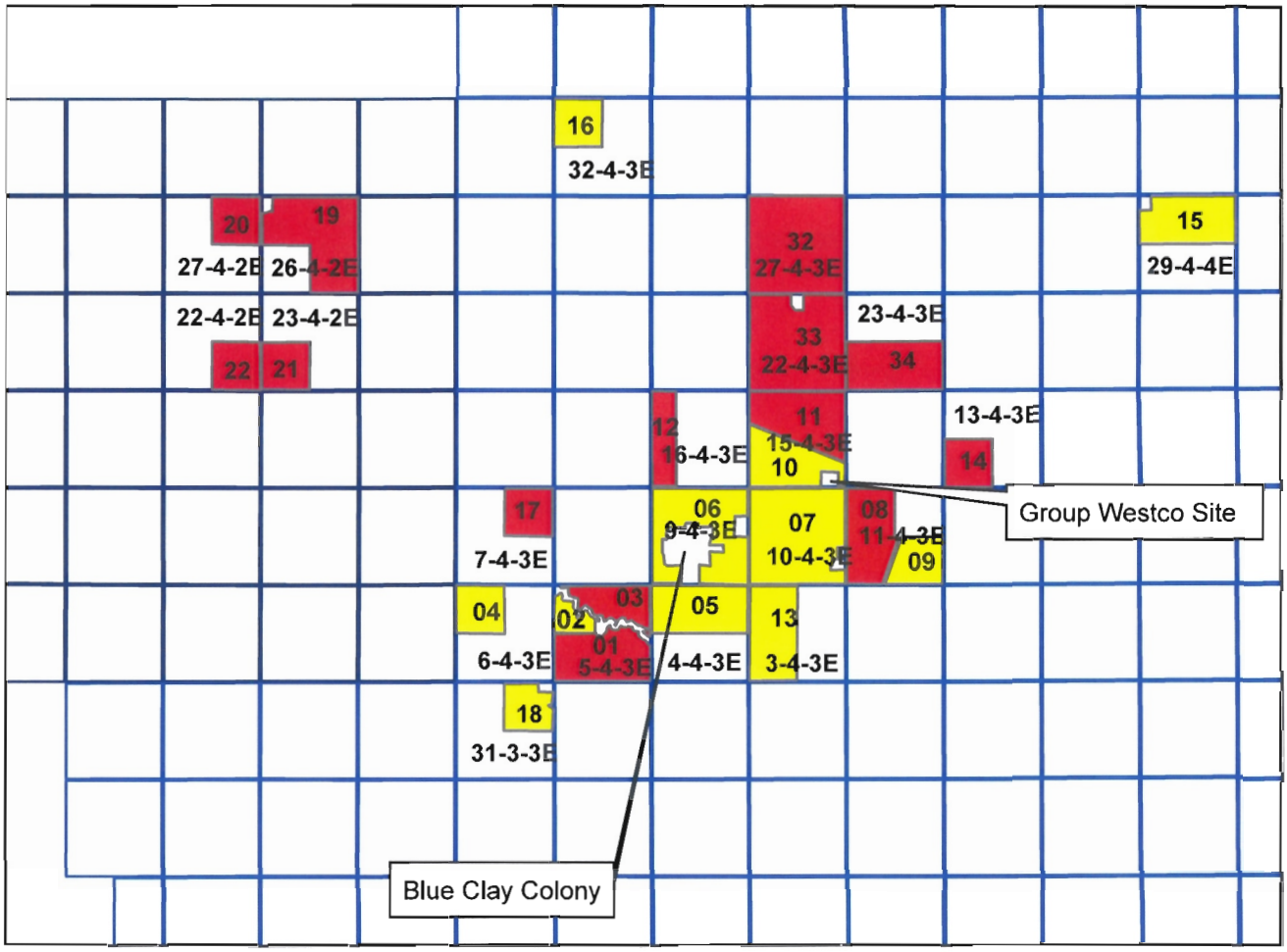
If any setback distances have not been met, please provide explanation below:

_____

_____

_____

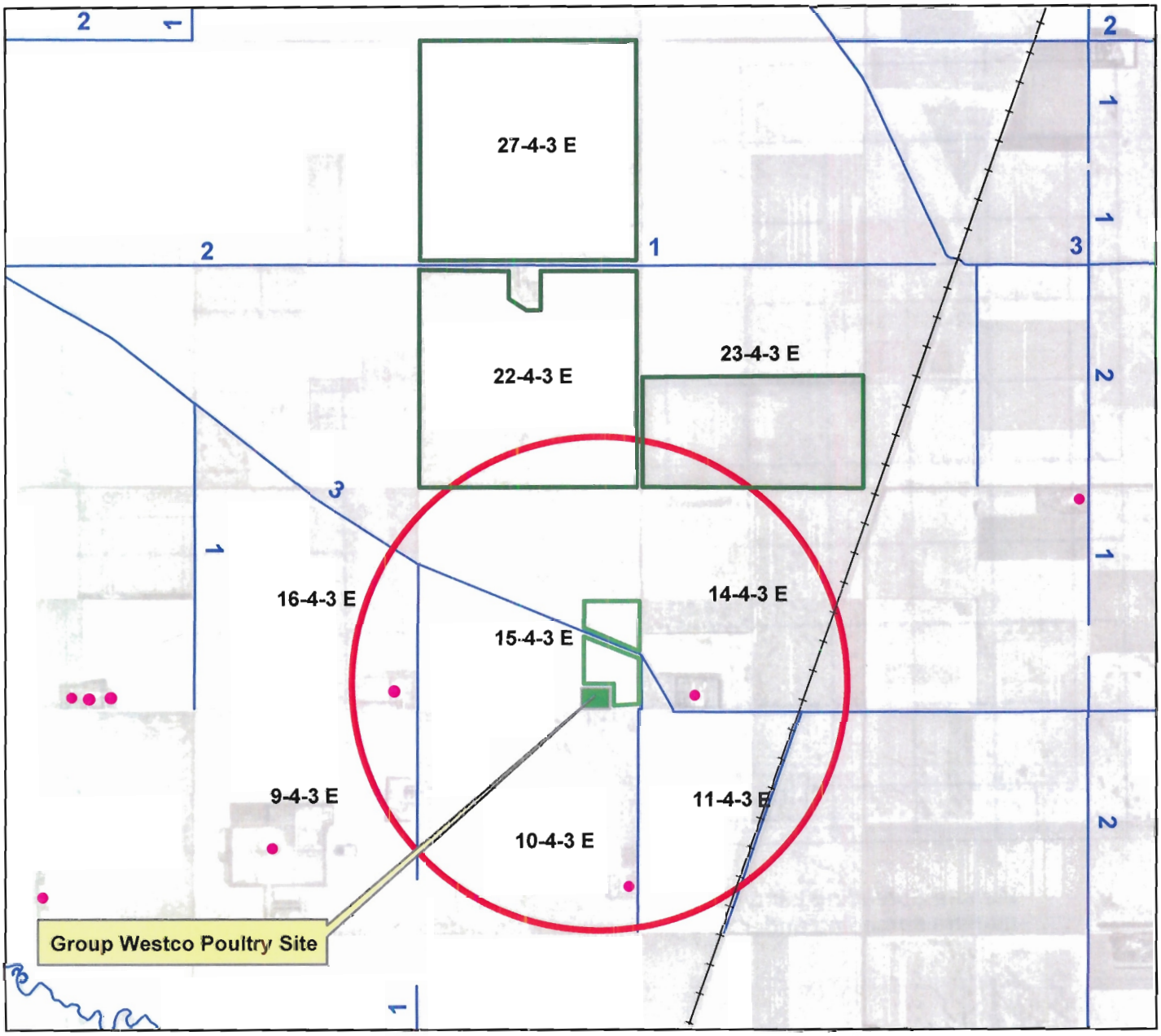
Show: a) location of the project site, location and ownership of spread fields and b) land uses and significant features including dwellings (i) within a 1 mile radius of the project site and (ii) within and adjacent to each spread field on a Land Use & Spread Field Map. (See **Land Use & Spread Field Map Example**).



Manure Spreading Land (Lands 32, 33 and 34 are available for Group Westco manure spreading under an agreement with Blue Clay Colony.)

LEGEND

ID	Spread land - with soil test results within 12 months
ID	Spread land - without soil test results within 12 months
XX-X-X E	Legal description



Group Westco Poultry Site and Features within 1 Mile Radius

LEGEND

- Group Westco Poultry Site
- one mile radius
- residence
- manure spreading land owned
- manure spreading land under agreement
- X — drain and order number
- CPR

12.0 Truck Haul Routes and Access Points

One consideration with new or expanding livestock operations is the potential impact on existing public roads (municipal and provincial), access and the need for improvements or mitigation. Complete the following table.

Vehicle Type	Estimated Average Number of times per day accessing		Access from PTH/PR onto site will mainly require a Left or Right Hand Turn Please check one				Access onto PTH/PR from site will mainly require a Left or Right Hand Turn Please check one			
	Provincial Trunk Highway (PTH)	Provincial Road (PR)	Provincial Trunk Highway (PTH)		Provincial Road (PR)		Provincial Trunk Highway (PTH)		Provincial Road (PR)	
			LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
Truck		2			x					x
Tractor Trailer		1			x					x
Other – Specify										

Identify what roads and access points will be used for the proposed operation? (See **Truck Haul Routes and Access Points Map** for an example).

For help with mapping, contact your **Community and Regional Planning Regional Office**.

[X] Truck Haul Routes and Access Points Map attached

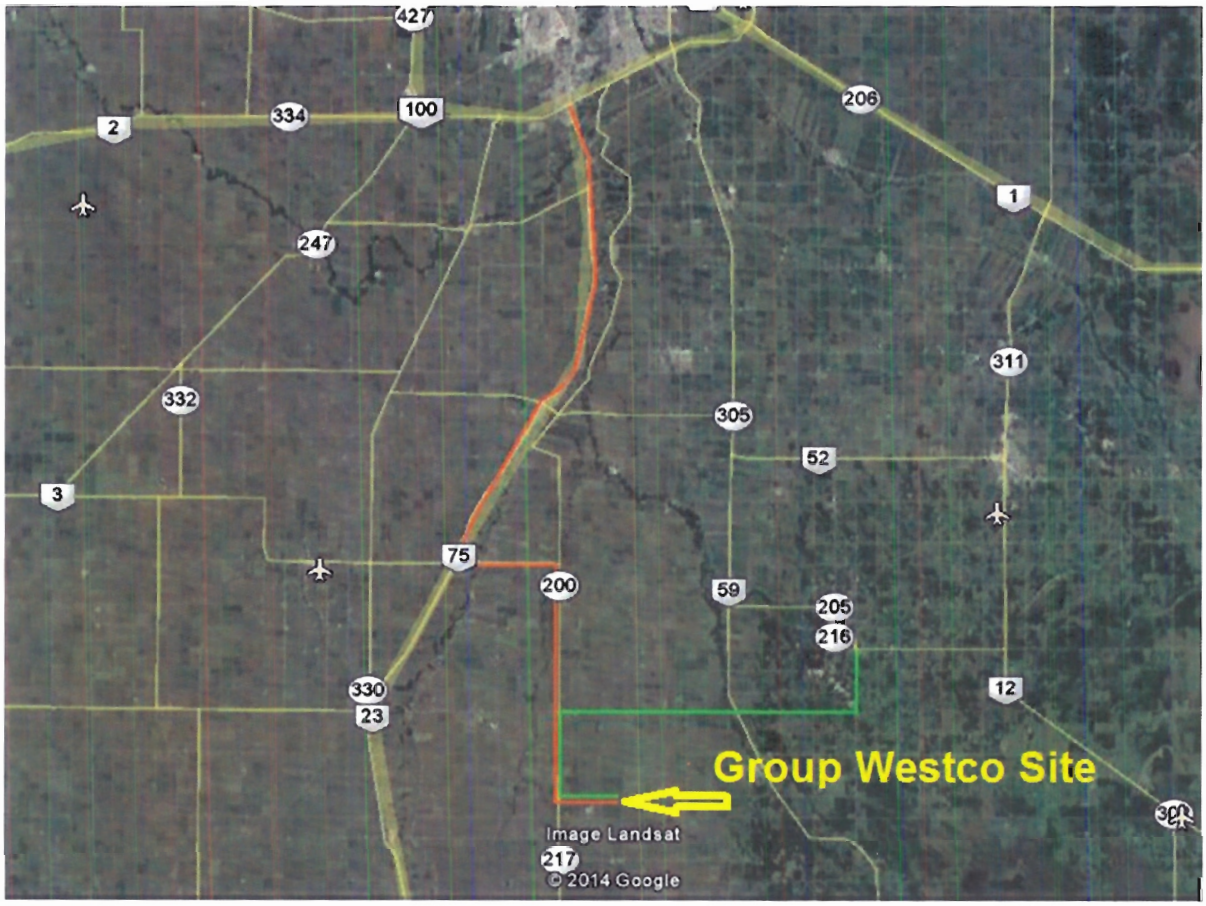
13.0 Conservation Data Centre Report

A Conservation Data Centre Report must be requested and the response attached to this site assessment. The request may be submitted electronically at:
www.gov.mb.ca/conservation/cdc

Were rare species identified in the Conservation Data Centre Report?

[ ] Yes
[X] No

Truck Haul Routes and Access Points Map



Group Westco Truck Haul Routes and Access Points Map

LEGEND

___ shipping in route

___ shipping out route

14.0 Supporting Documents

Check off the supporting documents included in this submission:

- [x] Contact Information and Privacy and Publication Notice
- [x] Location Map (shows proposed project within rural municipality)
- [x] Animal Units Calculation Table
- [x] Water Requirement Calculation Table
- [x] Manure Production Calculator Table
- N/A [ ] Existing and Proposed Manure Storage Facility Dimensions Tables (if applicable)
- [x] Manure Application Field Characteristics Table
- [x] Crop Rotation Table
- [x] Recent manure application field soil sample results (Nitrate- N lb/ac at 0-6 and 6-24 inch depths, Phosphorus – ppm at 0-6 inch depth)
- [x] Land Base Calculator
- [x] Project Site Plan (proposed operation showing current and proposed structures)
- [x] Land Use and Spread Field Map (location and ownership of operation, spread fields, location and distance to non-agricultural uses, development plan designation, zoning for project site and spread fields)
- [x] Truck Haul Routes and Access Points Map (with routes and access points on municipal/provincial roads and/or provincial trunk highways)
- [x] Response from the Conservation Data Centre
- [ ] Other, please specify:

_____

_____

_____

15.0 Declaration

I do hereby verify that the information contained in the Site Assessment and all required Supporting Documents is accurate and complete to my knowledge

Date: FEB 4/2014

Signature: David de R

APPENDIX A

About Land Base Calculator

Land Base Requirement Calculator
for Group Westco TRC Site Assessment

Land Calculator Development:
Clay Sawka, Nutrient Management Specialist, MAFRD
Petra Loro, Livestock Environment Specialist, MAFRD

Background Information and Sources for Nutrient Excretion from Pigs, Chickens and Turkeys

Pigs

- Input by user: Type, Number of pigs, Type of Storage
- Feed consumed per pig per cycle based on Nutrient Requirements of Swine (NRC 2012) and adjusted using Manitoba Cost of Production (Robyn Harte, Business Development Specialist – Swine, MAFRD)
- Protein content of feed based on Manitoba industry norms (Robyn Harte, Business Development Specialist – Swine, MAFRD)
- % N excretion (ASAE 2005; AWMFH 2008; Farm Practices Guidelines for Pig Producers in Manitoba, 1998; MB AU Revised 2001.xls)
- N Volatilization based on the Farm Practices Guidelines for Pig Producers in Manitoba, 1998
- P content of feed based on CFIA Table 4 and 2013 Manitoba Feed Survey (Robyn Harte, Business Development Specialist – Swine, MAFRD)
- P retention (5.34 g/kg, Manitoba Feed Model)
- % P excretion (ASAE 2005; AWMFH 2008)
- No adjustment to ASAE/AWMFH excretion values
- Sows – Farrow to Nursery (28 kg) and Farrow to Finish:
    - Weanlings: 13.2 piglets per litter x 0.89 survival to wean x 2.375 litters per year /52 weeks per year x 6 weeks in room (Robyn Harte, Business Development Specialist – Swine, MAFRD; Gary Plohman, Livestock Engineer, MAFRD)
    - Grower Finisher: 13.2 piglets per litter x 0.89 survival to wean x 2.375 litters per year x 0.972 survival to g-f / 52 weeks per year x 17 weeks in room (Robyn Harte, Business Development Specialist – Swine, MAFRD; Gary Plohman, Livestock Engineer, MAFRD)

Layer and Broiler Chickens

- All default production values provided by Angela Kroeker, Poultry Export Verification Specialist (MAFRD) and Carlyle Bennett, Manager-Farm Production Extension (MAFRD)
- Input by User: Type, Number of Birds, Type of Storage, Weight In (MB default provided), Weight Out (MB default provided), Days on Feed per Cycle (MB default provided), Number of Cycles (MB default provided)
- N excretion (ASAE 2005; AWMFH 2008)
- N Volatilization based on the Farm Practices Guidelines for Pig Producers in Manitoba, 1998
- P excretion (ASAE 2005; AWMFH 2008)

- Validation based on weight gain based on retention of 5 g/kg meat (Flaten 2003; Lynch and Caffrey, 1997)
- Validation of egg gain based on retention of 2 g/kg eggs (Flaten 2003; Lynch and Caffrey, 1997)
- Layers and breeders : # eggs per bird (MB default), egg weight (MB default)
- Feed Conversions (MB default)
- % P in Feed (MB default)
- % P Excretion calculated for Manitoba
- No adjustment made to ASAE values

Turkeys

- All default production values provided by Angela Kroeker, Poultry Export Verification Specialist (MAFRD) and Carlyle Bennett, Manager-Farm Production Extension (MAFRD)
- Input by User: Type, Number of Birds, Type of Storage, Weight In (MB default provided), Weight Out (MB default provided), Days on Feed per Cycle (MB default provided), Number of Cycles (MB default provided)
- N excretion (ASAE 2005)
- N Volatilization based on the Farm Practices Guidelines for Pig Producers in Manitoba, 1998
- P excretion (ASAE 2005)
- No Retention Values for Turkeys. Retention value for chicken weight gain used for validation of turkeys (5 g/kg meat). No adjustment made to ASAE excretion values.

Referenced Publications

ASAE Standards, 2005. D384.2 Manure Production and Characteristics. http://evo31.ae.iastate.edu/ifafs/doc/pdf/ASAE_D384.2.pdf

Flaten, D. 2003. The Risk of Phosphorus Transfer to Water from Manure Application onto Agricultural Land. Presentation to the 46th annual MSSS Meeting, 2003.

Lynch, P.B. and Caffrey P.J. 1997. Phosphorus Requirements for Animal Production. Pp. 283-296 In H. Tunney, O.T. Carton, P.C. Brookes and A.E. Johnston, eds. Phosphorus Loss from Soil to Water. CAB International. Wallingford, UK.

Manitoba Agriculture. 1998. Farm Practices Guidelines for Hog Producers in Manitoba.

USDA, 2008. Part 651 Agricultural Waste Management Field Handbook (AWMFH), Chapter 4 Agricultural Waste Characteristics. http://tammi.tamu.edu/NRCS651ch4.pdf

APPENDIX B
Manure Spreading Agreement

This agreement entered into effective this 14 th day of February, 2014.

Manure Spreading Agreement

Between:

BLUMENHOF HOLDING CO. LTD.
(hereinafter referred to as Blue Clay),

of the First Part,

and

Group Westco Inc.,
(hereinafter referred to as Westco),

of the Second Part.

Whereas Westco desires to construct and operate a Poultry Farm, (the "Operation"); in the RM of De Salaberry.

And whereas Westco will require a sufficient land base on which to spread manure produced from the Operation;

And whereas the Blue Clay owns land which is suitable and available for manure to be spread;

And whereas the Blue Clay and Westco agree to spreading of manure produced from the Operation upon Blue Clay's land in accordance with the terms and conditions more particularly set out herein;

Now therefore in consideration of the sum of $1.00 paid by each of the parties to the other (the receipt of which is acknowledged by each party), the mutual covenants contained in this agreement and other good and valuable consideration, the parties agree as follows:

1. Blue Clay owns land, (the "Spreading Lands") legally described as follows:

(legal land descriptions of the Spreading Lands)

NE 27-4-3 E; SE 27-4-3 E; SW 27-4-3 E; NW 27-4-3 E; NE 22-4-3 E; SE 22-4-3 E;

SW 22-4-3 E; NW 22-4-3 E; SE 23-4-3 E; SW 23-4-3 E

2. The total number of nominal acres of the Spreading Lands that are available for spreading of manure as of the date of this agreement is : 1600 acres.

3. Blue Clay agrees that Westco may spread manure produced from the Operation on the Spreading Land during the Term of this agreement.

4. Westco agrees to provide the manure to Blue Clay and apply it on the Spreading Lands at no cost to Blue Clay for a period of 7 years from the date of this agreement. Westco and Blue

Clay agree that manure will be applied to the Spreading Lands to the limit of the manure quantities available as permitted by law.

5. The parties shall be entitled by mutual agreement to extend this agreement on an annual period, or such other period as may be agreed to by the parties, (an "Extension Period").

6. Blue Clay agrees that Westco may enter into and upon the Spreading Lands from time to time by one or more of its employees, agents or contractors, bringing with them and utilising such equipment necessary for the purpose of conducting soil testing and monitoring, and the applying of manure in and on the Spreading Lands to allow Westco to comply with all conditions of manure spreading imposed upon it by law, including those set out in any development permit applicable to the construction or operation of the Operation and any provisions set out under the Environment Act of Manitoba and the Farm Practices Guidelines for Poultry Producers in Manitoba and any other regulations which may govern the spreading of manure enacted from time to time. Such access will be arranged in consultation with Blue Clay giving consideration to the terms and conditions as set out herein, the field conditions and the timing of other field activities.

7. Westco agrees that the period during which poultry manure can be spread on the Spreading Lands shall be immediately following completion of harvest or plowdown or abandonment of a crop for fall application and up to two weeks prior to seeding for spring application. Where any part of the Spreading Lands are seeded to grass or forages or are in native pasture, poultry manure in the determined quantities can be spread at any mutually agreeable time.

8. Westco agrees that poultry manure is to be applied at nutrient application rates consistent with the recommendations of Blue Clay but is not to exceed the maximum application rates allowable under any development permit, the current Farm Practices Guidelines and any pertinent legislation that exists or comes into force, including any subsequent revisions thereto.

9. Blue Clay acknowledges that it is the registered legal owner of the Spreading Lands and that it has full legal authority to enter this agreement. If the Spreading Lands are now, or in the future, leased to another party, Blue Clay shall immediately advise Westco, and Blue Clay shall obtain from the lessee an executed copy of the attached Schedule "A", ("Lessee Consent"), under which the lessee acknowledges and agrees to the terms of this agreement.

10. Blue Clay agrees that Westco may register a copy of this agreement, by way of caveat, against Blue Clay's title to the Spreading Lands in the applicable land registry office in the Province of Manitoba.

11. Blue Clay and Westco further agree that this agreement does not supersede or alter any existing agreements between Blue Clay and Westco for the provision of labour and/or services respecting the operation of the barns of Westco.

Executed as of the date and year first written above.

BLUMENHOF HOLDING CO. LTD.

By: _____

Title: Secretary

Group Westco Inc.

By: _____
Ray St. Hilaire

Title: Agent for the Owner

Schedule "A"

I am the Lessee of the Spreading Lands as are more particularly described in the manure spreading agreement between Westco, and **BLUMENHOF HOLDING CO. LTD.** , the Land Owner, dated the 14th day of FEBRUARY , 2014, (the "Manure Spreading Agreement"), and I hereby consent to being bound by the terms and conditions of the Manure Spreading Agreement as if I was a party to it.

Date: February 14, 2014

Lessee signature

Box 23 ARNAUD, MB R0A 0B0
address

APPENDIX C

- Blue Clay Colony Well Logs
- Blue Clay Colony Water Requirements Calculation Table

Group Westco Poultry will use an existing well for water supply. The well is owned by Blue Clay Colony. Blue Clay Colony has filed an application with Manitoba Conservation and Water Stewardship to amend their existing licence (2013-066) for the proposed Group Westco Poultry operation.

Well PID: 70235
Location: NE-29-4-4E
UTMX: 644344.8 UTMY:5466748.8 XY Accuracy: UNKNOWN
Owner: BLUMENGART C FARMS
Driller: Echo Drilling Ltd.
Well Name:
Date Completed: 1990 Mar 26
Well Use: PRODUCTION
Water Use: Domestic, Livestock
Well Status: UNKNOWN Aquifer: LIMESTONE OR DOLOMITE

REMARKS:

WELL LOG (Imperial units)

From	To(ft.)	Log
0.0	40	CLAY
40.0	68	TILL
68.0	119.9	HARD BLUE CLAY
119.9	209.9	GYPSUM AND RED SHALE
209.9	267.8	RED SHALE
267.8	272.8	TILL
272.8	297.8	LIMESTONE

WELL CONSTRUCTION

From	To(ft)	Const. Method	Inside Dia.(in)	Outside Dia.(in)	Slot Size(in)	Type	Material
0.0	279.8	casing	5.0			INSERT	PVC
279.8	297.8	open hole	4.0				

Top of Casing: 1.5 ft. below ground

PUMPING TEST
Date : 1990 Mar 27 Flowing 119.9 Imp. gallons/minute
Water level before test : 4.5 ft above ground
Water level at end of test : 2.5 ft above ground
Test duration: : :00

Water Requirement Calculation Table

Livestock	Number	IG/day per animal in winter	IG/day per animal in summer	IG/day (Imperial gallons per day)
Beef/Dairy/Bison				
Feeder/heifer/steer (600 lb.)		5	9	-
Feeder (900 lb.)		7	12	-
Feeder (1250 lb.)		10	15	-
Cow/calf pair		12	15	-
Dry cow		10	12	-
Milking cow		25	30	-
Bison		8	10	-
Horses				
Horses		8	11	-
Hogs				
Sow (Farrow/wean)	378	6.5		2,457
Dry Sow/Boar	82	4		328
Feeder	2,818	3		8,454
Nursery (33 lb.)	965	2		1,930
Chickens				
Broilers		0.035		-
Roasters/Pullets	18,500	0.04		740
Layers		0.055		-
Breeders		0.07		-
Turkeys				
Turkey Growers		0.13		-
Turkey Heavies	11,670	0.16		1,867
Sheep/Goats				
Sheep/Goats		2		-
Ewes/Does		3		-
Lambs/Kids (90 lb.)		1.6		-
		TOTAL (IG/day)		**15,776**

For beef, dairy, bison and horse enterprises:
Use summer numbers if appropriate for the operation.
Otherwise base projections on winter values.
Always use the greater of the two values.

Enter this number on page 7 of Application Form.

Other consumption values:

Normal household consumption:
40-55 IG/day per person or
(180-250 l/day/person)

Hydrant flow:
10 imperial GPM (45 l/min)

Unit Conversions		
Total per day	**Total per year**	**Unit**
15,776	**5,758,313**	**IG**
71,719	**26,177,291**	**litres**
0.072	**26**	**cubic decametres (dam^3)**

Enter this number on page 7 of Application Form.

Conversion Factor: 1 IGPM = 4.546 l/m