

# Friesen Farm Book - 2017

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Prepared by: Ruth McDougall, M.Sc., PAg., Consulting Agrologist

v. 2 October 23, 2017

## Introduction

On May 12, 2016, Rhoda Mavis Friesen of 5021 Parkinson Road, Armstrong BC was served with a Pollution Abatement Order (PAO) under the Environmental Management Act (File: UA Hullcar Aquifer, AMS# 349896). The PAO referenced the lands identified by PID 006-368-174 as well as other lands associated with the operation, and identified the specific substance of concern as nitrate from agricultural waste. This report addresses the issues required to be considered by a Qualified Professional, namely to determine required drainage management measures on the farm and to assess manure storage facilities and application rates of manure and/or fertilizer.

The recommendations in this report are based on standards and guidance from the following regulations and documents:

- BC Agricultural Waste Control Regulation (AWCR)
- BC Code of Agricultural Practice for Waste Management
- Friesen Pollution Abatement Order
- BC Environmental Farm Plan Program Reference Guide (EFP Guide)
- Other references as noted in the reference list

## Disclaimer

This report is based on information obtained from the land owner which is believed to be accurate and on site conditions observed during the site visits made on June 23, 2016 and July 24, 2017. Reasonable efforts were made to confirm the accuracy of information provided. No responsibility is taken for inaccurate information provided to the author in the preparation of this report. Due to the time of year of preparation of this report (September), site conditions may have been different than would be observed during the winter and spring months. Given these factors, this report has been prepared as accurately as possible.

## Farm Description

The Friesen farm is a small-scale poultry operation on 60 acres located at 5021 Parkinson Road in Spallumcheen BC. In 2017, the operation produced 42,000 broilers per year (6 cycles of 7000 birds per cycle). All manure produced by the broiler operation was hauled away by a custom hauler. The farm has one 24.9 acre arable field which is leased on a permanent basis to farmers in the Hullcar area, and a 10 acre rough pasture which is used to pasture up to 3 heifers for two months of the year. Broilers are hauled off site for slaughter, and mortalities are also hauled off the property.

## Soils, Water and Climate

**Soils:** The soil on the Friesen property is mapped as follows:

**Upper area (house and outbuildings, pasture and treed land):** Mapped as O’Keefe (area around house and outbuildings) and Nahun (sloping area to north of farm buildings)(Sprout and Kelley 1960/1963). Both soil series have developed on sandy glacial outwash deposits. The Nahun soil on the property is mapped as having a texture of gravelly loamy sand. The O’Keefe soils on the property are mapped as having a texture of sandy loam. These soils have some fines in the surface layer but are considered well drained.

**Lower area (arable land):** Mapped as Grandview (Sprout and Kelley 1960/1963). This soil type has developed on sandy glacial outwash deposits. This soil series varies in texture from fine sandy loam to loamy sand and all types are well drained. The soils may have scattered gravel lenses and gravel layers at depth.

**Climate:** The climate in the north Okanagan is characterized by hot summers with a seasonal moisture deficit where crop moisture requirements exceed precipitation. Winters are cold with air temperatures below freezing for several months and frozen soils. Annual precipitation is 557 mm (22”) which is fairly evenly distributed throughout the year. Seventy percent of the precipitation (380 mm, 15”) falls as rain primarily during the March through November period, and 30% as snow during the December through February period (data from the Silver Creek climate station, the closest station to the subject property from 1981 to 2010) (Environment Canada 2017).

**Surface and groundwater, and wells:** There are no surface water sources including seasonal streams on the Friesen property. The farm has one well which is located in the northeast corner of the leased field (marked on site map). All lessee’s are made aware of the well and respect the required 30 m manure application setback. Groundwater in all areas of the property is expected to be greater than 1 m from the soil surface throughout the year due to the coarse texture of soils and the distance to groundwater in the area.

## **1. 2017 Farmbook**

### **i. List of fields**

The Friesen 60 acre property consists of a 24.9 acre field which in 2017 was leased to Curtis Farms who grew silage corn on the field. The field makes up the northern half of the property (see site map). It is located on the valley bottom over the Hullcar aquifer. Because Friesen does not farm the field or use any of his manure on the field, manure and fertilizer use on the field are not discussed in this Farm Book. The field is covered under the 2017 Curtis Nutrient Management Plan.

The remainder of the Friesen property consists of the house and outbuildings, yard, broiler barn, some treed areas and 10 acres of rough pasture. In 2017 the pasture was used during the months of May and June to pasture 3 heifers. No fertilizer or manure will be applied to the pasture in 2017. The pasture is not irrigated or cropped.

### **ii. Storage capacity for manure**

At the time the Pollution Abatement Order was issued in May 2016, manure at the Friesen farm was stored temporarily on a packed dirt pad near the chicken barn. Manure was cleaned out of the barn after each cycle and stored on the packed dirt pad for approximately 24 hours until it was removed by a custom hauler. Manure was not covered during temporary storage. There was no field storage of manure on the property in 2017.

In fall 2017, the broiler barn will be expanded to increase production. At that time, a concrete pad will be constructed outside of the barn. The pad will be attached to the barn so that manure can be removed from the barn and deposited directly on the concrete pad. Manure will be tarped during temporary storage. The pad size will be 20' by 30'. This appears to be adequately sized to hold manure produced during one cycle (see calculations below). Broiler manure has a moisture content of approximately 25% and therefore should not produce any leachate when stored for a short period of time. Utilizing a concrete pad combined with a temporary cover (tarp) will be an effective method to prevent any surface runoff or leachate from forming.

Broiler production is anticipated to double in fall 2017 from 7000 birds per cycle to 14000 birds per cycle. Based on BC Ministry of Agriculture Environmental Farm Plan standard manure production values (1.2 tons/yr/100 bird places and density of 0.39 tons per yd<sup>3</sup>), manure production each cycle will be approximately 54 m<sup>3</sup> (72 yd<sup>3</sup>) when flock expansion occurs. Assuming manure is piled 2 m high on the concrete pad, the manure pile after each production cycle will be approximately 4 m by 7 m in size (13' by 23'). The proposed pad at 20' by 30' will be adequate to hold manure from each cycle. Because manure is hauled away after each cycle, there will never be more than manure from 1 cycle on the storage pad.

### **iii. Manure and fertilizer use in 2017**

There was no manure or fertilizer used on the Friesen property in 2017 (the corn field that was leased to Curtis Farms is not included in this). Three heifers grazed the rough 10 acre pasture area for a two month period during May and June but were not fed supplementary feed so there was not a net addition of nitrogen to the property in their manure.

### **iv. Manure management systems used in 2017**

Manure was stored temporarily on site (approx. 24 hours) after removal from the barn, then was hauled away by a custom hauler. The site on which the manure was temporarily stored was a flat pad of packed soil. The temporary storage site was not located in proximity to surface water or to domestic wells.

### **v. Dates and rates of manure application in 2017**

No manure will be spread on the Friesen property in 2017. All manure produced by the birds on site is hauled away by a custom hauler and used elsewhere.

### **vi. Cropping in 2017**

There was no cropping on the Friesen property in 2017 (not considering the leased corn field). The 10 acres of pasture were grazed by 3 heifers for two months. There was no cropping of this area.

### **vii. Drainage management measures completed**

No drainage management measures were completed up to the time of report preparation in September 2017. They will be completed in fall 2017 as described below.

## **2. Drainage management measures required**

There are no drainage management measures required at the Friesen farm. What is required and will be completed in fall 2017 is completion of a concrete pad attached to the barn for short-term manure

storage. Rather than berming and covering the existing manure storage site, Mr. Friesen will construct an impermeable surface for the manure which will be sited such as to prevent clean run-on from contacting the manure. The manure will be tarped while on the pad to prevent formation of leachate and runoff from the pile during rain events.

At the time the PAO was issued (May 12, 2016), manure was temporarily stored outside of the barn on a packed dirt pad which was not bermed to keep clean water out and to retain leachate. Therefore, the pile could be susceptible to movement of nutrients from the manure if a large rain event or snowmelt occurred when manure was stockpiled on the pad area.

When the barn is expanded in fall 2017, a concrete pad of dimensions 20' by 30' will be built attached to the broiler barn. The pad will be constructed so that clean water from rain or snow melt cannot run on to the concrete pad. Manure will be stored on the pad until removed by the custom hauler. Manure will be tarped to ensure there is no runoff or leachate during rain events. This will eliminate the risk of runoff or leachate from stockpiled manure entering the environment. The barn and storage pad will be at least 30 metres from water sources including wells and 4.5 metres from property lines. There is no surface water on site so no setback from high water marks of water courses is required.

## References

- BC Ministry of Environment. 1992. Agricultural Waste Control Regulation (and Code of Practice). BC Reg 131/92 April 9, 1992
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- Sprout, P.N and C.C. Kelley. 1960. Soil Survey of the North Okanagan Valley, BC Department of Agriculture, 1960. [www.sis.agr.gc.ca/cansis/publications/surveys/bc/bc101/index.html](http://www.sis.agr.gc.ca/cansis/publications/surveys/bc/bc101/index.html) (Accessed September 7, 2017).
- Sprout, P.N and C.C. Kelley. 1963. Soil Map of the Armstrong Area. BC Department of Agriculture. [www.sis.agr.gc.ca/cansis/publications/surveys/bc/bc101/index.html](http://www.sis.agr.gc.ca/cansis/publications/surveys/bc/bc101/index.html) (Accessed September 7, 2017).

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Ruth McDougall, M.Sc., PAg.

Consulting Agrologist

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**Figure 1. Site map showing Friesen property boundaries, arable land, manure storage area and domestic well. Farm located on Parkinson Road, Spallumcheen BC**

