



Date: May 12, 2016

File: UA Hullcar Aquifer
AMS #349896

Rhoda Mavis Friesen
5021 Parkinson RD
Armstrong, BC
VOE 1B4

POLLUTION ABATEMENT ORDER

I am satisfied on reasonable grounds that pollution is being caused by the introduction in to the environment of agricultural waste, including manure and/or manure laden effluent from agricultural operations located on the following lands:

Lot A, Plan KAP6723, Section 26, Township 34, Osoyoos Division of Yale Land District:
Property Identification 006-368-174; and

lands, used from time to time for agricultural operations that are part of or associated with the agricultural operations on the above lands, and are controlled directly or indirectly by Rhonda Mavis Friesen

(the “Lands”).

I am satisfied that:

- Rhoda Mavis Friesen is the owner of a portion of the Lands; and
- Rhoda Mavis Friesen had possession, charge and control of the polluting substance at the time it was introduced into the environment.

The specific substance causing pollution is agricultural waste, including manure and/or manure laden effluent, from which nitrate is leaching into groundwater.

The usefulness of the environment has been impaired due to the presence of nitrate in groundwater as the presence of nitrate is causing the groundwater in the unconfined aquifer that lies in part underneath the Lands (commonly referred to as the Hullcar Aquifer 103) to be unfit for potable purposes for specific persons in the population.

Pursuant to Section 83 of the *Environmental Management Act* [SBC 2003] Chapter 53, Rhoda Mavis Friesen is hereby ordered, upon receipt of this Pollution Abatement order or otherwise indicated, to comply with the following requirements:

1. Retain a Qualified Professional to prepare a report (the “**Farm Book**”) for the 2016 calendar year which includes at a minimum the following information :
 - i) a list of all fields that are or are reasonably anticipated to form part of the Lands (including proposed leased or licenced fields) and utilized for farm operations or outdoor animal feeding areas during 2016;
 - ii) the storage capacity needed to store all manure produced by agricultural operations on the Lands during 2016 until it can be applied to the Lands in accordance with the rates and timing of application determined under section 11 of this order and the length of time the manure needs to be stored;
 - iii) types and quantities of manure and/or inorganic fertilizer used and planned to be used on the Lands in 2016 and a description of how it is/ will be utilized, including amounts of different types applied or planned to be applied during different stages for which there are specific use patterns;
 - iv) all manure management systems utilized and planned to be utilized during 2016 for farm operations on the Lands including descriptions of temporary and permanent manure storage facilities/ field storage areas;
 - v) dates and rates of manure spreading completed during and planned for 2016 (may include work sheets used to calculate agronomically-correct manure and other nutrient sources application rates);
 - vi) crops (to be) planted in 2016;
 - vii) drainage management measures undertaken or planned to be undertaken in 2016; and,
 - viii) a map of the Lands and nearby surrounding lands as of July 31, 2016, identifying all fields (owned or leased) utilized for farm operations including outdoor animal feeding areas; identifying the locations of manure storage facilities/ field storage areas, animal feeding areas, drinking water well(s), industrial well(s), surface water intakes, and any other relevant water work(s); and, identifying all setbacks (i.e. minimum distances) between such facilities or areas and wells or relevant water works.

The 2016 Farm Book must be provided to the Director under the *Environmental Management Act* (the “**Director**”) by July 31, 2016. Subsequent updates to the 2016 Farm Book indicating any changes to the above required information must be provided to the Director by October 30, 2016 and January 30, 2017.

2. Retain a Qualified Professional to prepare a 2017 Farm Book which includes at a minimum the information required by section 1 of this order to be included in the 2016 Farm Book, but for the 2017 calendar year.

The 2017 Farm Book must be provided to the Director by January 30, 2017. Subsequent updates to the 2017 Farm Book indicating any changes to the required information must be provided to the Director by April, 30 2017; July 31, 2017; and, October 30, 2017.

3. Publicly post the Farm Books and subsequent updates required by this order, including physically posting the Farm Books and subsequent updates at the Hullcar Community Hall, on the same day the respectively Farm Book or update is required to be provided to the Director.
4. Retain a Qualified Professional to identify drainage management measures necessary to effectively control runoff and to ensure that solids, leachate, contaminated runoff and drift from sprayed materials do not enter watercourses or any source of water for irrigation or drinking purposes or leave the property. Implement drainage management measures identified by the Qualified Professional by July 31, 2016.
5. By June 30, 2016 establish functional manure storage facilities, which have, at a minimum, the storage capacity identified in the Farm Book necessary to store all manure produced by your agricultural operation, for the length of time necessary to allow for storage of such manure in accordance with this order until it can be applied to the Lands in accordance with the rates and timing of application determine under section 10 of this order.
6. By June 30, 2016 ensure all permanent manure storage facilities have a minimum setback of:
 - i) 30 meters from any source of water used for domestic purposes including drinking water well or surface water intake;
 - ii) 15 meters from the high water mark of all watercourses; and
 - iii) 4.5 meters from all property lines.
7. By June 30, 2016 ensure all manure field storage areas are not located:
 - i) on areas having standing water,
 - i) on saturated soils, or
 - ii) on low-lying areas in fields prone to seasonal flooding.
8. By June 30, 2016 ensure all manure field storage areas have a minimum setback of:
 - i) 30 meters from any source used for domestic purposes including a drinking water well or surface water intake,
 - ii) 30 meters from the high water mark of all watercourses, and
 - iii) 4.5 meters from all property lines.
9. By June 30, 2016 must ensure all manure field storage areas are:
 - i) covered,
 - ii) located on a base of low permeability soil (hydraulic conductivity of 10^{-6}), e.g., layer of clay, or on an impermeable liner;
 - iii) established such that any leachate must be collected and contained, and
 - iv) established and located such that storm or rain water flowing along the surface of any berms or other works constructed is diverted from entering the field's stored

manure pile(s).

10. By June 30, 2016, ensure that no manure and/or manure effluent is stored in sites other than storage facilities or field storage areas.
11. Prior to any manure and/or inorganic fertilizer application to fields, retain a Qualified Professional to determine agronomically-correct rates of application of manure and/or inorganic fertilizer. All records and data used to calculate the manure application rate must be retained for two (2) years and must be made available to the Ministry upon request.

Manure applications must adhere to the rates and timing as outlined in the [BC Environmental Farm Plan Program Reference Guide](#), Table 6.10 Percentage Manure to Apply at Various Times of the Year.

Table 6.10 Percentage Manure to Apply at Various Times of the Year in Interior Regions						
Crop	Typical Annual Nitrogen Uptake ^a (kg N/ha)	Suggested Manure Application as a Percentage of Annual Crop Uptake ^b				
		Feb & March	April & May	June to Aug	Sept & Oct	Nov to Jan
Perennial Grass ^c	200 to 400	up to 5 %	up to 100 %	up to 75 %	up to 50 %	0 %
Silage Corn	150 to 200	0 %	up to 100 %	20 %	0 %	0 %
Cereals (Spring Planted)	50 to 150	0 %	up to 100 %	0 %	0 %	0 %
Cereals (Fall Planted)	50 to 150	up to 5 % ^d	up to 100 %	up to 100 %	0 %	0 %
Berries, Tree Fruits and Grapes	50 to 100 ^e	0 %	up to 100 %	0 % ^f	0 %	0 %
Vegetables	80 to 185 ^e	0 %	up to 100 %	up to 100 %	0 %	0 %
Cover Crop ^g						
Emerged before Aug 15	100 to 140	0 %	0 %	up to 60 %	up to 100 %	0 %
Emerged before Sept 1	40 to 60	0 %	0 %	0 %	up to 100 %	0 %

^a For high yielding crop – better estimates of actual uptake can be obtained by completing a Nutrient Management Plan
^b Maximum total nitrogen (from manure and chemical fertilizer) applied to the soil not to exceed the crop's annual uptake (i.e., the sum of percent applied for each time period through the year not to exceed 100%).
^c For grass legume mixes reduce the application of nitrogen in proportion to legume content
^d Feb & March application in the year following planting
^e Maximum nitrogen application depends on crop type (i.e. raspberries vs. blueberries or potatoes vs. broccoli)
^f For new plantings up to 100% of that year's nutrient need
^g Includes relay crops – post-harvest nitrate test should be below 20 µg/g (0-30 cm) if fertilizing a fall-planted cover crop

12. Ensure all applications of manure and/or inorganic fertilizer are:
 - i) a minimum of 3.5 meters from the high water mark of a watercourse;
 - ii) 3.5 meters from all property lines;
 - iii) 3.5 meters from any industrial wells; and
 - iv) 30 meters from any drinking water wells.
13. Prior to conducting any manure and/or inorganic fertilizer application, ensure the buffer requirements above have been visibly identified either using a visual marking system (such as flagging tape) or GPS enabled datalogger.

In this order "Qualified Professional" means an applied scientist or technologist specializing in a particular applied science or technology, including agrology, biology, chemistry, engineering, geology or hydrogeology, who

- (a) is registered in British Columbia with the professional organization responsible for his or her area of expertise, acting under that professional association's code of ethics and subject to disciplinary action by that association, and
- (b) through suitable education, experience, accreditation and knowledge, may be reasonably relied on to provide advice within his or her area of expertise as it relates to this order;

Failure to comply with the requirements of this order is a contravention of the *Environmental Management Act* and may result in legal action. I direct your attention to Section 120(10) of the *Environmental Management Act*, which reads:

"(10) A person who contravenes an order...that is given, made or imposed under this Act by a ...director...commits an offence and is liable on conviction to a fine not exceeding \$300 000 or imprisonment for not more than 6 months, or both."

Failure to comply with the requirements of this order may also result in an administrative penalty under the *Administrative Penalties Regulation (Environmental Management Act) (B.C. Reg 133/2014)* (Regulation). I direct your attention to Section 12(4) of the *Regulation*, which reads:

"(4) A person who fails to comply with an order under the [Environmental Management] Act is liable to an administrative penalty not exceeding \$40 000."

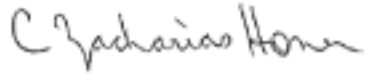
Nothing in this order relieves you from complying with the requirements of the *Agricultural Waste Control Regulation*, and, in particular any deadlines for compliance with order requirements do not excuse you from compliance with the regulation prior to that deadline.

This order does not authorize entry upon, crossing over, or use for any purpose of private or crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority rests with you. It is also your responsibility to ensure that all activities are carried out with due regard for the rights of third parties, and comply with other applicable legislation that may be in force, such as municipal bylaws relating to the discharge of waste to municipal storm or sanitary sewers.

This order may be appealed to the Environmental Appeal Board in accordance with Part 8 of the *Environmental Management Act*. An appeal must be delivered within 30 days from the date notice of this order is given. For further information, please contact the Environmental Appeal Board at (250) 387-3464.

If you have any questions, please call the undersigned or Devan Oldfield at (250) 490-2222.

Yours truly,



Christa Zacharias-Homer
Deputy Director
Regional Operations Branch

for Director, Environmental Management Act

cc: Devan Oldfield, P.Ag., Environmental Protection Officer
Hullcar Inter-Ministry Working Group