



Report Date: August 13, 2019

File: 108387

Report Number: 113780

H.S. Jansen and Sons Farm Ltd.
5063 Knob Hill Road
Armstrong, BC V0E 1B4

Dear H.S. Jansen and Sons Farm Ltd.

Re: Notice Letter, Pollution Abatement Order 108387, H.S. Jansen and Sons Farm Ltd., Armstrong, BC, Effluent

On August 06, 2019, Ministry of Environment and Climate Change Strategy, Environmental Protection Division staff conducted an inspection of your facility, H.S. Jansen and Sons Farm Ltd. located at 5063 Know Hill Road Armstrong, BC with Pollution Abatement Order number 108387 under the *Environmental Management Act*.

Inspection Details:

Requirement Description:	<p>PAO 108387 Requirement 4 - Prepare Action Plan</p> <p>Retain a Qualified Professional to prepare an Action Plan detailing measures to be taken to abate the environmental impacts identified in the EIA and submit the Action Plan to the Director by August 15, 2016. The Action Plan must include, but is not limited to:</p> <ul style="list-style-type: none"> i) description of proposed manure storage measures that ensure sufficient storage, ensure proper construction of permanent and temporary storage facilities with appropriate setbacks, and ensure minimal impact to the environment; ii) description of proposed drainage management measures to effectively control runoff to ensure that solids, leachate, contaminated runoff and drift from sprayed materials do not enter watercourses, penetrate to groundwater or leave the property; iii) description of proposed remedial measures to ensure manure applications do not extend beyond property boundary, in a watercourse, and near industrial and drinking water wells; iv) description of a proposed ongoing soil, surface and groundwater monitoring program for nitrate and E.coli for the purposes of monitoring the effects of Action Plan; v) a map identifying all fields (owned ,or leased, licenced or otherwise part of the Lands) utilized for farm operations, identifying the locations of manure storage facilities, feeding areas, drinking water well(s), industrial well(s), surface water intakes, and any other notable work(s) and identify all setbacks (i.e. minimum distances) between such facilities or areas and wells or relevant water works; vi) a 2016 Nutrient Management Plan, as defined in the BC Environmental Farm Plan Reference Guide (the "Guide"), located at: http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/programs/growing-forward-2/environmental-farm-plan, and consistent with the recommendations in the Guide, for all farm operations occurring on the Lands; and vii) a timeline for implementation of the Action Plan. <p>The Action Plan and Nutrient Management Plan must be amended by a Qualified Professional if there is any change in the agricultural operations occurring on the Lands that affects the volume of agricultural waste produced. Any such amendments to the Action Plan must be completed and approved by the Director prior to the implementation of the change in the agricultural operations. In addition, H.S. Jansen and Sons Farm Ltd. may from time to time cause a Qualified Professional to recommend amendments to the Action Plan, if the Qualified Professional determines that the amendments are advisable for the purpose of reducing nitrates entering groundwater or surface water. Any such amendments must be approved by the Director.</p> <p>Changes under July 29, 2016 Director's Amendment Letter: Action Plan submission date November 30, 2016</p> <p>Changes under October 28, 2016 Director's Amendment Letter: Action Plan submission date December 30, 2016</p>
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Details/Findings:	<p>Inspection Overview</p> <p>On August 6, 2019, Ministry of Environment and Climate Change Strategy (Ministry) Environmental Protection Officer Colin Meldrum (Officer Meldrum) conducted a file review inspection of the H.S. Jansen and Sons Farm Ltd.(Facility). The purpose of the inspection was to verify compliance with Pollution Abatement Order 108387 (the Order), issued on May 12, 2016 and most recently amended on September 25, 2017.</p> <p>The inspection period is from January 1, 2018 to November 30, 2018 and included a review of the following documentation:</p> <ul style="list-style-type: none"> - Jansen Farms EIA Action Plan Summary – 2018, prepared by Ruth McDougall, M.Sc., PAg. and dated November 29, 2018 (herein referred to as 2018 Annual Summary); and - HS Jansen and Sons Ltd 2018 Nutrient Management Plan, v.2 June 2018, prepared by Ruth McDougall, M.Sc., PAg. and dated June, 2018 (herein referred to as 2018 NMP). <p>Compliance Assessment</p> <p>Compliance with this requirement was previously assessed in IR74458.</p>
Compliance:	Not Applicable
Requirement Description:	<p>PAO 108387 Requirement 5- Action Plan Implementation</p> <p>Upon approval by the Director, implement the Action Plan referred to in section 4 in accordance with any amendments to the Action Plan required or approved by the Director, or any further directions of the Director.</p> <p>ACTION PLAN (Dated July 2017): GENERAL ITEMS FROM MAY 2016 PAO</p> <ol style="list-style-type: none"> 1. Ensure adequate and safe manure storage facilities. Maintain and keep in good working order the side slopes and pond edges of effluent storage structures. P. Eng. assessment of storages as part of EIA indicated there is sufficient storage capacity for 7 months of effluent and solids, and storages are sound. Slopes and edges will be maintained as required in 2017. (Ongoing) 2. Drainage management measures required to ensure manure does not leave property or enter groundwater. Manure application setbacks from Deep Creek are stipulated in 2017 NMP. Application rates are designed to meet crop nitrogen requirements and minimize residual nitrate in fall. Soil moisture monitoring limits irrigation water to top 60cm of soil to prevent downward movement of nitrates. (Ongoing). 3. Remedial measures required to ensure manure does not leave property boundaries, enter surface water or impact wells. Manure application setbacks from roads, Deep Creek and wells are stipulated in the 2017 NMP. (Ongoing). 4. Soil, surface and groundwater monitoring to demonstrate effectiveness of implemented strategies. As outlined below, HS Jansen will sample all wells on his property in 2017, monitoring wells 3x and other wells once. They will conduct postharvest soil testing on all fields over the aquifer in fall 2017 to 90 cm. (Fall 2017). 5. Map of fields, wells etc. Maps are found in the 2017 NMP. (2017). 6. 2017 Nutrient Management Plan. (Spring 2017). 7. Schedule for implementation of Action Items (2017).

Details/Findings:	<p>Action Item 1 - The 2018 Annual Summary states that effluent storage facilities were visually monitored on a monthly basis in 2018 and that no maintenance was required.</p> <p>Action Item 2 - The 2018 Annual Summary states that the manure application setbacks were 30 m minimum from Deep Creek and that the manure application rates and irrigation rates were designed to ensure that the crop requirements were not exceeded and residual nitrate levels in the soil were low.</p> <p>Action Item 3 - The 2018 Annual Summary states that manure application setbacks from surface water, wells and property boundaries were designed to ensure that manure would not migrate off-site.</p> <p>Action Item 4 - The 2018 Annual Summary states that soil testing for nitrates was conducted in all fields in fall 2018 as part of the AGRI Post-Harvest Nitrate Testing (PHNT). The 2018 Annual Summary further states that all irrigation and domestic wells were tested for nitrate once in 2018 and all monitoring wells were tested for nitrate three times in 2018.</p> <p>Action Item 5 - The 2018 NMP included maps of all fields and wells.</p> <p>Action Item 6 - The 2018 NMP was prepared and submitted to the Ministry and the Ministry of Agriculture (AGRI). It was reviewed by AGRI.</p> <p>Action Item 7 - Compliance with this requirement was previously assessed in IR74458.</p>
Compliance:	In
Requirement Description:	<p>PAO 108387 Requirement 5- Action Plan Implementation</p> <p>Upon approval by the Director, implement the Action Plan referred to in section 4 in accordance with any amendments to the Action Plan required or approved by the Director, or any further directions of the Director.</p> <p>ACTION PLAN (dated July 2017): MANURE MANAGEMENT AND STORAGE</p> <ol style="list-style-type: none"> 1. Construct a new screen and silo storage system for solids. (Summer 2017). 2. Create a separate recycled grit storage or re-use area off the slab. (Summer 2017). 3. Cover compost facility. Cover not required. Any leachate is collect and moved to lagoon.
Details/Findings:	<p>Action Item 1 - The 2018 Annual Summary states that construction of the new screen and silo system was completed in 2018.</p> <p>Action Item 2 - Compliance with this requirement was previously assessed in IR74458.</p> <p>Action Item 3 - Compliance with this requirement was previously assessed in IR74458.</p>
Compliance:	In

Requirement Description:	<p>PAO 108387 Requirement 5- Action Plan Implementation</p> <p>Upon approval by the Director, implement the Action Plan referred to in section 4 in accordance with any amendments to the Action Plan required or approved by the Director, or any further directions of the Director.</p> <p>ACTION PLAN (dated July 2017): MANURE SUPPLY INFRASTRUCTURE</p> <p>1. Install a pipeline breach monitoring device to quickly identify pipe failures. Include shutoff criteria at the pump station. (Summer 2017). Develop contingency plan which includes procedures and protocols to follow if there is an incident. Farm must stock spill mitigation kits. Train staff in spill response and document training. Review contingency plan with staff twice per year. (December 2017).</p> <p>2. Ensure all mainline installations are approved by a Certified Irrigation Designer. (Ongoing).</p> <p>3. Manure and storm water management system (i.e. ditches, gutters, storm main) inspections must be completed monthly. Inspection dates, findings and resulting actions must be reported in the annual summary report. (Monthly during 2017).</p>
Details/Findings:	<p>Action Item 1 - The 2018 Annual Summary states that the manure pipeline system has a sensor which is connected to cell phones of farm staff to notify them of a pressure drop during pumping. A contingency plan was developed that included procedures and protocols to follow if these is an incident.</p> <p>Action Item 2 - The 2018 Annual Summary states that there were no mainline installations performed in 2018.</p> <p>Action Item 3 - The 2018 Annual Summary states that manure and stormwater management system were inspected monthly by Dale Jansen walking the perimeter of the lagoons and visually inspecting the liquid-solid separation unit and concrete storage area. The 2018 Annual Summary further states that no issues were noted and therefore no actions were required.</p>
Compliance:	In

Requirement Description:	<p>PAO 108387 Requirement 5- Action Plan Implementation</p> <p>Upon approval by the Director, implement the Action Plan referred to in section 4 in accordance with any amendments to the Action Plan required or approved by the Director, or any further directions of the Director.</p> <p>ACTION PLAN (dated July 2017): NUTRIENT MANAGEMENT</p> <ol style="list-style-type: none"> 1. Continue to use a qualified person to prepare an annual Nutrient Management Plan. The NMP must be designed to meet an agronomic balance that does not exceed zero for each crop and field receiving nutrients from fertilizer or manure. Must account for all on-farm, imported and exported nutrient sources on HS Jansen and Sons Farm Ltd. including compost and irrigation water. Must incorporate recommendations from 2016 Ministry of Agriculture post-harvest nitrate study. (Ongoing). 2. Ensure operational nutrient applications are made in consultation with the crop advisor. (Ongoing). 3. Include nitrate additions in irrigation water when calculating nitrogen application rates. (Ongoing). 4. Conduct annual post-harvest soil testing on all fields over Hullcar aquifer to 900 mm using Kowalenko recommendations to assess residual levels. Sampling to be completed within 2 weeks of final crop harvest on each field. Soil samples must be collected to 0-15, 15-30, 30-60 and 60-90 cm depth. (Fall 2017). 5. Reduce the nitrogen application rate in manure in 2017 on fields that had residual nitrate in fall 2016 in the medium or higher environmental risk category (Spring 2017). Lower 2018 manure application rates on fields that remain in the medium or higher environmental risk category. (Spring 2018). 6. Participate fully in the BC Ministry of Agriculture benchmark study if it is continued in 2017. (Fall 2017). 7. Apply nutrients based on the field and crop specific recommendations from the annual NMP prepared by the Professional Agrologist. Agricultural waste may be applied to land only for the purpose of soil conditioning or fertilization and the rate of such application must not exceed the rate required to meet the agronomic nitrogen balance for the growth of the relevant crop in that field as per the guidance of a NMP prepared by a QP. (2017). 8. Maintain records of all nutrients applied to lands (dates of application, type or form of nutrient and amounts applied) and provide to Director on request. (2017). 9. Install additional flow meters on the liquid manure distribution system to confirm application rates. (Summer 2017). 10. Test the liquid manure for nutrient content at least 3 times during the growing season, use current manure N data to calculate application rates. The manure must be tested prior to spring and fall manure applications and application rates of manure adjusted based on the nitrogen content of manure. Soil to be tested in fall after crop harvest and residual soil nitrate-N values used to determine application rate of nutrients on each field in following year. Pre-sidedress nitrogen application recommendations to be made based on soil tests done at the appropriate stage of corn growth, normally in June. (Sampled in March and May 2017. Will be sampled once in fall. Spring 2017 data used in calculating manure application rates in NMP. Fall manure data will be used to confirm fall 2017 manure applications.). 11. Continue to export separated solids off the Hullcar aquifer fields unless there is insufficient liquid manure to meet crop nitrogen requirements. Apply solids to off-site fields that are nutrient or organic matter deficient. (Ongoing). 12. No inorganic nitrogen fertilizer should be used on fields overlying the Hullcar aquifer unless insufficient manure is available to meet crop demands or manure cannot be applied to a field. Nitrogen fertilizer applications should be made in consultation with the crop advisor. (2017). 13. Irrigate fields based on data from soil moisture monitors. (Ongoing). 14. Install soil moisture monitors on more fields over aquifer 103. (Summer-Fall 2017 depending on ARCORP funding).
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<p>Details/Findings:</p>	<p>Action Item 1 - The 2018 NMP was prepared by Ruth McDougall, MSc, PAg with input from Doug Macfarlane, CCA. The plan was designed for an agronomic balance of zero on each field. The 2018 Annual Summary states that the 2018 NMP included all sources of nitrogen, including manure and irrigation water and incorporated recommendations from the 2017 AGRI PHNT.</p> <p>Action Item 2 - The 2018 Annual Summary states that operational nutrient applications were made in consultation with Doug Macfarlane, CCA who is the farm's nutrient management advisor.</p> <p>Action Item 3 - The 2018 NMP averages the concentrations of nitrate measured in November 2017 in 11 irrigation wells and applies this concentration as a nitrate contribution based on 20 cm of irrigation for all home fields. Similar calculations were made for two wells used for irrigation of the Dixon fields and one well used for irrigation of the Harold field.</p> <p>Action Item 4 - The 2018 Annual Summary states that PHNT was conducted on all fields in fall 2018 over to a depth of 900 mm at depth increments of 0-15, 15-30, 30-60 and 60-90 cm.</p> <p>Action Item 5 - The 2018 Annual Summary states that the nitrogen application rate in manure was reduced in 2018 on the corn field where residual nitrate was in the higher environmental risk category in fall 2017. The 2018 Annual Summary states that the nitrogen application rate in manure was lower in 2018 on all alfalfa/grass fields.</p> <p>Action Item 6 - The 2018 Annual Summary states that HS Jansen and Sons Farm participated in the AGRI benchmark study in fall 2018.</p> <p>Action Item 7 - The 2018 Annual Summary states that nitrogen application in manure in 2018 was at or below the rate recommended in the 2018 NMP.</p> <p>Action Item 8 - The 2018 Annual Summary states that records of manure application by field and volume were maintained in 2018.</p> <p>Action Item 9 - Compliance with this requirement was previously assessed in IR74458.</p> <p>Action Item 10 - The 2018 Annual Summary states that the liquid manure was tested for nutrient content three times in 2018 and the nitrogen information for the manure was used when calculating manure application rates.</p> <p>Action Item 11 - The 2018 Annual Summary states that all separated solids were hauled to the operation's Lavington fields in 2018.</p> <p>Action Item 12 - The 2018 Annual Summary states that no inorganic nitrogen fertilizer was used in 2018.</p> <p>Action Item 13 - The 2018 Annual Summary states that irrigation rates on all fields were based on data from soil moisture monitors and irrigation water was applied to wet the soil to a depth of at least 1 ft but not below a depth of 2 ft.</p> <p>Action Item 14 - The 2018 Annual Summary states that no additional soil moisture monitors were installed in 2018.</p>
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Compliance:	In
Requirement Description:	<p>PAO 108387 Requirement 5- Action Plan Implementation</p> <p>Upon approval by the Director, implement the Action Plan referred to in section 4 in accordance with any amendments to the Action Plan required or approved by the Director, or any further directions of the Director.</p> <p>ACTION PLAN (Dated July 2017): GROUNDWATER</p> <ol style="list-style-type: none"> 1. Sample monitoring wells MW 1S, MW 1D, MW 3 AND MW 5 for total N, TKN, nitrate-N, nitrite-N and ammonia-N three times per year for two years (March, July and November). Sampling must be undertaken by trained personnel and as per the BC Field Sampling Manual. Documentation to include in the Annual Summary Report includes description of the well purging technique; observations and standard field parameter measurements from well purging to stabilization; laboratory certificates; quality assurance/quality control; and chain of custody records. (Will sample 3 times in 2017 (March, July and November) and will reassess frequency for future years. Data will be provided to MoE in the Annual Summary. Annual Summary will be posted at Hullcar Hall.) 2. Continue to record soil moisture monitoring data. (Ongoing). 3. Complete a study to further assess the flux of nitrate-N through the unsaturated zone using nested lysimeters. (Will undertake this if funding is available from ARDCORP in 2017). 4. Sample domestic wells to the south of the field of concern for nitrogen parameters to help delineate the southern extent of the nitrate plume. (HS Jansen will sample all of their wells in 2017 for nitrogen parameters. Data will be included in the 2017 Annual Summary). 5. Report the results of MW 1S and MW 1D to owners of neighbouring properties as per requirements of CSR. (Ongoing).
Details/Findings:	<p>Action Item 1 - The 2018 Annual Summary presents results showing that all monitoring wells were sampled three times in 2018 in April, July and October and analyzed for total N, TKN, nitrate-N, nitrite-N and ammonia-N. The 2018 Annual Summary states that sampling was undertaken by Jennifer Kjaerbeck of Mountainview Electric of Enderby, BC using standard sampling protocols. Ms. McDougall provided photographic evidence that the 2018 Annual Summary was posted at Hullcar Hall.</p> <p>Action Item 2 - The 2018 Annual Summary states that soil moisture data is recorded automatically and records are stored on site.</p> <p>Action Item 3 - The 2018 Annual Summary states that installation of lysimeters was not done in 2018.</p> <p>Action Item 4 - The 2018 Annual Summary presents the results of samples collected from all monitoring wells domestic and irrigation wells located to the south of fields 103A and 103B in 2018.</p> <p>Action Item 5 - The 2018 Annual Summary states that neighbours are made aware of the nitrate levels in these wells and the data is available on the Hullcar Aquifer information website in the HS Jansen EIA.</p>
Compliance:	In

Requirement Description:	<p>PAO 108387 Requirement 6 - Annual Summary Reporting</p> <p>Submit to the Director a formal written summary by November 30, 2016 and annually for the next two years including:</p> <ul style="list-style-type: none"> i) summarizing in reasonable detail what actions from the Action plan were undertaken; ii) identification of all agriculture operational changes that occurred; iii) summarizing in reasonable detail monitoring results; iv) summarizing environmental impact assessment (first year only); and v) recommending additional mitigation and restoration measures, if appropriate. <p>Changes under July 29, 2016 Director's Amendment Letter: Written Summary submission date June 30, 2017</p> <p>Changes under September 6, 2017 Director's Amendment Letter: Submit to the Director a formal written summary by October 15, 2017.</p> <p>Changes under September 25, 2017 Director's Amendment Letter: Submit to the Director a formal written summary by November 30, 2017.</p>
Details/Findings:	<p>The 2018 Annual Summary was submitted on November 30, 2018.</p> <p>The 2018 Annual Summary included i) a summary of the actions from the Action plan that were undertaken, ii) the identification of all agriculture operational changes that occurred, iii) a summary of the monitoring results, and v) recommendations for additional mitigation and restoration measures.</p>
Compliance:	In
Requirement Description:	<p>PAO 108387 Requirement 7 - Public Posting of Annual Summary</p> <p>7: Publically post the Action Plan required by this order by August 15, 2016 and publicly post the annual summary required by section 6 of this order by November 30, 2016, including physically posting the Action Plan and Annual Summary at the Hullcar Community Hall. Any updates to the Action Plan and future Annual Summaries must be posted at Hullcar Community Hall annually for the next two years, by November 30 of each year.</p> <p>Changes under July 29, 2016 Director's Amendment Letter: Action Plan publically posted by November 30, 2016 Annual Summary publically posted by June 30, 2017 Future Annual Summaries publically posted by June 30</p>
Details/Findings:	Ms. McDougall provided photographic evidence showing that the 2018 Annual Summary was posted at the Hullcar Community Hall.
Compliance:	In

Compliance History:

2018-02-13 IR74458 - Advisory: failure to conduct all groundwater monitoring

2017-09-28 IR66637 - Notice of Compliance

2017-03-13 IR48787 - Investigation Referral: failure to submit an action plan

More information about Environmental Compliance, the Non-Compliance Decision Matrix, and reporting and data submission requirements can be found at the links below:

- General compliance information: <http://www.gov.bc.ca/environmentalcompliance>
- Non-Compliance Decision Matrix information: <http://www.gov.bc.ca/environment/how-compliance-is-assessed>
- Reporting and data submission requirements (to be sent to EnvAuthorizationsReporting@gov.bc.ca): <http://www.gov.bc.ca/submit-waste-authorization-reports>

Please be advised that this inspection report may be published on the provincial government website within 7 days.

If you have any questions about this letter, please contact the undersigned.

Yours truly,

Colin Meldrum
Environmental Protection Officer

cc:

Attachments:

Deliver via:
Email: Fax: Mail:
Registered Mail: Hand Delivery:

**Ministry of Environment
and Climate Change
Strategy**

Compliance
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DISCLAIMER:

Please note that sections of the permit, regulation or code of practice referenced in this inspection record are for guidance and are not the official version. Please refer to the original permit, regulation or code of practice.

To see the most up to date version of the regulations and codes of practices please visit <http://www.bclaws.ca>

If you require a copy of the original permit, please contact the inspector noted on this inspection record.

It is also important to note that this inspection record does not necessarily reflect each requirement or condition of the authorization therefore compliance is noted only for the requirements or conditions listed in the inspection record.