Report Date: February 13, 2018 File:108387

Report Number:074458

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

Dear H.S. Jansen and Sons Farm Ltd.

**Re: Non-compliance Advisory Letter, Pollution Abatement Order 108387, 5063 Knob Hill Road Armstrong BC, Effluent**

On November 30, 2017, 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 Knob Hill Road Armstrong BC with Pollution Abatement Order number 108387 under the *Environmental Management Act*. Ministry staff were accompanied on site by Dale Jansen, H.S. Jansen and Sons Farm Ltd..

This Advisory, the alleged violations and the circumstances to which it refers will form part of the compliance history of H.S. Jansen and Sons Farm Ltd., and will be taken into account in the event of future non-compliance.

Please note that this authorization is considered to be out of compliance until such a time as it can be confirmed to meet the authorization requirements.

**Inspection Details:**

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| Requirement Description: | 2: Immediately upon approval of the terms of reference and work plan by the Director, cause a Qualified Professional to implement the comprehensive monitoring program and complete the comprehensive EIA according to the work plan and terms approved by the Director, but subject to any further directions or amendments to the work plan or terms of reference made by the Director. |
| Details/Findings: | The final version of the comprehensive EIA was submitted on February 27, 2017 (Comprehensive Monitoring Program and Environmental Impact Assessment, H.S. Jansen & Sons Farms Ltd., Pollution Abatement Order File AMS#350091, dated February 2017). The comprehensive monitoring program was implemented by a Qualified Professional (Marta Green, PGeo, Hugh Hamilton, PhD, PAg, Ruth McDougall, MSc, PAg and Roderick T. MacLean, MSc, PEng). The comprehensive EIA was completed by a Qualified Professional (Marta Green, PGeo, Hugh Hamilton, PhD, PAg, Ruth McDougall, MSc, PAg and Roderick T. MacLean, MSc, PEng) according to the work plan and terms approved by the Director. |
| Compliance: | In |

**Ministry of Environment and Climate Change Strategy**
Compliance
Environmental Protection Division
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| Actions to be taken: | |
| Requirement Description: | 4: 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 December 30, 2016. The Action Plan must include, but is not limited to: 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. 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. |
| Details/Findings: | The final version of the Action Plan was submitted on July 30, 2017 (HS Jansen and Sons Farms Ltd - Action Plan 2017, dated July 2017). The Action Plan was approved by ENV on August 9, 2017. |
| Compliance: | In |
| Actions to be taken: | |

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| Requirement Description: | 5: 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.<br><br>ACTION PLAN - GENERAL ITEMS FROM MAY 2016 PAO<br>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)<br>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).<br>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).<br>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).<br>5. Map of fields, wells etc. Maps are found in the 2017 NMP. (2017).<br>6. 2017 Nutrient Management Plan. (Spring 2017).<br>7. Schedule for implementation of Action Items (2017). |
| Details/Findings: | Action Item 1 - Effluent storage facilities were visually monitored on a monthly basis in 2017 (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017). Dale Jansen indicated that only regular maintenance was required in 2017.<br><br>Action Item 2 - No manure application occurred within 30 m of Deep Creek. 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 (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017).<br><br>Action Item 3 - Manure application setbacks from property boundaries, Deep Creek and wells were adhered to in 2017 (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017).<br><br>Action Item 4 - Soil testing for nitrates was conducted in all fields in Fall 2017 as part of the AGRI Post-Harvest Nitrate Testing. All Irrigation and domestic wells were tested for nitrate once in 2017 (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017).<br><br>Action Item 5 - Maps were included in the 2017 Nutrient Management Plan (HS Jansen and Sons Ltd Nutrient Management Plan 2017, dated May 2017).<br><br>Action Item 6 - A Nutrient Management Plan was completed in 2017 and submitted to ENV (HS Jansen and Sons Ltd Nutrient Management Plan 2017, dated May 2017).<br><br>Action Item 7 - A schedule for implementation of the Action Items is included in the Action Plan (HS Jansen and Sons Farms Ltd - Action Plan 2017, dated July 2017). |
| Compliance: | In |

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| Actions to be taken: | Continue to implement the Action Items and adhere to the schedule listed in the Action Plan. |
| Requirement Description: | 5: 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.<br><br>ACTION PLAN - GENERAL ITEMS FROM MAY 2016 PAO<br>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)<br>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).<br>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).<br>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).<br>5. Map of fields, wells etc. Maps are found in the 2017 NMP. (2017).<br>6. 2017 Nutrient Management Plan. (Spring 2017).<br>7. Schedule for implementation of Action Items (2017). |
| Details/Findings: | Action Item 4 - The monitoring wells were tested for total N, TKN, nitrate-N, nitrite-N and ammonia-N either once or twice in 2017 (October, November and/or December), rather than three times in 2017 (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017). Dale Jansen indicated that they forgot to sample the monitoring wells earlier in the year. |
| Compliance: | Out |
| Actions to be taken: | Ensure that all monitoring wells are tested for nitrate three times in 2018 according to the Action Plan. |
| Requirement Description: | 5: 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.<br><br>ACTION PLAN - MANURE MANAGEMENT AND STORAGE<br>1. Construct a new screen and silo storage system for solids. (Summer 2017).<br>2. Create a separate recycled grit storage or re-use area off the slab. (Summer 2017).<br>3. Cover compost facility. Cover not required. Any leachate is collect and moved to lagoon. |

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| Details/Findings: | Action Item 1 - A new screen and silo system was partially installed in 2017. Final completion is expected in Spring 2018 (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017). |
| Compliance: | Not Determined |
| Actions to be taken: | Ensure that construction of the new screen and silo storage system is completed. |
| Requirement Description: | 5: 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.<br><br>ACTION PLAN - MANURE MANAGEMENT AND STORAGE<br>1. Construct a new screen and silo storage system for solids. (Summer 2017).<br>2. Create a separate recycled grit storage or re-use area off the slab. (Summer 2017).<br>3. Cover compost facility. Cover not required. Any leachate is collect and moved to lagoon. |
| Details/Findings: | Action Item 2 - It was not necessary to create a separate recycled grit storage area because the existing system contains the grit and captures any leachate (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017).<br><br>Action Item 3 - The Action Plan stated that the compost facility did not require a cover (HS Jansen and Sons Farms Ltd - Action Plan 2017, dated July 2017). |
| Compliance: | Not Applicable |
| Actions to be taken: | |

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| Requirement Description: | 5: 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.<br><br>ACTION PLAN - MANURE SUPPLY INFRASTRUCTURE<br>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).<br>2. Ensure all mainline installations are approved by a Certified Irrigation Designer. (Ongoing).<br>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). |
| Details/Findings: | Action Item 1 - Two pipeline breach monitoring devices were installed in 2017. 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. (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017). A contingency plan was developed that included procedures and protocols to follow if these is an incident. The contingency plan was provided to ENV in December 2017 (H.S. Jansen and Sons Farm Ltd, Emergency Response Procedure For Unauthorized Discharges).<br><br>Action Item 2 - No mainline installations were performed in 2017 (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017).<br><br>Action Item 3 - 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. No issues were noted and therefore no actions were required (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017). |
| Compliance: | In |
| Actions to be taken: | Continue to implement the Action Items and adhere to the schedule listed in the Action Plan. |

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| Requirement Description: | 5: 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.<br><br>ACTION PLAN -NUTRIENT MANAGEMENT AND CROP SELECTION<br>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).<br>2. Ensure operational nutrient applications are made in consultation with the crop advisor. (Ongoing).<br>3. Include nitrate additions in irrigation water when calculating nitrogen application rates. (Ongoing).<br>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).<br>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).<br>6. Participate fully in the BC Ministry of Agriculture benchmark study if it is continued in 2017. (Fall 2017).<br>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).<br>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).<br>9. Install additional flow meters on the liquid manure distribution system to confirm application rates. (Summer 2017).<br>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.).<br>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).<br>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).<br>13. Irrigate fields based on data from soil moisture monitors. (Ongoing).<br>14. Install soil moisture monitors on more fields over aquifer 103. (Summer-Fall 2017 depending on ARCORP funding). |

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| Details/Findings: | Action Item 1 - The 2017 Nutrient Management Plan (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 NMP include all sources of nitrogen , including manure and irrigation water. The NMP incorporated recommendations from the 2016 AGRI PHNS (HS Jansen and Sons Ltd Nutrient Management Plan 2017, dated May 2017).<br><br>Action Item 2 - Operational nutrient applications were made in consultation with Doug Macfarlane, CCA who is the farm's nutrient management advisor (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017).<br><br>Action Item 3 - Nitrate additions in the irrigation water were used when calculating nitrogen application rates (HS Jansen and Sons Ltd Nutrient Management Plan 2017, dated May 2017).<br><br>Action Item 4 - Post-harvest soil testing was conducted on all fields over to a depth of 900 mm at depth increments of 0-15, 15-30, 30-60 and 60-90 cm. Sampling was completed in Fall 2017 within 2 weeks of final crop harvest (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017).<br><br>Action Item 5 - The nitrogen application rate in manure was reduced in 2017 on all corn fields where residual nitrate was in the medium or higher environmental risk category in fall 2016. The nitrogen application rate in manure was similar or slightly higher in 2017 on all alfalfa/grass fields because the 2016 nitrogen application rate in manure were very low. The 2017 nitrogen application rate provided approximately 1/3rd of the required nitrogen uptake of the alfalfa/grass and were approved by AGRI (HS Jansen and Sons Ltd Nutrient Management Plan 2017, dated May 2017 and Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017).<br><br>Action Item 6 - HS Jansen and Sons Farm participated in the BC Ministry of Agriculture benchmark study in Fall 2017 (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017).<br><br>Action Item 7 - Nutrients were applied at a rate that was less than or equal to the rate recommended in the NMP on 11 of the 12 fields. One field (109 Sylvia) received slightly more nitrogen (29 lb/A) than recommended (18 lb/A) in the NMP; however, the rate was well below the nitrogen requirement of the crop (192 lb/A). Agricultural waste was only applied for the purpose of fertilization (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017).<br><br>Action Item 8 - Records of manure application by field and volume were maintained in 2017.<br><br>Action Item 9 - One flow meter was installed on the liquid manure distribution system in 2017. A funding application was made to ARDCORP for additional flow meters.<br><br>Action Item 10 - The liquid manure was tested for nutrient content 3 times in 2017, in March, May and August. The nitrogen information was used when calculating manure application rates (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017). No manure application took place in Fall 2017.<br><br>Action Item 11 - All separated solids were hauled to the operation's Lavington fields in 2017 (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017).<br><br>Action Item 12 - No inorganic nitrogen fertilizer was used in 2017.<br><br>Action Item 13 - Irrigation rates on all fields were based on data from soil moisture monitors. Irrigation water was applied to wet the soil to a depth of at least 1 ft but not below a depth of ft (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017). |

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| Compliance: | In |
| Actions to be taken: | Continue to implement the Action Items and adhere to the schedule listed in the Action Plan. |

**Ministry of Environment and Climate Change Strategy**

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Environmental Protection Division

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| Requirement Description: | 5: 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.<br><br>ACTION PLAN -NUTRIENT MANAGEMENT AND CROP SELECTION<br>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).<br>2. Ensure operational nutrient applications are made in consultation with the crop advisor. (Ongoing).<br>3. Include nitrate additions in irrigation water when calculating nitrogen application rates. (Ongoing).<br>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).<br>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).<br>6. Participate fully in the BC Ministry of Agriculture benchmark study if it is continued in 2017. (Fall 2017).<br>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).<br>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).<br>9. Install additional flow meters on the liquid manure distribution system to confirm application rates. (Summer 2017).<br>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.).<br>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).<br>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).<br>13. Irrigate fields based on data from soil moisture monitors. (Ongoing).<br>14. Install soil moisture monitors on more fields over aquifer 103. (Summer-Fall 2017 depending on ARCORP funding). |
| Details/Findings: | Action Item 14 - No additional soil moisture monitors were installed in 2017 because no ARDCORP funding was approved. |
| Compliance: | Not Determined |

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| Actions to be taken: | Continue to follow up with ARDCORP on the availability of funding to install additional soil moisture monitors. |
| Requirement Description: | 5: 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.<br><br>ACTION PLAN - GROUNDWATER<br>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.)<br>2. Continue to record soil moisture monitoring data. (Ongoing).<br>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).<br>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).<br>5. Report the results of MW 1S and MW 1D to owners of neighbouring properties as per requirements of CSR. (Ongoing). |
| Details/Findings: | Action Item 1 - All monitoring wells were tested for total N, TKN, nitrate-N, nitrite-N and ammonia-N in 2017. Sampling was undertaken by Jennifer Kjaerbeck of Mountainview Electric of Enderby, BC as per the BC Field Sampling Manual. The results were provided in the Annual Summary and the Annual Summary was posted at Hullcar Hall (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017).<br><br>Action Item 2 - Soil moisture data is recorded automatically and records were verified on site.<br><br>Action Item 4 - All domestic and irrigation wells located to the south of fields 103A and 103B were sampled for nitrogen parameters in 2017. The results were provided in the 2017 Annual Summary (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017).<br><br>Action Item 5 - Neighbours were made aware of the nitrate levels in wells MW 1S and MW 1D and the data. |
| Compliance: | In |
| Actions to be taken: | Continue to implement the Action Items and adhere to the schedule listed in the Action Plan. |

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| Requirement Description: | 5: 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.<br><br>ACTION PLAN - GROUNDWATER<br>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.)<br>2. Continue to record soil moisture monitoring data. (Ongoing).<br>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).<br>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).<br>5. Report the results of MW 1S and MW 1D to owners of neighbouring properties as per requirements of CSR. (Ongoing). |
| Details/Findings: | Action Item 1 - The monitoring wells were tested for total N, TKN, nitrate-N, nitrite-N and ammonia-N either once or twice in 2017 (October, November and/or December), rather than three times in 2017 in March, July and November (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017). |
| Compliance: | Out |
| Actions to be taken: | Ensure that all monitoring wells are tested for nitrate three times in 2018 in March, July and November according to the Action Plan. |

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| Requirement Description: | 5: 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.<br><br>ACTION PLAN - GROUNDWATER<br>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.)<br>2. Continue to record soil moisture monitoring data. (Ongoing).<br>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).<br>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).<br>5. Report the results of MW 1S and MW 1D to owners of neighbouring properties as per requirements of CSR. (Ongoing). |
| Details/Findings: | Action Item 3 - An application for funding was made to ARDCORP; however, funding has not been received and therefore the study was not undertaken in 2017. |
| Compliance: | Not Determined |
| Actions to be taken: | Continue to follow up with ARDCORP on the availability of funding and conduct this study if funding is provided. |
| Requirement Description: | 6: Submit to the Director a formal written summary by November 30, 2017 and annually for the next two years including: 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. |

| | |
|---|---|
| Details/Findings: | A formal written summary was submitted on November 30, 2017. Not all of the laboratory data was available on that date, therefore, a final formal written summary was submitted on December 18, 2017 (Jansen Farms EIA Action Plan Summary - 2017 Final, dated December 18, 2017).<br><br>The written 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, iv) a summary of the environmental impact assessment conclusions and recommendations, and v) recommendations for additional mitigation and restoration measures. |
| Compliance: | In |
| Actions to be taken: | |
| Requirement Description: | 7: Publically post the Action Plan required by this order by November 30, 2016 and publicly post the annual summary required by section 6 of this order by June 30, 2017, 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 June 30 of each year. |
| Details/Findings: | Photographic evidence showing that the Action Plan was posted at the Hullcar Community Hall was provided to ENV.<br><br>Photographic evidence showing that the 2017 Annual Summary was posted at the Hullcar Community Hall was provided to ENV. |
| Compliance: | In |
| Actions to be taken: | |

The final version of the Action Plan was submitted on July 30, 2017 (HS Jansen and Sons Farms Ltd - Action Plan 2017, dated July 2017). The Action Plan listed:
7 Action Items under General items from May 2016 PAO;
3 Action Items under Items arising from the 2017 EIA - Manure management and storage;
3 Action Items under Items arising from the 2017 EIA - Manure supply infrastructure;
14 Action Items under Items arising from the 2017 EIA - Nutrient management and crop selection; and
5 Action Items under Items arising from the 2017 EIA - Groundwater.

Compliance History:
2017-09-28 IR66637 - Notice
2017-03-13 IR48787 - Investigation Referral

Please submit all annual/quarterly/monthly reports and data submissions to the Ministry's Routine Environmental Reporting Submission Mailbox at EnvAuthorizationsReporting@gov.bc.ca. More information about the reporting requirements may be found at http://www2.gov.bc.ca/gov/content/environment/waste-management/wastedischargeauthorization/data-and-report-submissions/routine-environmental-reporting-submission-mailbox.

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:** [X] **Fax:** [ ] **Mail:** [ ]

**Registered Mail:** [ ] **Hand Delivery:** [ ]

**Ministry of Environment and Climate Change Strategy**

Compliance
Environmental Protection Division

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