**Environmental Risk Screening Tool for Manure Facilities at Confined Feeding Operations**
**Version 1.2 – September 2011**

(Information on how to complete this form is available in a companion document.)

Facility 1 Name: Open pens (2 existing) Facility 2 Name: Open pens (1 new) Facility 3 Name: Catch Basin

Legal Land Location: NE 10-009-27 W4 CFO name: Muilwijk, Arie & Willemina

Screening Completed By: Scott Cunningham Date Completed: December 9, 2020 - revised

NOTE- Each facility should be scored individually

## HAZARD POTENTIAL

### Manure Type

| | | | | | |
|---|---|---|---|---|---|
| Solid Manure | 4 | | | | |
| Runoff water with manure constituents (e.g., catch basin contents) | 10 | | | | |
| Liquid Manure | 20 | Score: | 4 | 4 | 10 |

### Annual Manure Amount (tonnes)

| | | | | | |
|---|---|---|---|---|---|
| >60,000 | 8 | | | | |
| 40,000 to 60,000 | 5 | | | | |
| 20,000 to <40,000 | 2 | | | | |
| <20,000 | 1 | Score: | 1 | 1 | 1 |

**Total Hazard Potential Score (maximum 28):** 5 5 11

**PATHWAY**

GROUNDWATER

General comments and overall scoring criteria

☐ ☐ ☐ *If there is a water well directly located within the manure storage area, score the groundwater section as high risk.*

If the above condition does not exist, continue scoring the groundwater section.

To help score the next two factors, complete the following and provide a sketch if possible:

Notes:

| | | | | |
|---|---|---|---|---|
| Depth of storage below grade | 0 | 0 | 1.8 | (A) |
| Depth to top of Protective Layer below grade | 1.0 | 1.0 | 1.0 | (B) |
| Depth to bottom of Protective Layer below grade | 2.7 | 2.7 | 2.7 | (C) |
| Thickness of Protective Layer | 1.7 | 1.7 | 0.9 | (D) |
| Depth of UGR below grade | 2.7 | 2.7 | 2.7 | (E) |
| Depth to UGR from the bottom of the facility | 2.7 | 2.7 | 0.9 | (F) |

**Uppermost Groundwater Resource (UGR)**

| | **Subsoil Texture** | | |
|---|---|---|---|
| **Depth to UGR (m) (from the bottom of the facility)** | Fine - Medium | Coarse | Very Coarse |
| >30 | 1 | 4 | 7 |
| 8 - 30 | 2 | 5 | 8 |
| <8 | 3 | 6 | 10 |

Score: 6 | 6 | 6

**Protective Layer(s) (PL) Between Bottom of Facility and UGR**

- *Score is 20 if the storage is constructed into the UGR*

| | Subsoil Texture | | |
|---|---|---|---|
| **Thickness of Protective Layer(s) (m)** | Fine | Medium | Coarse – Very Coarse |
| >10 | 1 | 3 | 8 |
| 5 - 10 | 4 | 6 | 12 |
| 2 - <5 | 6 | 9 | 16 |
| <2 | 8 | 12 | 20 |

Score: 20 | 20 | 20

**Liner Type**

| | |
|---|---|
| Meets AOPA liner or protective layer requirements | 1 |
| Concrete liner – no specs | 2 |
| May meet AOPA requirements | 15 |
| Does not meet AOPA requirements | 20 |

Score: 15 | 15 | 1

**Notes**

The applicant has not been able to demonstrate that the RCC liner for the open pens can meet AOPA groundwater protection requirements. "May meet AOPA requirements" instead of "does not meet AOPA requirements" has been used to provide a "best case" scenario because of this.

**Water Well Risk Scoring**

Complete the table below for each water well within 400 m of the reference point identified. If the well is upslope of the facility, the well should be given a score of 1.

The "Highest Risk Water Well" is the well with the highest score.

| | Distance to Water Well (m) | | | |
|---|---|---|---|---|
| **Depth to top of open interval in water well (m)** | ≥100 to 400 | 60 to 99 | 30 to 59 | <30 |
| >100m | 1 | 2 | 3 | 4 |
| 30-100m | 5 | 6 | 7 | 8 |
| <30m | 9 | 10 | 12 | 15 |

- *If well annulus filled with cuttings, add 3 points*
- *If well has a drive shoe seal, add 5 points*
- *If well has no seal or the nature of the seal is unknown, add 8 points.*

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Well I.D.** | 115735 | | | | | | | | | | | |
| **Score** | 15 | 15 | 14 | | | | | | | | | |
| **Well I.D.** | | | | | | | | | | | | |
| **Score** | | | | | | | | | | | | |

**Highest Risk Water Well (highest score from wells scored above):** Score: 15 15 14

**Infiltration Potential**

| Predominant Soil type | Average Annual Precipitation (mm) | | |
|---|---|---|---|
| | <400 | 400-600 | >600 |
| Fine | 1 | 2 | |
| Medium | 3 | 4 | |
| Coarse | 5 | 6 | 8 |

Score: 6 | 6 | 6

**Special Considerations** (Allowable range of -8 to +8 with a total score for this section not to go over or under the allowable range). *Score is 0 if there are no special considerations*

Special consideration examples:

- Pumping rate of nearby water well (concern is that even if the well is upslope, a cone of depression may develop which could draw in contaminated water)
- Presence of any springs that have the potential to be impacted by the CFO.
- Water well in pit
- Certainty of information (ie. remove points for high quality of information, is not intended to be used for low quality of info)
- Additional points may be added if there are multiple wells that score high in the water well risk scoring criteria

Score: | |

**If a special consideration(s) is used, describe:**

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**Total Groundwater Pathway Score (maximum score 81):** 62 | 62 | 47

## EXPOSURE POTENTIAL

### *GROUNDWATER*

☐ ☐ ☐ If no water wells are completed within 400m of the confined feeding operation facility being assessed, use an exposure potential factor of **1**

☐ ☐ ☐ If one or more water wells located within 400m of the confined feeding operation facility, but greater than 100m from the confined feeding operation facility, use an exposure potential factor of **1.1**

■ ■ ☐ If one or more water wells located within 100m of the confined feeding operation facility, use an exposure potential factor of **1.2**

Hazard Potential Score 5 + Groundwater Pathway Score 62 = 67 × Exposure Potential Multiplier 1.2 = Risk Score 80.4

Hazard Potential Score 5 + Groundwater Pathway Score 62 = 67 × Exposure Potential Multiplier 1.2 = Risk Score 80.4

Hazard Potential Score 11 + Groundwater Pathway Score 47 = 58 × Exposure Potential Multiplier 1.1 = Risk Score 63.8

| **Risk Level** | **Hazard Potential Score + Groundwater Pathway Score (maximum score – 109)** |
|---|---|
| High Potential *Risk to the Environment* | **>90** |
| Moderate Potential *Risk to the Environment* | **70 – 90** |
| Low Potential *Risk to the Environment* | **<70** |

If you checked off the following in the groundwater section, indicate here as well.

☐ ☐ ☐ *If there is a water well directly located within the manure storage area, score the groundwater section as high risk.*

**Notes**

**PATHWAY**

SURFACE WATER

General comments and overall scoring criteria

☐☐☐ *If body of water is known to be upslope of the facility, score the surface water section as low risk.*

☐☐☐ *If no water body within 800 m, score the surface water section as low risk.*

☐☐☐ *If the facility is located less than 1 m (in elevation) above the 1 in 25 year floodplain level, score the surface water section as high risk.*

If none of the above conditions exist, continue scoring the surface water section.

**Likelihood of Runoff Reaching a Water Body**

| | **Slope of land from facility to water body (%)** | | | |
|---|---|---|---|---|
| **Horizontal Distance to Water Body** | <4 | 4 - <6 | 6 - 12 | >12 |
| >100m | 1 | 2 | 3 | 4 |
| 30-100m | 2 | 3 | 4 | 5 |
| <30m | 3 | 4 | 5 | 6 |

Score: 1 | 1 | 1

**Surface Water Runoff**

| | **Average Annual Precipitation (mm)** | | |
|---|---|---|---|
| **Predominant Soil type** | <400 | 400-600 | >600 |
| Coarse | 1 | 2 | |
| Medium | 3 | 4 | |
| Fine | 5 | 6 | 8 |

Score: 2 | 2 | 2

**Surface Water Run-on Control**

| | | | | |
|---|---|---|---|---|
| All upslope surface water diverted around the facility | 0 | | | |
| Most upslope surface water diverted (>80% - 99%) | 1 | | | |
| Minimal upslope surface water diverted (<80%) | 5 | Score: | 1 | 1 | 1 |

**Manure Impacted Area Runoff Control**

| | | | | |
|---|---|---|---|---|
| No yard runoff (e.g., covered facility) | 0 | | | |
| All runoff controlled | 4 | | | |
| Most runoff controlled (>80% - 99%) | 10 | | | |
| Minimal control of lot runoff (<80%) | 20 | Score: | 4 | 4 | 4 |

**Runoff Flow Path between Facility and Receiving Body of Water**

| | Vegetation Cover | |
|---|---|---|
| **Type of Yard Runoff Flow** | > 50% Vegetated | < 50% Vegetated or Frozen |
| Dispersed flow | 1 | 4 |
| Channelled flow | 7 | 15 |

Score: 1 | 1 | 1

**Notes**

**Special Considerations** (Allowable range of -5 to +5 with a total score for this section not to go over or under the range). *Score is 0 if there are no special considerations*

Special consideration examples:

- Secondary containment
- Amount of freeboard
- Above ground earthen storage
- Certainty of information (ie. remove points for high quality of information, is not intended to be used for low quality of info)

Score: | | | |

**If a special consideration(s) is used, describe:**

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When scoring the surface water section of the tool choose runoff water with manure constituents for solid manure facilities.

| | | | |
|---|---|---|---|
| Additional score of **6** for solid manure storage | 6 | 6 | |
| **Total Surface Water Pathway Score (maximum score 54):** | 15 | 15 | 9 |

Notes

## *SURFACE WATER*

☐ ☐ ☐ If highest use surface water body (with the greatest number of types of users) located within 800m of the confined feeding operation facility being assessed is a small slough or creek on private land but not a common body of water, use an exposure potential factor of **1**

☐ ☐ ☐ If highest use surface water body (with the greatest number of types of users) located within 800m of the confined feeding operation facility being assessed is a common body of water with little human use (within 10 miles downstream), use an exposure potential factor of **1.1**

☐ ☐ ☐ If highest use surface water body (with the greatest number of types of users) located within 800m of the confined feeding operation facility being assessed is a high use common body of water (recreation, water supply, etc.), use an exposure potential factor of **1.2**

Hazard Potential Score 5 + Surface water Pathway Score 15 = 20 × Exposure Potential Multiplier 1.0 = Risk Score 20

Hazard Potential Score 5 + Surface water Pathway Score 15 = 20 × Exposure Potential Multiplier 1.0 = Risk Score 20

Hazard Potential Score 11 + Surface water Pathway Score 9 = 20 × Exposure Potential Multiplier 1.0 = Risk Score 20

| **Risk Level** | **Hazard Potential Score + Surface Water Pathway Score (maximum score – 82)** |
|---|---|
| High Potential *Risk to the Environment* | **> 58** |
| Moderate Potential *Risk to the Environment* | **44 – 58** |
| Low Potential *Risk to the Environment* | **<44** |

If you checked off the following in the surface water section, indicate here as well.

☐ ☐ ☐ *If body of water is known to be upslope of the facility, score the surface water section as low risk.*

☐ ☐ ☐ *If no water body within 800 m score the surface water section as low risk.*

☐ ☐ ☐ *If the facility is located less than 1 m (in elevation) above the 1 in 25 year floodplain level, score the surface water section as high risk.*

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