Infosheet #11 Milking Centre Washwater

This Infosheet provides background to Worksheet #11 of the *Environmental Farm Plan Workbook*. It outlines options you could adopt to address problem areas in your operation. In most cases you'll need more information before implementation: please refer to the resource materials listed in the infosheet, and consult OMAF Environmental Farm Plan (EFP) Technical Advisors.

All options are classed as Actions, Compensating Factors or Monitoring. Actions address the areas of concern identified, and will change the rating to (3) or Best (4). Compensating Factors are alternatives that will adequately address the concerns, but will not change the rating in the EFP worksheets. Monitoring is an alternative only in special circumstances and it is explained in the Infosheet when and how it can be used.

Pretreatment of Washwater

ISSUE	WHAT CAN YOU DO?
11-1 Milking system cleanup The first rinse water from the milking equipment wash cycle contains a high percentage of milk. A small amount of milk entering a sediment tank and treatment trench system daily can plug the septic tiles in a matter of months or even weeks, leading to failure of the system. Therefore it is important to keep the first rinse out of the sediment tank and treatment trench system. This will not be a concern if the washwater is being directed to a liquid manure or runoff storage.	**OPTION – ACTION** **Remove first rinse from milking equipment wash cycle:** • this liquid can be used to feed calves, but it is very low in nutrients. Use it to replace water in milk replacer formulations, or feed it to calves that are older than normal weaning age. Never substitute first rinse water for milk. **FOR MORE INFORMATION:** *Handling Milking Centre Washwater in an Environmentally Responsible Manner*, OMAF Factsheet Order No. 04-019 Milking Centre Washwater Disposal Manual, OMAF Publication 28 Best Management Practices Book: *Livestock and Poultry Waste Management*, Order No. BMP 04

OMAF = Ontario Ministry of Agriculture and Food Ontario; MOE = Ontario Ministry of the Environment

11-2 Milking centre cleanup If manure, spilled feed, or any other solids are not cleaned off the floor before washing, it is assumed that they will be washed down the drain. They can then plug the septic tiles of the sediment tank and treatment trench system, causing the system to fail. This is not a concern where washwater is directed to a liquid manure or runoff storage.	**OPTION – ACTION** **Remove all manure, spilled feed, or any other solids from the milking centre floor before washing:** • clean milking centre floor with shovel and broom prior to washing down. **FOR MORE INFORMATION:** *Handling Milking Centre Washwater in an Environmentally Responsible Manner*, OMAF Factsheet Order No. 04-019 Milking Centre Washwater Disposal Manual, OMAF Publication 28 Best Management Practices Book: *Livestock and Poultry Waste Management*, Order No. BMP 04
11-3 Water used in milking centre If excessive amounts of water are used, energy and chemical costs will increase. The milking centre washwater storage will be larger than necessary if the washwater is stored. If too much washwater is put into a sediment tank and treatment trench system on a daily basis, the system can become flooded, quit working, and possibly contaminate ground water.	**OPTION – ACTION** **Reduce amount of water used for milking centre cleanup to less than 4 gallons (18 litres) per cow per day:** • use an "energy-conservation sink" (may reduce water use by as much as 45%) • clean up milking centre floor with a shovel as opposed to trying to do it all with water • always be careful to use enough water to ensure proper cleaning of the milking system. **FOR MORE INFORMATION:** *Handling Milking Centre Washwater in an Environmentally Responsible Manner*, OMAF Factsheet Order No. 04-019 Milking Centre Washwater Disposal Manual, OMAF Publication 28 Best Management Practices Book: *Livestock and Poultry Waste Management*, Order No. BMP 04
11-4 Use of chemicals Water hardness can change over time, and automatic cleaning equipment can go out of calibration. Periodically check the water to determine the optimum amount of chemicals to use, and calibrate the automatic cleaning equipment to determine if it is performing correctly. Excessive chemical use is	**OPTION – ACTION** **Check water hardness, and cleaning equipment calibration at least once every two years, and adjust if necessary.** **FOR MORE INFORMATION:** *Handling Milking Centre Washwater in an Environmentally Responsible Manner*, OMAF Factsheet Order No. 04-019

expensive and it increases the potential for ground water contamination.

Milking Centre Washwater Disposal Manual, OMAF Publication 28
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11-5 Method of storage/disposal

This question is used to determine whether the washwater storage or treatment system is acceptable. Secondly, it directs you to the remaining sections of the workbook related to the topic that should be completed. Milking centre washwater must be either stored in a suitable liquid manure storage, separate storage, or runoff storage until it is spread on the land, or it must be disposed of in a properly designed sediment tank and treatment trench system.

OPTION #1 – ACTION

Store the washwater in a liquid manure storage, separate storage or runoff storage:

- make sure the storage has adequate capacity to contain both the manure and milking centre washwater.

OPTION #2 – ACTION

Treat in sediment tank and treatment trench system:

- first rinse should be removed and fed
- clean milkhouse centre floor with shovel and broom prior to washing down.

OPTION #3 - COMPENSATING FACTOR

Add washwater to solid manure storage:

- only suitable for very small operations
- additional straw will have to be added
- storage must be walled, with a minimum 1 ft. (0.3 m) curb (speed bump) at exit to contain liquid material
- storage must be checked regularly for leakage.

FOR MORE INFORMATION:

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Best Management Practices Book: *Livestock and Poultry Waste Management*, Order No. BMP 04

Disposal by Sediment Tank and Treatment Trench System

11-6 Depth to saturated soil or bedrock from trench bottom

The treatment trench relies on bacteria in the stone bed and in the surrounding soil to break down pollutants. If saturated soil or bedrock is too close to the bottom of the treatment trench, pollutants can enter the groundwater before they are treated sufficiently. There must be sufficient depth between the bottom of the treatment trench and saturated soil to allow for drainage of the treated washwater; otherwise the system could become flooded and quit working.

OPTION #1 – ACTION

Move the treatment trench to a location where there is at least 3 feet (0.9 m) of depth from trench bottom to the saturated soil or bedrock.

OPTION #2 – ACTION

Construct a raised bed treatment trench system:

- these systems require careful design and construction.

FOR MORE INFORMATION:

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Milking Centre Washwater Disposal Manual, OMAF Publication 28
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11-7 Sediment tank and sediment tank cleanout

The size of the sediment tank and the frequency of cleaning it out are two factors that determine how well the treatment trench and sediment tank system will function. If the tank is too small, washwater is not in the tank long enough to allow the sediment time to settle out; the same thing can happen if the tank becomes full of sediment. If the tank does not have the proper baffles or tee connections, sediment could also enter the septic tile and block the lines.

OPTION – ACTION

Replace existing tank with a standard two-compartment septic tank with a capacity for at least 4 days production of washwater, and clean out sediment tank at least once per year.

FOR MORE INFORMATION:

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11-8 Treatment trench If the treatment trench is not long enough, or if there is insufficient stone in the trench, the washwater may not be treated sufficiently to prevent pollution of ground water. Also, if the treatment trench is not long enough, the treated washwater may not be able to drain away from the trenches fast enough between milkings. Legislation stipulates minimum total treatment trench length of 131 ft. (40 m).	**OPTION – ACTION** **Have a qualified contractor verify that the design meets or exceeds the OMAF guidelines. Increase the total size of the treatment trench to provide a minimum of 2 ft. (0.6 m) of trench for every 1 gallon (4.5 litres) of washwater produced daily with a minimum overall length of 200 feet (60 m):** • individual treatment trench lines should be approximately 60-100 feet (18-30 m) long, maximum 100 ft. (30 m) **FOR MORE INFORMATION:** *Handling Milking Centre Washwater in an Environmentally Responsible Manner*, OMAF Factsheet Order No. 04-019 *Milking Centre Washwater Disposal Manual*, OMAF Publication 28 Best Management Practices Book: *Livestock and Poultry Waste Management*, Order No. BMP 04
11-9 Access to treatment trench area Vehicle and animal traffic over treatment trenches can cause compaction of the soil, which will slow the drainage of washwater away from the treatment trench, possibly leading to flooding of the tile bed. In extreme cases, vehicle traffic may lead to breakage of the septic tile, leading to total system failure.	**OPTION – ACTION** **Restrict access to the treatment trench area:** • fence off treatment trench area from livestock • divert all traffic around treatment trench area. **FOR MORE INFORMATION** *Handling Milking Centre Washwater in an Environmentally Responsible Manner*, OMAF Factsheet Order No. 04-019 *Milking Centre Washwater Disposal Manual*, OMAF Publication 28
11-10 Distance from sediment tank and treatment trench to nearest surface water Sediment tank and treatment trench systems must be properly located in relation to surface water to reduce the risk of surface water contamination. Any outbreak of wastewater to the ground surface has the	**OPTION #1 – ACTION** **Relocate sediment tank and treatment trench system an adequate distance from surface water:** • new treatment trench system location should change the final EFP distance rating to a (3) or better.

potential of reaching surface water. The proper selection of the location, taking into account soil type and topography, will lessen the potential for surface water contamination.

Legislation stipulates minimum separation distances between washwater treatment systems and surface water. The sediment tank and treatment trench system must be installed more than 50 ft. (15 m) from surface water.

OPTION #2 – ACTION

Move surface water away from sediment tank and treatment trench system:

- new surface water location should change the final EFP distance rating to a (3) or better
- this option applies only to small, low flowing watercourses
- make sure necessary approvals are received for this change.

OPTION #3 – MONITORING

For existing sediment tank and treatment trench systems which are in good working condition, monitor sediment tank and treatment trench system regularly for surface outbreaks, odours, ground conditions over bed, backup of sewage, etc.

FOR MORE INFORMATION:

Handling Milking Centre Washwater in an Environmentally Responsible Manner, OMAF Factsheet Order No. 04-019
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11-11 Distance from sediment tank and treatment trench to well

Sediment tank and treatment trench systems must be properly located in relation to water wells to reduce the risk of water well contamination. This question addresses the level of natural protection provided by the soil around the well and well location relative to treatment trench system. Where a high potential for contamination currently exists, more drastic actions may have to be carried out. Legislation stipulates minimum separation distances between the sediment tank and treatment trench system components and water wells.

OPTION #1 – ACTION

Relocate the sediment tank and treatment trench system an adequate distance from well:

- new sediment tank and treatment trench location should change the final EFP distance rating to a (3) or better
- test well water for indicator bacteria at least three times a year, and once a year for other parameters (such as nitrate) until the new sediment tank and treatment trench is installed.

OPTION #2 – ACTION

Relocate well away from the sediment tank and treatment trench system:

- make sure old well is properly removed from use i.e. properly decommissioned
- new well location should change the final EFP distance rating to a (3) or better
- test well water for indicator bacteria at least three times a year, and once a year for other parameters (such as nitrate) until the new water well is installed.

OPTION #3 – MONITORING

For existing sediment tank and treatment trench systems which are in good working condition, test the well water for indicator bacteria at least three times a year and once a

year for other parameters (such as nitrate):

- monitoring of well water is not a solution. If the water test reveals contamination of well water, have a plan in place to immediately address the problem i.e. replace the sediment tank and treatment trench system
- if you have an EFP rating of (1), contact your municipality for further **guidance**

FOR MORE INFORMATION:

Handling Milking Centre Washwater in an Environmentally Responsible Manner, OMAF Factsheet Order No. 04-019

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11-12 Visual signs of performance

If the ground over the treatment trenches is always wet and spongy, or if there is a noticeable odour, washwater must be excessively wicking to the surface instead of draining downward. This could indicate poor drainage beneath the tile bed or a saturated treatment bed.

OPTION – ACTION

The treatment trenches could be plugged, tile lines broken or the system could be overloaded:

- any one of the previous options in this infosheet that deal with the management, design and construction of the sediment tank and treatment trench system could be contributing to this problem. Investigate all possible options.

FOR MORE INFORMATION:

Handling Milking Centre Washwater in an Environmentally Responsible Manner, OMAF Factsheet Order No. 04-019

Milking Centre Washwater Disposal Manual, OMAF Publication 28

Best Management Practices Book: Livestock and Poultry Waste Management, Order No. BMP 04

Alternate Treatment Methods

11-13 Alternate treatment options

Several other options are possible for the treatment of milking centre washwater. These systems have to be designed for specific conditions on site. Before proceeding with one of the alternate options

OPTION – ACTION

Construct and install the most appropriate alternate system:

- raised bed (mound) system
- vegetative filter strip
- constructed wetlands
- flocculator

conduct an adequate investigation of the system to make sure that it will do the anticipated job.

FOR MORE INFORMATION:

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*At the request of the **Ontario Farm Environmental Coalition**, consisting of Ontario Federation of Agriculture, Christian Farmers Federation of Ontario, AGCare, and the Ontario Farm Animal Council, the following people contributed to the development of Infosheet #11:*

Harold House, OMAFRA (Chair)
Harold Cuthbertson, OMAFRA
Claude Weil, Alfred College
George MacNaughton, OMMB
Jack Rodenburg, OMAFRA

Technical Editing Committee:

Brent Kennedy, OMAFRA
Jim Myslik, OMAFRA
Bob Stone, OMAFRA

The following people contributed to the revision (2004) of Infosheet #11:

Harold House, OMAF (Chair)
Bob Stone, OMAF
George MacNaughton, DFO
Harold Cuthbertson, OMAF
Ahmed Sharaf, MAH
Chris Kinsley, Alfred College
George Ryken, EFP
Jack Rodenburg, OMAF

Technical Editing Committee:

H.J. Smith, OMAF
Jim Myslik, OMAF
Bob Stone, OMAF