

LANDOWNER'S SURVEY:

WHAT'S THE RISK TO YOUR WATER FROM STORED MANURE

Utah Farmstead Assessment for Ground Water and Surface Water Protection

Survey 7

NR-WQ-04.7b

Storing livestock manure allows farmers to spread manure on their fields when conditions are favorable for nutrient use by crops. Storing manure in a concentrated area, however, can present a threat to water quality and to human or animal health. Runoff or leached water from these areas contains disease-causing organisms and excess nutrients which can contaminate surface or drinking water.

Facilities for liquid manure storage on the farmstead sometimes leak or even burst. Leaching from manure stored in earthen pits is limited by a layer of organic material that forms a seal at the bottom of the pit, but seasonal filling and emptying can cause this seal to break down. Short-term solid manure storage and abandoned storage areas can also be sources of surface and ground water contamination.



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This survey asks a series of questions dealing with common risks to water quality from storing and applying animal manure. The questions are designed to help you identify specific practices or conditions on your farmstead or acreage that should be addressed to reduce risk of water contamination.

The results of this survey are intended to provide general information and recommendations regarding practices and potential risks to water quality. Keep this survey as your private record and use it as a guide to taking action to reduce risks. For more information, refer to Fact Sheet 7 in this series: "How to Manage Stored Manure and Protect Your Water."



See Glossary in Fact Sheet #7 for clarification of terms in this survey.

SURVEY INSTRUCTIONS

For each question circle the answer that best describes your situation. At the end of each section sum the numbers that correspond to each answer. When you have completed the survey, add up the section totals for the total risk assessment score.

Location of Manure Storage

1. Is the manure storage structure more than 100 feet from water wells?

Yes (1)
No (3)

surface waters? Yes (1)
No (3)

field tiles? Yes (1)
No (3)

2. Is the manure storage structure downslope from water wells? Yes (1)
No (3)

surface waters? Yes (1)
No (3)

3. What is the soil texture at the site of you manure storage structure?

Clay (1)
Loam (2)
Sand (3)

4. Is the water table or fractured bedrock layer more than 20 feet below the bottom of the manure storage structure?

Yes (1)
No (2)

5. Is the seasonal high water table ever within 3 feet of the bottom of the manure storage structure?

Yes (2)
No or Don't Know (1)

Location of Manure Storage section total: _____



Storage

For this section, answer only the questions for the type of manure you store:

Liquid or Semi-solid Manure

6. Does the storage structure have any noticeable leaks?
No (1)
Yes (3)

Earthen Waste storage pit or lagoons (below ground)

7. Is the pit or lagoon lined with clay or plastic?
Yes (1)
No (3)
8. When pumping out the contents, have you seen any cracks in the soil or tears in the lining of the pit or lagoon?
Yes (2)
No (3)

Solid Manure Storage

9. What type of surface is your manure stacked on?
concrete (2)
earthen (3)
10. Is the manure stack exposed to rainfall, snowfall, or surface water runoff?
No (1)
Yes (3)
11. Does the area have a settling basin and/or grass infiltration strip to receive runoff?
Yes (1)
No (3)

Storage Type section total _____

Design and Maintenance

12. Was your manure storage structure designed and installed according to accepted engineering standards and specifications?
Yes (1)
No (2)

13. Do you perform regular inspection and maintenance procedures on the manure storage structure (e.g. clean outlets and check for seepage, erosion, weakened berms and burrowing animals?)
Yes (1)
No (3)

14. Is all roof water and clean surface runoff diverted away from the manure storage structure?
Yes (1)
No (3)

15. Have you ever had a leak in your manure storage structure that resulted in manure (solid or liquid) being released to the environment, either underground or aboveground?
No (1)
Yes (3)

Design and Maintenance section total: _____

Site Characteristics of Waste Application Site

16. Is your soil excessively drained or of coarse texture such as sands, sandy loam or gravel?

No (1)
Yes (3)

18. Is the available soil water holding capacity very low or is the soil easily saturated with standing water present?

No (1)
Yes (3)

17. Is your soil depth

deep (more than 40 inches deep)? (1)
moderate (20-40 inches deep)? (2)
very shallow (less than 20 inches deep)? (3)

Characteristics of Waste Application Site
section total: _____



Livestock Manure Application Practices

19. Do you test the soil in your manure application sites yearly for nutrient concentrations?

Yes (1)
No (3)

22. Is the manure application area more than 200 feet from surface sources or wells?

Yes (1)
No (3)

20. Do you apply manure at a rate equal to or less than plant needs based on the soil test?

Yes (1)
No (3)

23. When manure is applied is it incorporated into soil or applied at sites with heavy vegetation?

Yes (1)
No (3)

21. Is your manure application rate based on Phosphorus levels?

Yes (1)
No (3)

24. Is manure applied to frozen or saturated soil?

Yes (1)
No (3)

Design and Maintenance section total: _____

Land Management Practices

25. Are manure solids uniformly distributed on the land?

Yes (1)

No (2)

28. Is soil moisture monitored to evaluate irrigation water needs?

Yes (1)

No (2)

26. Is the manure spreader calibrated annually?

Yes (1)

No (2)

Design and Maintenance section total: _____

27. Is irrigation water applied considering the evapotranspiration rates?

Yes (1)

No (2)



RISK ASSESSMENT FOR IMPROVING LIVESTOCK MANURE AND HANDLING

Section Risk Ranking

Add the following totals:

Location of Manure Storage section total _____

Livestock Manure Application Practices _____

Storage Type section total _____

Land Management Practices _____

Design and Maintenance section total _____

Survey 7 Total Score _____

Site Characteristics of waste application site section total _____

SURVEY 7 TOTAL SCORE

26

56

86



TOTAL RISK LEVEL

Low

Moderate

High

INTERPRETING YOUR RISK RATING

Locate your total risk score on the spectrum above to get a general idea of the risk wastewater is posing to water sources on your farmstead or acreage.

Next, compare your risk scores for each section with the ratings (Low, Moderate, and High) for the individual sections to determine the practices where your risk is moderate to high.

For these sections go back into the survey and look at the questions for which you marked a high scoring choice. These are the areas you should address first to reduce risk of water contamination.

Follow Up

Refer to Fact Sheet # 7: How to Manage Stored Manure and Protect Your Water for contacts and information about safe well operation. Contact your Utah State University county Extension office, or the Extension web page <http://www.extension.usu.edu> for more information.

