

WATERSHED MANAGEMENT PLAN FOR THE DALLAS COUNTY FARM

Introduction

This Watershed Management Plan is intended to guide natural resource management activities and establish management practices for the Dallas County Farm and Care Facility. This Watershed Plan establishes the following:

- Watershed goals/objectives
- Standards for future activities
- Management direction

Issues

This Watershed Management Plan was developed in response to the following issues:

- Nutrient Management
- Soil Erosion Management
- Management of the pond and wetland area in the south part of the farm
- Buffer Management

Nutrient management

Nutrients from the agricultural land on the farm can impact water quality locally and downstream. Nitrate levels are of greatest concern because of their ultimate impact on water bodies (hypoxia) and because of their health impacts through our drinking water supply.

Soil erosion management

In 1997, the State of Iowa's erosion rate per acre was 5.3 tons. The Dallas County Farm could improve its erosion management practices on the farmland itself as well as along the steep slopes that border the west side of the farm and the east side of the Raccoon River.

Pond, wetland, and buffer management

Ponds, wetlands, and buffers are effective edge-of-field treatments to reduce nitrate levels before they reach rivers or streams. Plant roots absorb nitrogen from soils and their aboveground structure helps to slow and reduce erosion.

Limitations

There are two limiting factors that could potentially have an impact on the success of watershed management on the Dallas County Farm. The first factor is the issue of funding. Monetary resources may not be available and may not be consistent to begin or continue a management program. The second limiting factor is that of labor force. The farm does not have access to a strong labor force. The majority of the small number of laborers on the farm at the present time are residents at the care facility, with the exception of the farm manager. Because the farm

cannot afford to hire additional laborers, a volunteer program is suggested to carry out management tasks.

Questions

The issues stated above present a set of questions that must be considered for the management plan to be successful.

- How can watershed management practices be incorporated into current farm practices without creating a significant increase in cost and labor?
- What specific watershed management practices are appropriate for the Farm?
- If monetary and labor limitations reduce management ability, what practices are most important and need to be retained?
- From where can the farm obtain volunteer and in-kind resources?

Inventory and Research

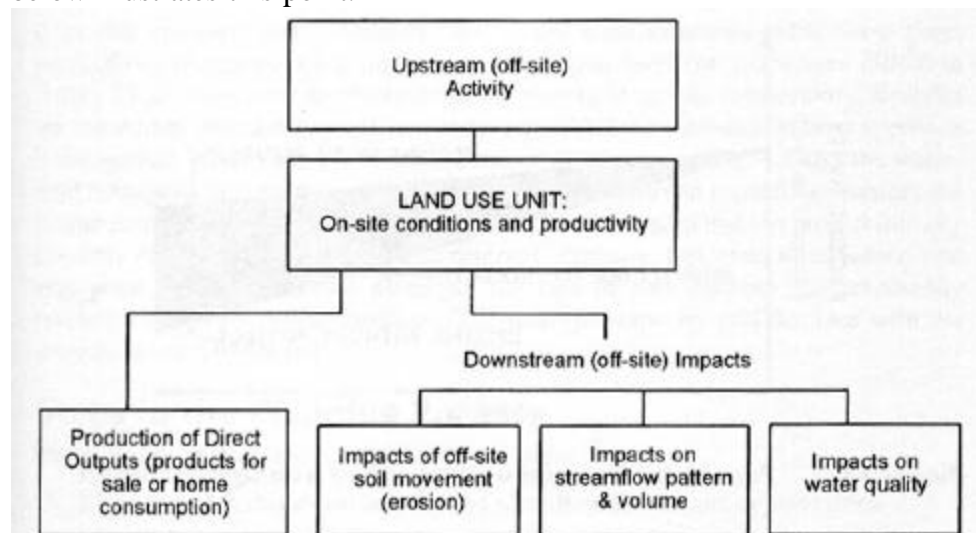
This section discusses information about current farm management and provides models/outlines for watershed management planning.

Site visit gleanings

Currently, the farm has no erosion control management. Crop farming is performed in a conventional way, using typical row-cropping techniques. Corn and soybeans are occasionally rotated and animal manure is applied to the fields for organic fertilization. Des Moines Area Community College (DMACC) students, who have recently begun a program working in conjunction with the farm, execute soil-sampling technology. The farm manager rotates cattle around three grazing fields.

Watershed management planning context and process

Since a watershed is only a small part of a much larger region and river basin, the framework of watershed management planning must consider both on-site and off-site impacts. The diagram below illustrates this point.



On-site and off-site impacts (from Brooks 1997)

The process of watershed management planning must follow certain guidelines in order to create an effective plan. Steps in the process include (but are not limited to) the following:

1. Identify farm mission and both short and long term objectives.
2. Monitor and evaluate past activity and identify problems and opportunities.
3. Inventory and analyze current water, plant, and animal resource information.
4. Determine priority water quality issues for the farm.
5. Identify practices (BMPs) to address the priority water quality issues.
6. Evaluate the effects of these practices on water quality issues and the farm (environmental, social, and economic impacts).

Management

This section provides a list of farm practice recommendations and gives several examples of BMPs to provide a template for BMP design.

Practices for improving water quality

Below is a list of a variety of practices that can be used to help mitigate the water quality problems of the farm. This list is only a small representation of methods that can help a farm attain its water quality goals. These practices are not applicable to every situation, and trade-offs must be considered when incorporating them into current farm practices.

- Precision farming techniques (Global Positioning Systems and Geographic Information Systems)
- Conservation tillage
- Constructed wetlands and buffers
- Altered nutrient application timing
- Use of nutrient management plans
- Improved nutrient application equipment
- Manure testing
- Altered drainage tile depth
- Altered row spacing (Narrow Row-High Population)
- Pasture/grazing management
- Cover crops

Examples of BMPs for Watershed Management

A few examples of best management practices that have been designed for conditions similar to those of the Dallas County Farm are described briefly below.

Objective: Reduce erosion along Raccoon River

Practice: Use of biotechnology including contour wattling and willow staking

Ability to implement: Medium

Effectiveness: High

Objective: Reduce nitrogen output to Raccoon River and increase nitrogen productivity on farm

Practice: Comprehensive soil and manure testing and constructed wetland

Ability to implement: Medium

Effectiveness: Medium

Objective: Buffer Raccoon River from southwest corner of property

Practice: Using riparian buffer model, use appropriate plantings and constructions

Ability to implement: Low

Effectiveness: High

These are only examples in that insufficient information has been collected for their compilation. Much more data would be necessary for the farm to actually consider and implement BMPs.

References

Brooks, K.N. et al. 1997. Hydrology and the management of watersheds (second edition). Ames, Iowa: Iowa State University Press. 502 p.

Committee to Review the New York Watershed Management Strategy. 2000. Watershed management for potable water supply: assessing the New York City strategy. Washington, D.C.: National Academy Press. 546 p.

Nutrient Management Task Force. 2000. Progress and challenges in nutrient management. Des Moines, Iowa.

Raccoon River Watershed Project. 2000. Accessed 4/20/01. <http://www.rrwp.org>