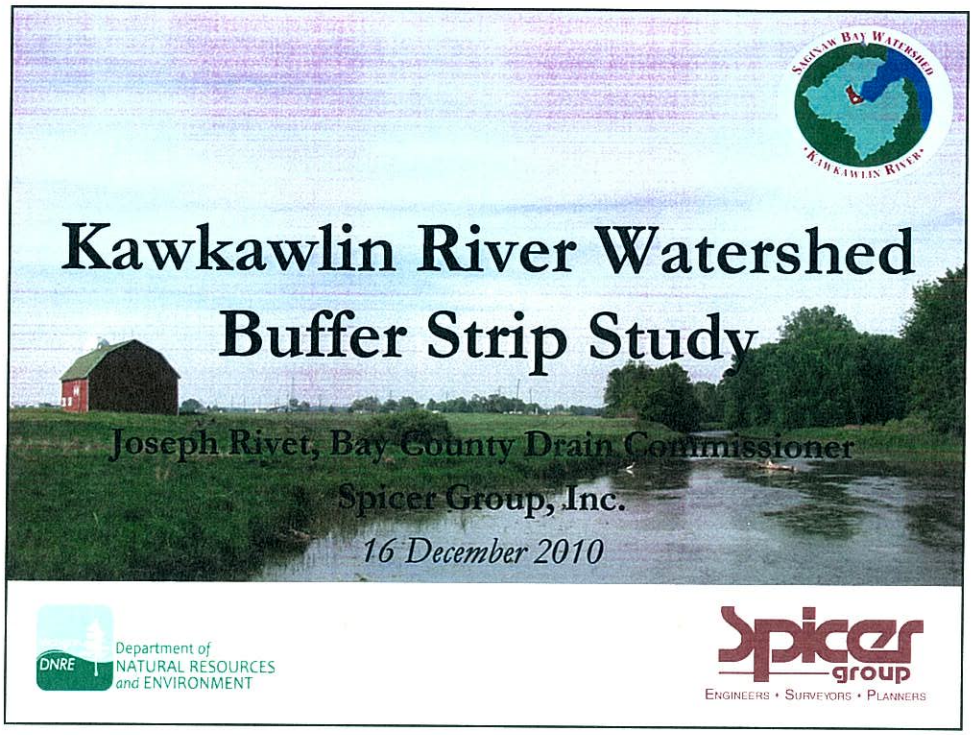
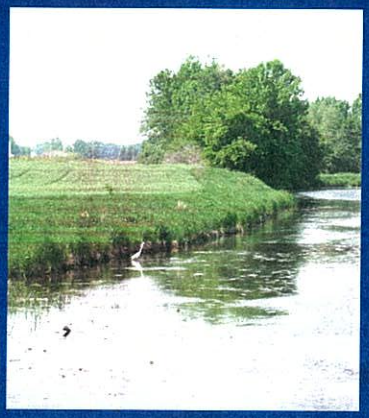


Scope and Outline

- Address Sedimentation Concerns
- Treat with Vegetative Filter Strips (VFS)
  - Research
  - Model Development
  - Implementation
- Quantify Impact of Sediment
  - Drain Cleanouts
  - Financial Costs

Vegetative Filter Strips

- Dense Vegetation Near Edge of Erodible Land
  - Agricultural Lands
  - Slows Runoff
  - Deposits on Shoreline
- Various Types of Strips
  - Plants
  - Width



Effectiveness of VFS

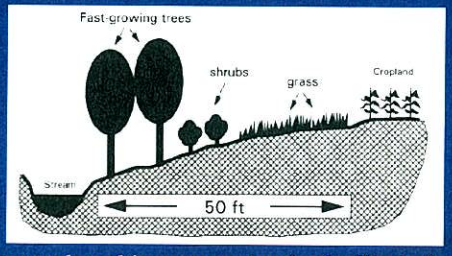
- Filter Effectiveness Depends on:
  - Soil Type
  - Slope
  - Contributing Area
  - Erodibility of Upland Areas
  - Type/Density of Vegetation
  - Local Climate

Suggested Buffer Width

- USDA CREP
  - 50-100 feet
- NRCS Conservation Practice Standard
  - 20-30 feet
- Iowa State University
  - 50 feet for slope < 5%
- Ohio DNR
  - 50 feet minimum, 65-100 feet suggested
- USDA 1997 Agroforestry Notes
  - 50 feet

Composition of VFS

- Ohio DNR & USDA 1997
  - 50 feet
    - Trees Near Stream
    - Shrubs Middle
    - Grasses Near Field



A general, multi-purpose, riparian buffer design for cropland. – *USDA Agroforestry Notes (1997)*

Modeling Buffer Strips

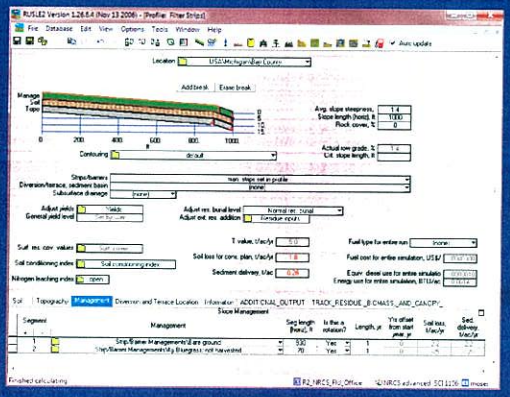
- USDA Methods to Quantify Soil Loss
  - Universal Soil Loss Equation (USLE)
  - Revised USLE (RUSLE)
    - Incorporated into Computer Program
- RUSLE 2
  - Version 2 of RUSLE Computer Program
  - Used in NRCS Conservation Practice Standard

RUSLE 2

- Location Specific
  - Climate Data, Soil Data, Agricultural Practices
- Site Layout
  - Soil Types
  - Land Use
  - Filter Widths
  - Slopes
- 100's of Crops
- Sheet Flow

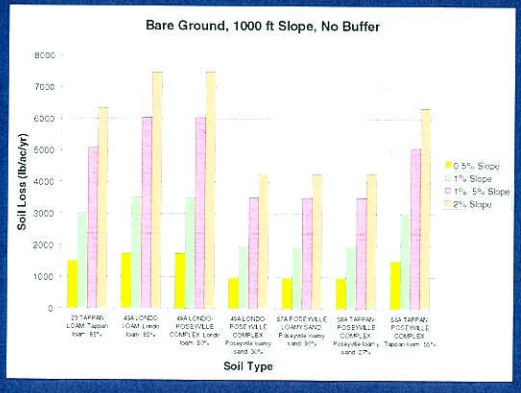
RUSLE 2 Continued…

- Calculates Soil Loss from Field
  - Compare to Soil Loss Entering Receiving Water
  - Determine VFS Effectiveness
- Over 600 Different Scenarios Modeled



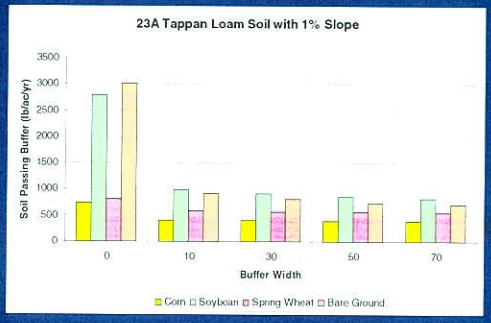
RUSLE 2 Results

- Set Baseline without VFS
- Varying Soil Types and Slopes
  - Based on Soil Map
    - 7 Common Soils
  - 3 Different Soils



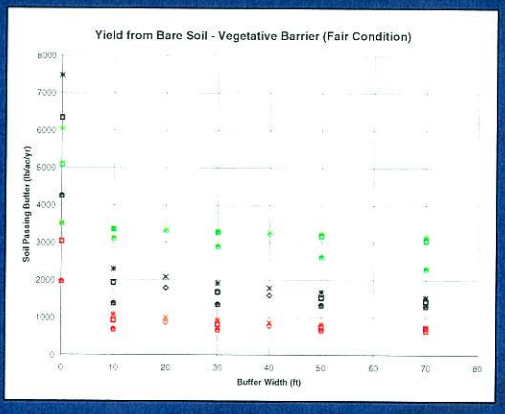
Upland Crops

- Switchgrass VFS
- Comparison of 4 Covers
  - 100's of Practices in RUSLE 2
  - Varies Significantly
- Applicability
  - Rotations
  - Need Standard



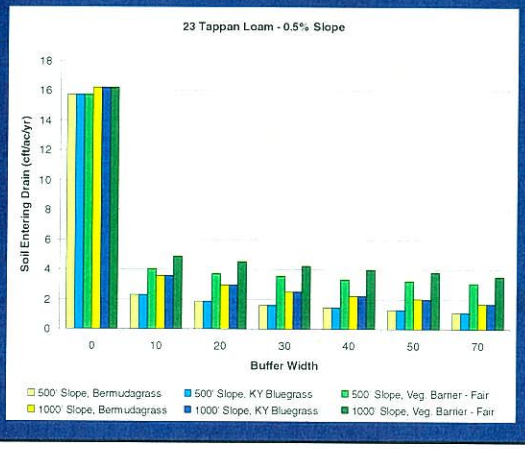
Effects of VFS

- Switchgrass Stands
- Varying Widths
- Varying Soils
  - Different Symbols
- Varying Slopes
  - 1%
  - 2%
  - 1% 900', 5% 100'
- Effectiveness



Sediment Trapped

- Use Bare Soil
  - Most Significant
- Varying VFS Types
- Small VFS Works
  - Limit VFS Life
- Somewhat Affected by Slope Length



Use of Findings

- Generalize Findings
  - Standardize Width of VFS
  - Estimate Reduction in Sediment
    - Acreage
    - Length of Drain
- Determine Rate of Accumulation in Drain
  - Time Between Drain Cleanouts
  - Cost Savings

Further Work

- Coordination with BCDC to Standardize
- Estimate Cost Savings
- Method of Applying for Point Sources
  - V-ditches
- Field Verification

Questions?

Department of NATURAL RESOURCES and ENVIRONMENT

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