

# Electronic Field Office Technical Guide (eFOTG)

This planning document includes the official NRCS guidelines, criteria, and standards for planning and applying conservation treatment measures. The objective of the document is for the purpose of:

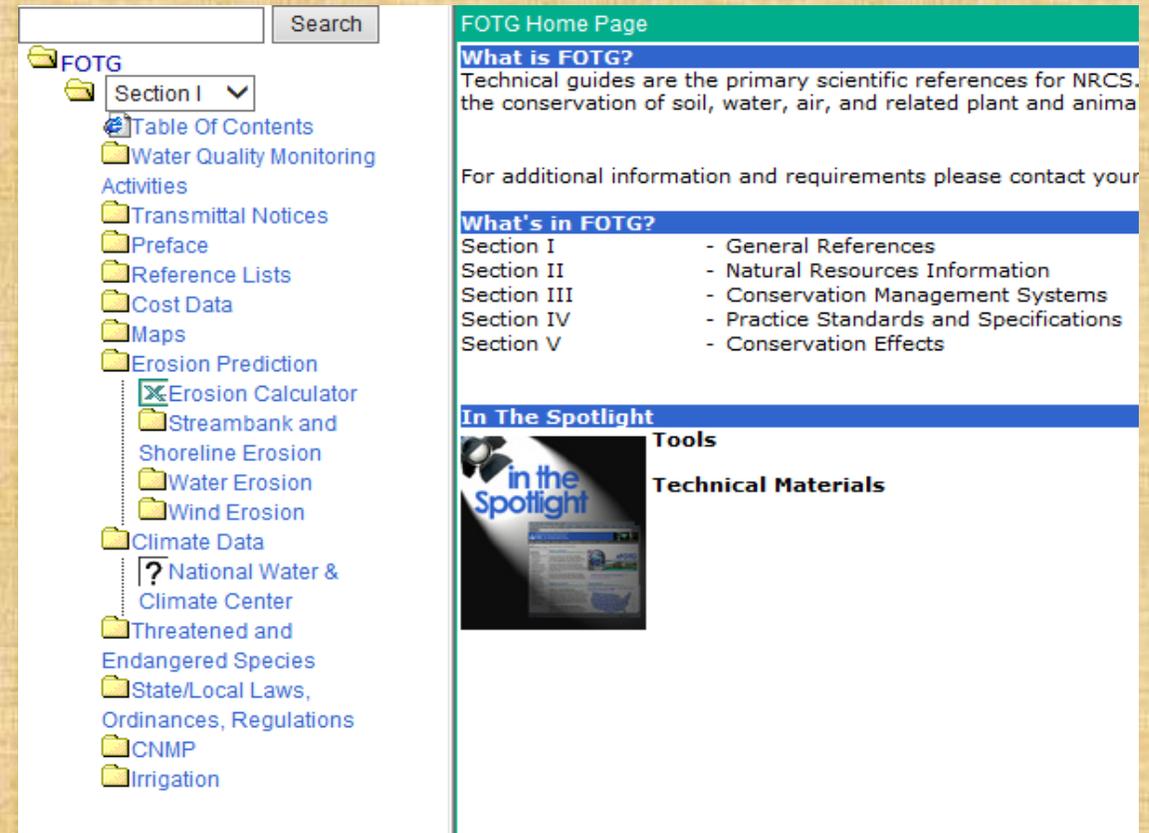
- 1) helping the planner identify resource problems, 2) evaluate the effects of conservation treatments, 3) compare alternatives, and
- 4) select the best options to meet client objectives while protecting natural resources.

This document is divided into 5 resource planning sections; 1) Section I - General References, Section II - Soils and Site Information, Section III – Conservation Management Systems, Section IV – Practice Standards and Specifications and Section V – Conservation Effects

# Electronic Field Office Technical Guide (eFOTG)

## Section I—General References

- State and County maps,
- Watershed information,
- Links to NRCS reference manuals and handbooks,
- Technical Assessment Tools
- Natural resource inventories

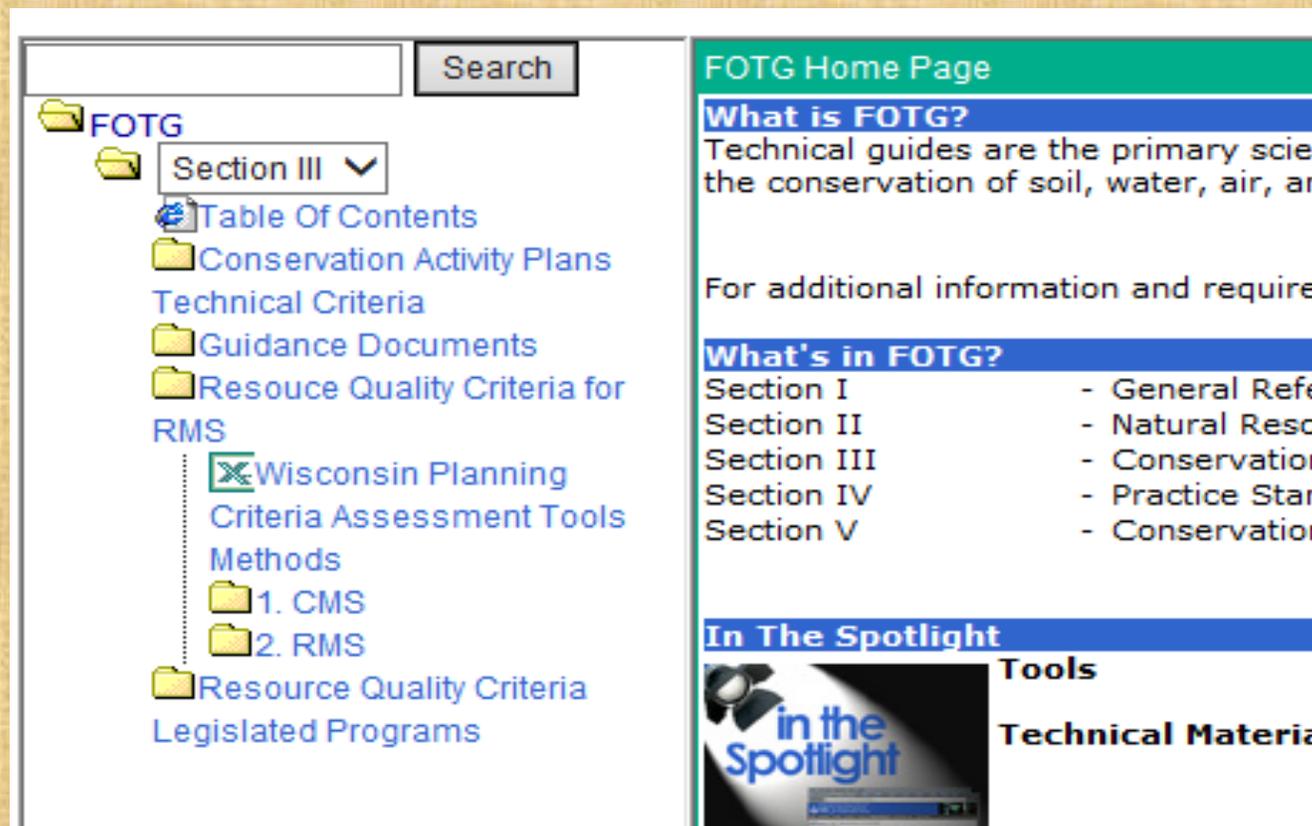


The screenshot displays the eFOTG website interface. On the left is a navigation menu with a search bar at the top. The menu items include: FOTG, Section I (selected), Table Of Contents, Water Quality Monitoring, Activities, Transmittal Notices, Preface, Reference Lists, Cost Data, Maps, Erosion Prediction, Erosion Calculator, Streambank and Shoreline Erosion, Water Erosion, Wind Erosion, Climate Data, National Water & Climate Center, Threatened and Endangered Species, State/Local Laws, Ordinances, Regulations, CNMP, and Irrigation. The main content area on the right has a green header 'FOTG Home Page'. Below it is a blue header 'What is FOTG?' followed by text: 'Technical guides are the primary scientific references for NRCS. the conservation of soil, water, air, and related plant and anima'. Below this is another blue header 'What's in FOTG?' with a list: Section I - General References, Section II - Natural Resources Information, Section III - Conservation Management Systems, Section IV - Practice Standards and Specifications, and Section V - Conservation Effects. At the bottom is a blue header 'In The Spotlight' with a sub-header 'Tools' and a section for 'Technical Materials'.

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## Section III—Conservation Management Systems

- Conservation Activity Plans
- Guidance Documents
- NRCS Planning Criteria



The screenshot displays the eFOTG website interface. On the left is a navigation menu with a search box at the top. The menu structure is as follows:

- FOTG
  - Section III (dropdown menu)
    - Table Of Contents
    - Conservation Activity Plans
    - Technical Criteria
    - Guidance Documents
    - Resource Quality Criteria for RMS
      - Wisconsin Planning
      - Criteria Assessment Tools
      - Methods
        - 1. CMS
        - 2. RMS
      - Resource Quality Criteria
      - Legislated Programs

On the right side of the page, there are three content panels:

- FOTG Home Page** (green header)
- What is FOTG?** (blue header) - Technical guides are the primary scientific resources for the conservation of soil, water, air, and...
- What's in FOTG?** (blue header) - A list of sections with corresponding topics:
  - Section I - General Reference
  - Section II - Natural Resources
  - Section III - Conservation
  - Section IV - Practice Standards
  - Section V - Conservation
- In The Spotlight** (blue header) - A section featuring a spotlight graphic and the text "in the Spotlight". Below it are the labels "Tools" and "Technical Material".

# Wisconsin Planning Criteria for Resource Protection

**Resource Concern**—An expected degradation of the soil, water, air, plant, or animal resource base to the extent that the sustainability or intended use of the resource is impaired.

**Planning Criteria**—A quantitative or qualitative statement of a treatment level required to achieve a minimum level of treatment for a given resource concern for a particular land area. It is established in accordance with local, State, Tribal, territorial, and Federal programs and regulations in consideration of ecological, economic, and social effects.

**Quality Criteria**—A descriptive statement of desired resource condition and management, representing a level of use that is sustainable over the long term.

## EXAMPLE PLANNING SCENARIO

- 1) Client is requesting technical assistance for installation of a Field Windbreak. The client is experiencing crop yield reductions as a result sand blasting of crops after emerging early in the growing season. Initial resource conditions (preplanning).
- 2) Inventory of natural resources and management activities, perform resource assessment; predominant soil is a Plainfield sandy loam, field is next to perennial stream. Farming operation: Corn silage and Soybean rotation with spring tillage.
- 3) Benchmark condition determined based on the inventory and management activities.
- 4) Resource concerns identified: Soil—Wind Erosion, Degraded plant condition—Undesirable plant productivity, Water Quality Degradation—Excessive sediment in surface waters.
- 5) Refer to the Quality Criteria to verify the resource concern.

## RESOURCE CONCERNS

Resource Concern	Description of Concern	Land Use	Screening Level	Basic Assessment Level	Assessment Methods or Tools
<p>A resource concern (RC) is an expected degradation of the soil, water, air, plant, or animal resource base to an extent that the sustainability or intended use of the resource is impaired.</p> <p>Because NRCS quantifies or describes resource concerns as part of a comprehensive conservation planning process that includes client objectives, human and energy resources are considered components of the resource base.</p> <p>The "Cause" is the specific reason or threat to the resource that results in the resource concern.</p>			<p>Screening level criteria are defined, when appropriate, to identify sites with conditions that have little or no probability of needing additional treatment to address the specific resource concern. If the site meets the screening level criteria, then no other assessment is needed to document that planning criteria are met on this site.</p>	<p>Basic assessment level criteria are used when a site does not meet screening level criteria, or when no screening level criteria are defined.</p> <p>Assessment levels on fields or planning areas/units using the appropriate assessment tools that do not meet the basic assessment level criteria shall be identified as a resource concern.</p> <p>Assessment levels are also used when formulating and evaluating alternatives. Assessment levels must be met for the alternative to solve the resource concern.</p> <p>CPA-52 Planning criteria is met when assessment levels are attained by the planned alternatives.</p>	<p>Description of the technology or process for determining if assessment criteria are met.</p>

Resource Concern	Description of Concern	Land Use	Screening Level	Basic Assessment Level	Assessment Methods or Tools
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Different receiving waters (303d listed, ORW, and ERW) or planning units may require a higher assessment level to achieve the desired resource requirements.

<b>1 - SOIL EROSION - Sheet, rill, &amp; wind erosion</b>	Detachment and transportation of soil particles caused by rainfall runoff/splash, irrigation runoff or wind that degrades soil quality	Crop	Permanent ground cover or residue > 90% and slope < 10%	Water (sheet and rill) erosion rate ≤ T	RUSLE2
				Wind erosion rate ≤ T	WEPS
		Developed Land, Farmsteads, Associated AG Land, Designated Protected Area, Other Rural Land, Pasture	Permanent ground cover or residue > 90% and slope < 10%	Water (sheet and rill) erosion rate ≤ T	RUSLE2
				Wind erosion rate ≤ T	WEPS
		Forest	Soil surface organic residue cover (leaf litter, herbaceous plants) > 80%	Site is stable and without visible signs of erosion	Client input & Planner I&E

## PLANT

Resource Concern	Description of Concern	Land Use	Screening Level	Basic Assessment Level	Assessment Methods or Tools
Different planning units may require a higher assessment level to achieve the desired resource requirements.					
<b>18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health</b>	Plant productivity, vigor and/or quality negatively impacts other resources or does not meet <b>yield</b> potential due to improper fertility, management or plants not adapted to site. This includes addressing pollinators and beneficial insects	Crop, Developed Land, Associated Ag Land, Designated Protected Area, Other Rural Land, Farmsteads	Plant production and health is not a client concern	Plants are adapted to the site, meet production goals and do not negatively impact other resources <b>AND</b> Plant damage from wind erosion is below Crop Damage Tolerance levels	Client input & Planner I&E UW nutrient deficiency visual references Crop Tolerance Table
				UW recommended major and minor nutrient levels at optimum recommendations	WEPS National Agronomy Manual
				Crop yield is 75% or more of the high management yield potential for the planning soil series based on the UW <b>recommendation</b> or Section II of the <b>*eFOTG crop yields</b>	UW pre-side-dress N soil test UW Soil test UW plant tissue analysis <b>*eFOTG - National Commodity Crop Productivity Index (NCCPI)</b>

# WATER

Resource Concern	Description of Concern	Land Use	Screening Level	Basic Assessment Level	Assessment Methods or Tools
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**Different receiving waters (303d listed, ORW, and ERW) or planning units may require a higher assessment level to achieve the desired resource requirements.**

<p><b>16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters</b></p>	<p>Off-site transport of sediment from sheet, rill, gully, and wind erosion into surface water that threatens to degrade surface water quality and limit use for intended purposes.</p>	<p>Crop, Developed Land, Associated Ag Land, Designated Protected Area, Other Rural Land, Farmsteads, Pasture, Water</p>	<p>Permanent ground cover &gt; 90% and slope &lt; 10%  <b>AND</b>            Classic gullies are not present  <b>AND</b>            Streams or shoreline are not on or adjacent to site</p>	<p>Upslope treatment and buffer practices address concentrated flows to water bodies  <b>AND</b>            Livestock and vehicle water crossings are stable  <b>AND</b>            SVAP2 - bank condition (#3) ≥ 5  <b>AND</b>            Water (sheet and rill) erosion rate ≤ T  <b>AND</b>            Wind erosion rate ≤ T, <b>AND</b></p>	<p>Client input &amp; Planner I&amp;E            SVAP2            RUSLE2  <b>WEPS</b>            WI—NRCS Surface Water Feature Risk Assessment Criteria for Pastures</p>
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## EXAMPLE PLANNING SCENARIO

Documentation of benchmark plan, benchmark condition and Resource Problem:

<b>Run Date:</b>	Tuesday, January 19, 2016, 04:57 PM		
<b>Client Name:</b>	Jorge Delgado		
<b>Farm No:</b>	12309	<b>Tract No:</b> 85	<b>Field No:</b> 1
<b>Run Location:</b>	C:\Users\terry.kelly\Documents\My WEPS Files\Cs; Sp fc, Sb; Sp fc_Benchmark system		
<b>Management:</b>	Cs;Sp fc,Sb;Sp fc.man		
<b>Soil:</b>	Plainfield_PfA_100_LS.ifc		

<b>Erosion</b>		<b>Gross Loss</b>	<b>Net Soil Loss From Field ( t/ac )</b>		
<b>Period</b>	<b>Crop/Residue</b>	t/ac	<b>Total Creep/Salt.</b>	<b>Suspen.</b>	<b>PM10</b>
Rot. year: 1	Corn, silage	10.5	10.5	3.3	0.29
Rot. year: 2	Soybean, group II, III and IV	14.4	14.4	4.7	0.39
Ave. Annual		12.5	12.5	4.0	0.34

Run: 1Cs;Sp fc, Sb;Sp fc			Erosion
Client: Jorge Delgado			Average Total Gross Soil Loss
Fm: 12309 Tr: 85 Fld: 1			
Management: Cs;Sp fc,Sb;Sp fc			
Soil: Plainfield_PfA_100_LS			
<b>Date</b>	<b>Operation</b>	<b>Crop</b>	t/ac
			<input checked="" type="checkbox"/>
May 16-16, 02	Drill or airseeder, double disk	Soybean, group II, ↑	0.0
May 17-31, 02	Sprayer, pre-emergence	weed residue; 0-3 ↑	3.7

Corn and Soybeans are very sensitive to soil erosion rates of 2.0 tons or more when plants are less than 4 weeks after crop emergence.

## Resource treatment and formulating alternatives:

**Run Date:** Thursday, January 21, 2016, 08:20 PM  
**Client Name:** Jorge Delgado  
**Farm No:** 12309      **Tract No:** 85      **Field No:** 1  
**Run Location:** C:\Users\terry.kelly\Documents\My WEPS Files\Cs; Sp fc, Sb; Sp fc\_Benchmark  
**Management:** Cs;WWcc; NT,Sp fc,Sb;WCRcc;NT,Sp fc.man  
**Soil:** Plainfield\_PfA\_100\_LS.ifc

### Erosion

Period	Crop/Residue	Gross Loss t/ac	Net Soil Loss From Field ( t/ac )			
			Total	Creep/Salt.	Suspen.	PM10
Rot. year: 1	Corn, silage	3.4	3.4	1.1	2.2	0.09
Rot. year: 2	Soybean, group II, III and IV	0.1	0.1	Trace	0.1	Trace
Ave. Annual		1.7	1.7	0.6	1.2	0.05

### Crop Interval Erosion

Date Range	Days	Crop	Gross Loss t/ac	Net Soil Loss From Field ( t/ac )			
				Total	Creep/Salt.	Suspen.	PM10
Oct 11, 02 - Sep 15, 01	341	Corn, silage	0.3	0.3	0.2	0.2	0.01
Sep 16, 01 - Oct 10, 02	390	Soybean, group II, III and IV	2.6	2.6	0.8	1.8	0.07
May 16-16, 02		Drill or airseeder, double disk		Soybean, group II, f			0.0
May 17-31, 02		Sprayer, pre-emergence		weed residue; 0-3 f			0.0
Jun 1-14, 02							0.0

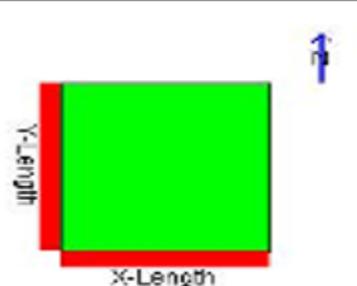
Corn Silage; WW cover crop; NT, Sp fc, Soybean; WCR cover crop; NT, Sp fc. The treatment measure using the winter cover crop after harvesting of each crop resulted in a soil loss reduction of 10.8 tons/acre and elimination of sand blasting of the young crop.

# Run Summary

3Cs;WWcc;NT, Sp fc,Sb;WCRcc;NT, Sp fc

<b>Run Date:</b>	Thursday, January 21, 2016, 08:40 PM		
<b>Client Name:</b>	Jorge Delgado		
<b>Farm No:</b>	12309	<b>Tract No:</b> 85	<b>Field No:</b> 1
<b>Run Location:</b>	C:\Users\terry.kelly\Documents\My WEPS Files\Cs; Sp fc, Sb; Sp fc_Benchmark		
<b>Management:</b>	Cs;WWcc; NT,Sp fc,Sb;WCRcc;Sp fc, NT_s-w leg field windbreak.man		
<b>Soil:</b>	Plainfield_PFA_100_LS.ifc		

## Location Site Information

	<b>X-Length:</b>	1319.9 ft	<b>Mode:</b>	NRCS
	<b>Y-Length:</b>	1319.9 ft	<b>Soil Loss Tolerance (T):</b>	5.0 t/ac/yr
	<b>Area:</b>	40.0 ac	<b>Site:</b>	UNITED STATES WISCONSIN PORTAGE
	<b>Elevation:</b>	1108.9 ft	<b>Location:</b>	44.47603° N, 89.50148° W
	<b>Orientation:</b>	0.0 °	<b>Cigen:</b>	STEVENS POINT
			<b>Windgen:</b>	Interpolated (44.47603° N, 89.50148° W)

## Erosion

Period	Crop/Residue	Gross Loss t/ac	Net Soil Loss From Field ( t/ac )			
			Total Creep/Salt.	Suspen.	PM10	
Rot. year: 1	Corn, silage	2.0	1.9	0.8	1.1	0.05
Rot. year: 2	Soybean, group II, III and IV	Trace	Trace	Trace	Trace	Trace
Ave. Annual		1.0	1.0	0.4	0.6	0.02

## Crop Interval Erosion

Date Range	Days	Crop	Gross Loss t/ac	Net Soil Loss From Field ( t/ac )		
				Total Creep/Salt.	Suspen.	PM10
Oct 11, 02 - Sep 15, 01	341	Corn, silage	0.1	0.1	0.1	0.00
Sep 16, 01 - Oct 10, 02	390	Soybean, group II, III	1.6	1.5	0.6	0.04

Corn Silage; WW cover crop; NT, Sp fc, Soybean; WCR cover crop; NT, Sp fc. The treatment measure using the winter cover crop after harvesting of each crop and implementation of a 3 row conifer planting modeled from 10 yrs. to 20 yrs., later resulted in a soil loss reduction of 11.5 tons/acre and elimination of sand blasting of the young crop.

# Conservation Practice Physical Effects (CPPE)

PracticeName	PracticeCode	Soil Erosion -Sheet, Rill, & Wind Erosion  - - Wind Erosion	Water Quality Degradation -Excessive Sediment in Surface Water  - - Excessive Sediment in Surface Water	Degraded Plant Condition  -Undesirable Plant Productivity and Health  - - Undesirable Plant Productivity and Health
Conservation Crop Rotation	328	4	4	4
Cover Crop	340	4	2	2
Residue and Tillage Management, Mulch Till	345	4	3	2
Tree/Shrub Establishment	612	5	3	5

# Resource Planning Tools

Aerial photo analysis  
Approved nutrient management planning tools  
ASABE S436.1 Modified by UW-BSE June 2004  
Assessment of fuel and petroleum product storage and handling facilities  
Bank Erosion Potential Index (BEPI)  
Barnyard Evaluation Rating Tool (BERT) & Flowchart  
Bulk density test  
Client input / Planner (I&E)  
Crop scouting (pest treatment thresholds)  
Crop Tolerance Table  
Current Soil test  
Dial penetrometer  
Ecological site Assessment  
Ecological Site Descriptions  
EPA/DNR Monitoring Data  
Ephemeral and Gully Erosion Worksheet  
Erosion Intensity Worksheet (EI)  
Feedstock Storage Area Evaluation Rating  
Feedstock Storage Bag Evaluation Rating  
Field measurements – Direct Volume Method  $[Density * (L \times Height \times recession\ rate)] / 2000$   
Field measurements – Direct Volume Method  $[Density * (L \times W \times D)] / 2000 / \text{years to form}$   
Field measurements – Direct Volume Method  $[Density * (L \times W \times D)] * \text{time per year} / 2000$   
FIRI – Farm Irrigation Rating Index  
Forest inventory plots and transects forms  
Generalized Wildlife Habitat Suitability Index (WHSI) finalized by States, and detailed models by selected species and habitat type  
GRAS - Grassland Resource Analysis System  
GRAS - Grassland Resource Analysis System - Tool for water distribution  
Grassed Waterway Design Spreadsheet  
IPM Worksheet  
Inventory of volume and depth

Inventory plots and transect analysis  
Manure Stack Evaluation Flowchart  
Manure Transfer Systems Evaluation flowchart  
Milk House Waste Evaluation Rating  
National Agronomy Manual  
**\*Nitrogen Risk Index**  
NR-812  
Nutrient budget  
Nutritional Balance Analyzer—(NUTBAL)  
Pesticide Storage and Loading Worksheet  
PCS-Pasture Condition Score  
Phosphorus Index  
Phosphorus Risk Index  
Pipeline water loss worksheet  
Pumping Plant Efficiency spreadsheet  
RUSLE2  
Soil lab test results of organic matter content  
Soil probes and witness poles  
Species-specific wildlife habitat assessment tools  
State or local noxious weed list  
Storm Wave Height Calculator  
SVAP2  
UW nutrient deficiency visual references  
UW plant tissue analysis  
UW pre-side-dress N soil test  
UW Soil test  
Vadose zone and groundwater petroleum, heavy metals or other potential pollutants sampling (total dissolved solids, or electrical conductivity) and assay  
Waste Storage Facility Evaluation flowchart  
Water Quality Index for Agricultural Runoff—(WQIag)  
WEPS  
WI DNR impaired water search