Red Cedar River Basin Planning & Implementation to Reduce Runoff Pollution

Karl Hakanson, Red Cedar River Project Coordinator



BARRON CO Rice Lake Barron Chetek Cumberland Almena Cameron Dallas Haugen New Auburn Prairie Farm Turtle Lake

#### DUNN CO Menomonie Ridgeland Downing Boyceville Wheeler Colfax Knapp

#### CHIPPEWA CO

New Auburn

#### POLK CO

Clayton

#### RUSK CO

<u>ST CROIX CO</u> Glenwood City Wilson

#### SAWYER CO

#### WASHBURN CO

Birchwood Barronett

1,209,466 acres / 1,889 mi<sup>2</sup>

# What's the Point?

### -- Clean Water Act -- Total Maximum Daily Load (TMDL)

# -- Swimmin' n' Fishin'!



#### PHOSPHORUS LOADS



# Lake Menomin/Tainter TMDL Goals

 $\approx$ 500,000+ lbs. annual phosphorus load

### ✓ 65% REDUCTION IN PHOSPHORUS LOAD

- ✓ 61% less phosphorus in Tainter Lake
- ✓ 54% less phosphorus in Lake Menomin
- ✓ Reduce algae bloom frequency/severity
- Increased recreational opportunities

*"Lake Tainter ... is known for the algae that bloom in the summer months."* 



| Tainter Lake  | Baseline (1990)                      | TMDL Goals                          |
|---|--------------------------------------|-------------------------------------|
| Total phosphorus (mg/L)   | 150                                  | 59                                  |
| Chlorophyll-a (mg/L)  | 87                                   | 25                                  |
| Secchi depth (m)  | 0.8                                  | 1.6                                 |
| Percent time >30mg/L chloro-a   | 92%                                  | 28%                                 |
|   |                                      |                                     |
| Lake Menomin  | Baseline (1990)                      | TMDL Goals                          |
| Lake Menomin<br>Total phosphorus (mg/L)                                 | <b>Baseline</b> (1990)<br><b>108</b> | TMDL Goals<br>57                    |
| Lake MenominTotal phosphorus (mg/L)Chlorophyll-a (mg/L)                 | <b>Baseline</b> (1990)<br>108<br>40  | TMDL Goals5725                      |
| Lake MenominTotal phosphorus (mg/L)Chlorophyll-a (mg/L)Secchi depth (m) | Baseline (1990)<br>108<br>40<br>1.3  | TMDL Goals      57      25      2.0 |

Goal: 1/2 to 2/3+ fewer algae blooms during summer

#### Runoff Pollution in one Lesson

- Most water pollution comes from the land
- Rain / melting snow causes runoff
- Runoff carries pollutants to surface waters
- Runoff pollution is zero most days
- Pollution comes from ordinary land uses
- A little runoff from many sources adds up
- No single source of runoff is significant
- A minority of the land area produces a majority of the runoff pollution

### It's Normal --aka invisible



# Sources



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# Sources



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<u>Runoff 101:</u> Go outside during a heavy rain or snow melt.

## No runoff most of the time...?

| Punoff     | Average of six edge-of-crop field<br>runoff monitoring sites                        |   |  |
|------------|---|---|--|
| Pollutant  | ant<br>Percent of total annual<br>runoff losses from single<br>highest runoff event | 1st, 2nd & 3rd<br>highest runoff<br>events combined |  |
| Phosphorus | 64%   | 83%   |  |
| Sediment   | 77%   | 91%   |  |

UW-Extension Discovery Farms, June 2011. The Importance of 'That One Big Storm'

www.uwdiscoveryfarms.org/ OurResearch/ USGSRealTimeData.aspx



(Volume X Concentration)

# Solving the Problem

The solution is easy: Infiltration is the opposite of runoff

The solutions are complex: ecosystems + sociology

The problem is the solution: We are the problem/solution

## Implementation

Organizing principles

We're all in this together: Everyone can help prevent runoff pollution Fair Share: Everyone can take responsibility for the water running off their property -- includes public property New Normal: Create new "standard

operating procedures", "cultural norms" that are self sustaining

-- i.e., human behavior; example: recycling

## Implementation

Bring people together to work together

- Create a stakeholder-led process
  with a diverse team of participants
- Develop a plan to bring about significant, self-sustaining water quality improvements in the RCRW.

"Stakeholder" = citizens; we all have a stake "Bring about" = action "Self-sustaining" = new normal

# Groups/Organizations/People

#### Agriculture

#### Urban

#### **Rivers/Lakes**

- -- Farmer's Union
- -- Farm Bureau
- -- Graziers Networks
- -- Western WI Energy
- -- Supply Cooperatives
- -- Crop Consultants
- -- Area Vo-Tech Colleges
- -- Custom Operators
- -- Individual Farmers
- -- UW-Extension
- -- Land Conservation Depts.
- -- WI DATCP
- -- NRCS

- -- City/Village officials, employees
- -- Environmental Engineers
- -- Master Gardeners
- -- Sustainable Dunn
- -- UW-Stout / Barron
- -- K-12 Teachers/Students
- -- Planners/Developers
- -- Landscaping Contractors
- -- Businesses
- -- Residents
- -- Nonprofit organizations

- -- Lake Assn./Districts
- -- Hunting/Angler Organizations
- -- Stream/Lake Monitoring Coordinators, Volunteers
- -- Environmental/Wildlife Organizations
- -- Kayaking/Canoeing Enthusiasts
- -- WI DNR
- -- UW-Extension Lakes
- -- Land trusts

#### ...pretty much all of us!

# It can be done! It is being done!





- Experience is the best teacher
- There are many people in the RCR watershed and across Wisconsin who are doing what needs to be done, right now
- We can learn from and build on these successes
- The solutions are out there

### Stakeholder led process...? **Farmer Networks**



BUILDING CONNECTIONS









Using member's farms as the classroom, we brought a cooperative spirit to the task of learning, where farmers and specialists worked together to solve problems and explore issues in depth.



## Current Watershed Projects

-- expand on local success

#### Tainter Lake Nutrient & Sediment Reduction Project Town of Grant, Dunn County

#### **Turtle Lakes Protection Project** Turtle Lake, Barron County

## Three C's of Sustainability

### Commitment

Community



### **Continual Improvement**

...sustainability is a process, not a set of prescribed practices.

### **Practices, Practices, Practices...**

**Detention Pounds, Swales River / Stream / Lake Buffers No-Till / Strip Till Crop Production Barnyard / Feedlot Runoff Controls** Managed Grazing Livestock Systems **Cover Crops, Waterways, Crop Residue Construction Site / Logging Erosion Control** Streambank Stabilization / Wetland Restoration **Rain Gardens, Porous Pavement, Street Sanitation** Manure Storage / Whole-Farm Nutrient Management Milkhouse Waste Treatment / Replace Critical Septic Systems

### **Optional Approaches**

The Blame Game -- it's not *my* fault Insert Head in Sand -- what, me worry? Throw Hands Up in the Air -- it's hopeless



### **Thank You!**



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http://basineducation.uwex.edu/lowerchip/redcedar