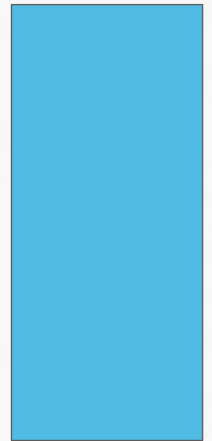




Innovative Phosphorus Compliance Options

PROGRAMMATIC HIGHLIGHTS - 2017



*Amanda Minks
February 23, 2017*

The AM/WQT Team

Statewide

SC/SE

NE

WC

NO

MKE
River

Amanda
Minks

Kevin
Kirsch

Andrew
Craig

Amy
Garbe

Keith
Marquardt

Dan
Helsel/
Amanda
Minks

Lonn
Franson

Mark
Riedel

Training Materials

- AM/WQT, MDV, & TP Internet pages
- Webinars
- Guidance Documents
- Forms
- Factsheets

[Subscribe to phosphorus rules updates.](#)

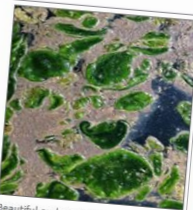
Wisconsin's phosphorus rule

→ [Statewide phosphorus multi-discharger variance](#)

Overview | **Implementation** | **More information**

Overview

The problem: Phosphorus has long been recognized as the controlling factor in plant and algae growth in Wisconsin lakes and streams. Small increases in phosphorus can fuel substantial increases in aquatic plant and algae growth, which in turn can reduce recreational use, property values, and public health. See [Reducing Phosphorus to Clean Up Lakes and Rivers](#) for more information about phosphorus as a pollutant.



Beautiful early spring brings early algal bloom as well to Lake Wingra. Photo by Peter Pataou.

Sources of excess phosphorus: Phosphorus entering our lakes and streams comes from "point sources" - piped wastes such as municipal and industrial wastewater treatment plants that release liquid effluent to lakes and rivers or spread sludge on fields; and from natural sources, including past phosphorus loads that build up in lake bottom sediments.

Phosphorus also comes from "nonpoint" or "runoff" pollution. Such pollution occurs when heavy rains and melting snow wash over farm fields and feedlots and carry fertilizer, manure and soil into lakes and streams, or carry phosphorus-containing contaminants from urban streets and parking lots.

Protecting human health and welfare: To protect human health and welfare, revisions to Wisconsin's Phosphorus Water Quality Standards for surface waters were adopted on December 1, 2010. These revisions:

- Created water quality standards for phosphorus in surface waters. These standards set maximum thresholds for phosphorus in Wisconsin's surface waters. See [Chapter NR 102](#) (PDF).
- Set procedures to implement these phosphorus standards in WQS permits issued to point

Surface waters

Atlas data, webinars, reports

About Wisconsin's waters.

Standards

Goals for water resources.

Monitoring

Monitoring water quality.

Assessments & reporting

Evaluating condition.

Planning

Planning for water quality.

Management

Managing water resources.

Water management

- Adaptive management
- Water quality trading
- Phosphorus rules
- Use designations
- Antidegradation
- ORW/ERW waters
- Triennial standards review
- Water quality based effluent limitations
- SSA planning

Water resources

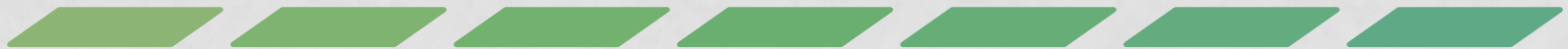
- Explore WI waters

Presentation Overview

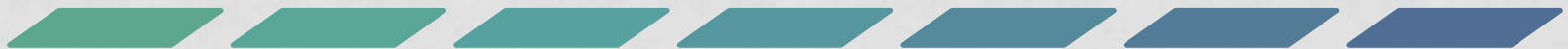
Overview of available options



Current projects



Key components of trading and adaptive management



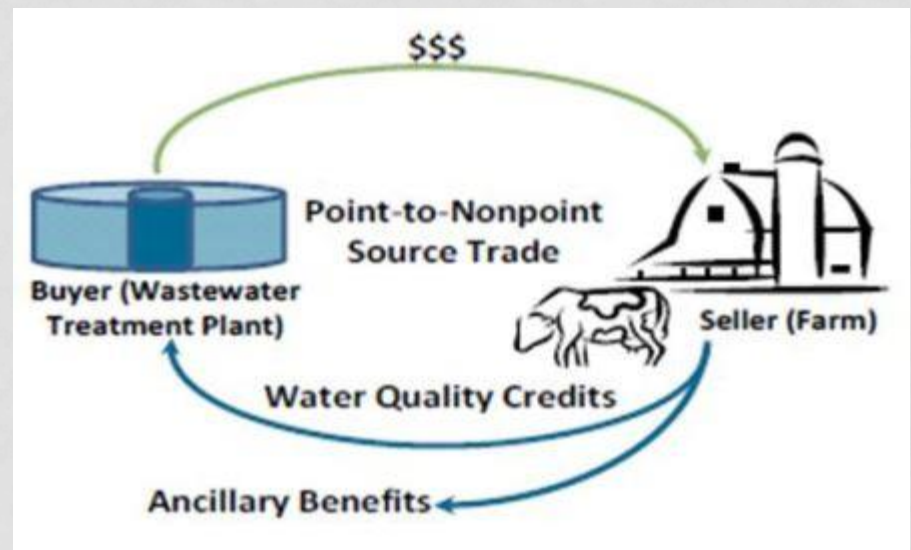
Available Programs

- Technology options
- Water quality trading
- Adaptive management
- Multi-discharger variance
- Individual variance



Trading at a Glance

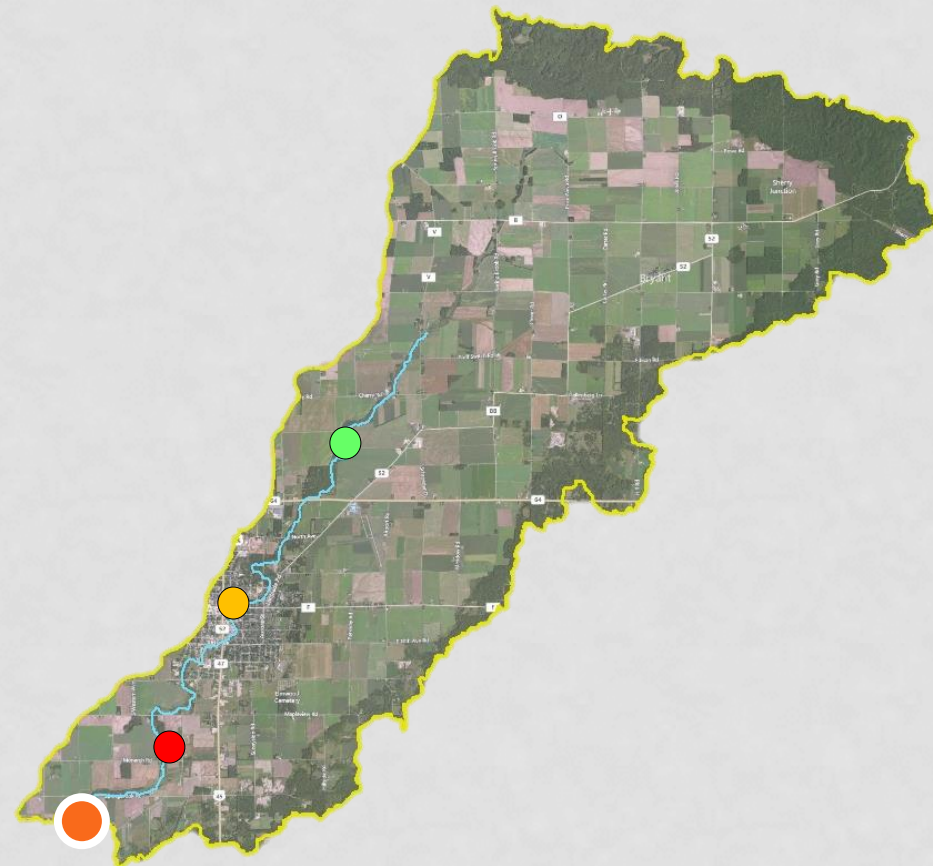
- End of pipe pollutant offset
- Mathematical
 - Effluent data or model
- Trade ratio required
- Must occur upstream or within same HUC-12



<http://dnr.wi.gov/>, keyword "Water Quality Trading"

Adaptive Management at a Glance

- 3 permit term option to improve water quality
- Allows point sources to work with other sources of phosphorus in the watershed
- Goal: To reduce overall phosphorus loads so that **water quality criteria** can be attained
- Must be in a NPS dominated watershed



Facility A

<http://dnr.wi.gov/>, keyword "Adaptive Management"

MDV at a Glance

- Temporary
- Only available to eligible point source dischargers
- Allows point sources to delay costly upgrades, but requires:
 1. Step-wise reductions in effluent TP concentrations
 2. Watershed improvements through the county payment option or through implementing a project directly
- Reductions can occur anywhere with a HUC-8 watershed to improve overall water quality in the state

<http://dnr.wi.gov/>, keyword "Statewide Variance"

Comparison of the MDV to AM/WQT

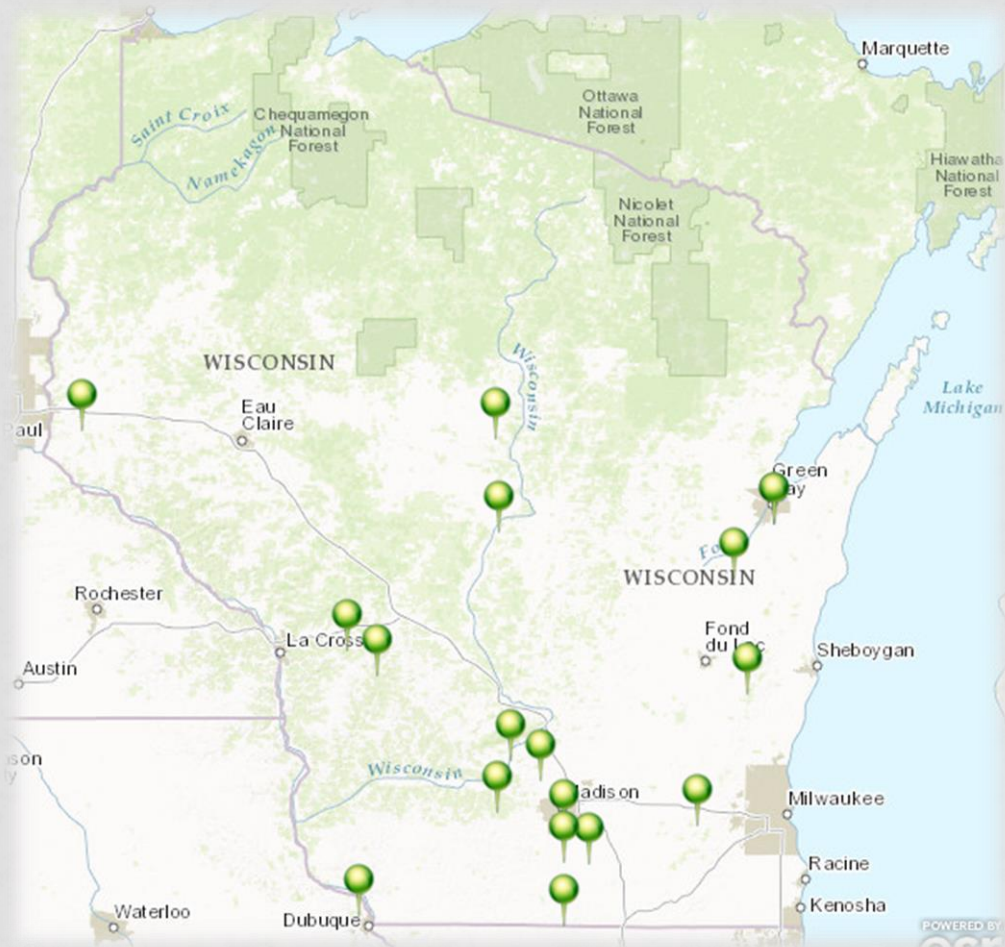
Similarities

- Target phosphorus reductions at a lower cost
- Point and nonpoint sources work together to achieve phosphorus reductions
- Requires work within the watershed

Differences

- Financial investments through variances are investing in time, not infrastructure
- Temporary vs. permanent
- Geographic scopes where reductions can occur are different

AM/WQT Project Distribution



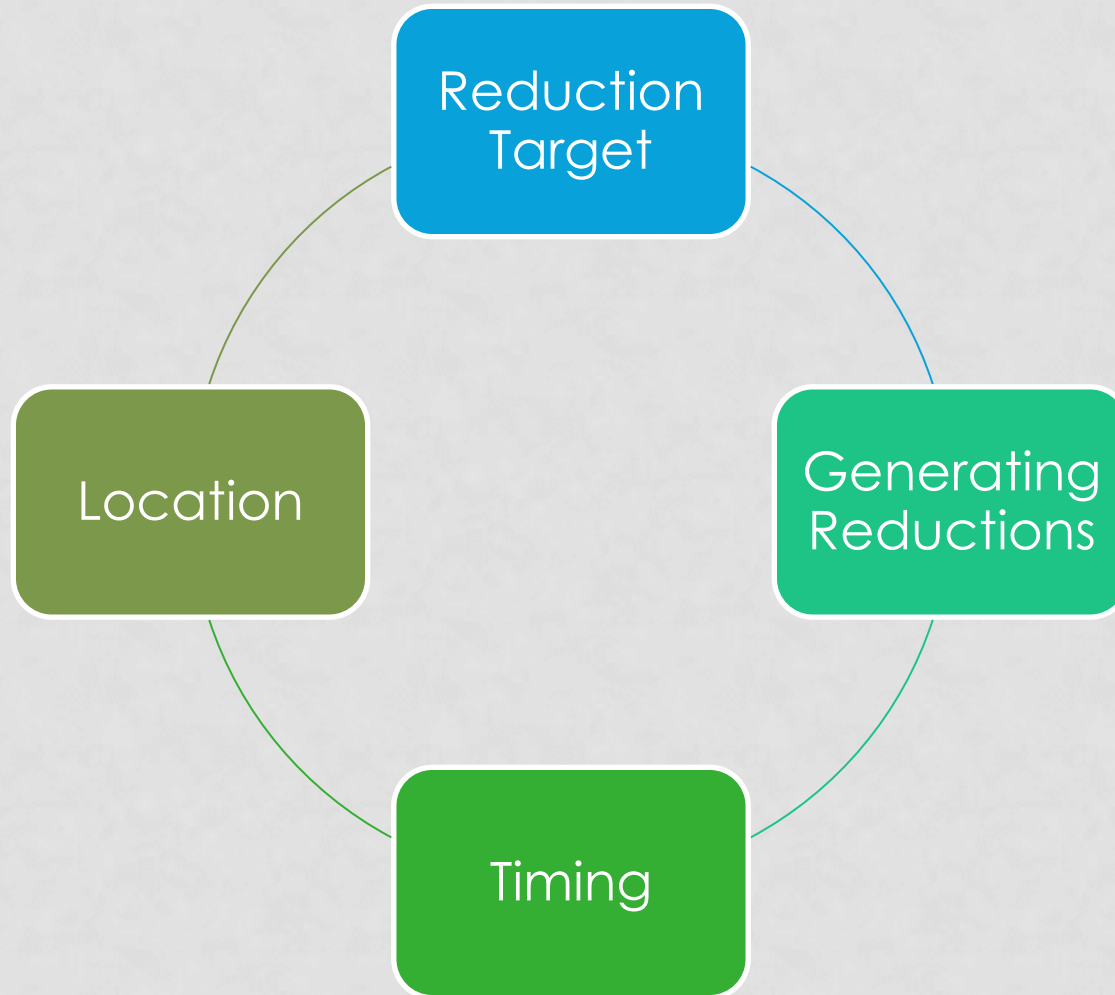
Adaptive Management

- ✓ Lodi
- ✓ Oconomowoc
- ✓ MMSD+

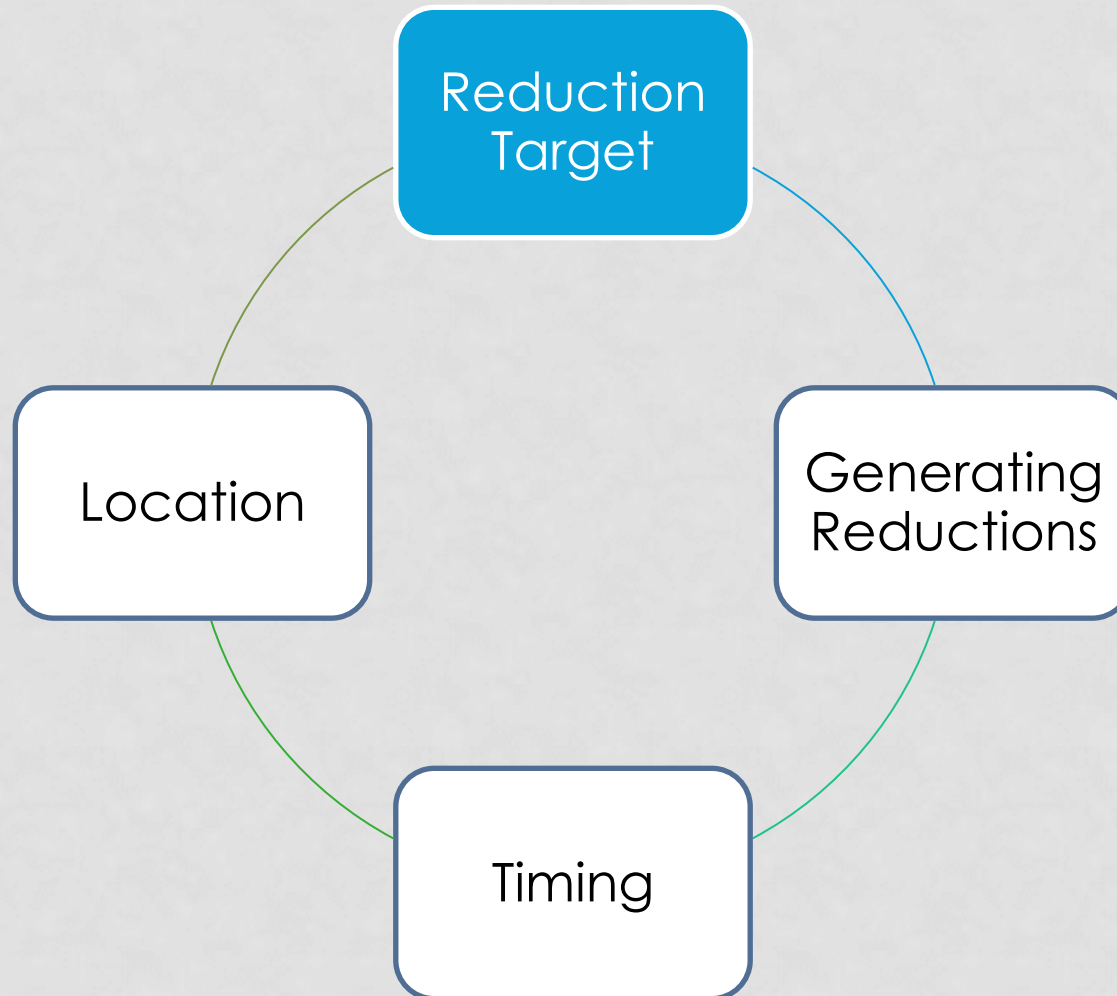
Trading

- ✓ Sparta
- ✓ Baker Cheese
- ✓ Devils Lake

Key Concepts



Key Concepts

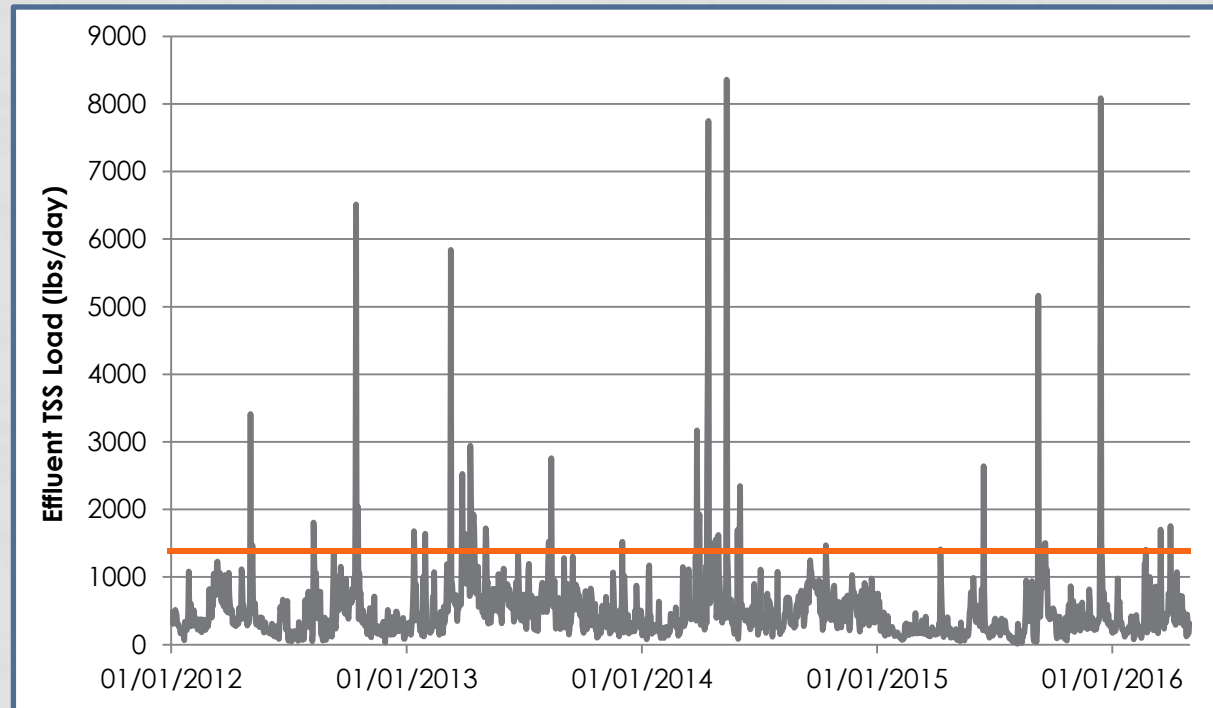


Trading Reduction Target...

HEART OF THE VALLEY



- Lower Fox River TMDL
- TSS Trade
- Weekly avg. limit= 1,345 lbs/day
- Monthly avg. limit= 801 lbs/day



How much credit is needed?

1. Determine credits needed by subtracting limit from discharged lbs
 - Example $1123 \text{ lbs/day} - 801 \text{ lbs/day} = 322 \text{ lbs/day}$
2. Determine credit used per month
 - a. Average the reported credits for the month
 - b. Multiply the average by the number of days of discharge during the month
3. Sum up months to get annual need

Approximate Credit Need= 1860 lbs/yr
(155lb/mo*12)

Description	Effluent TSS (lbs/day)	TSS WQT Credits (lbs/day)
Sample Type	Calculated	Calculated
Frequency	3/week	3/week
Day 1		
2	700	0
3		
4	810	0
5		
6	1123	322
7		
8		
9	1101	300
10		
11	601	0
12		
13	900	99
14		
15		
16	608	0
17		
18	700	0
19		
20	500	0
21		
22		
23	390	0
24		
25	501	0
26		
27	800	0
28		
Average		155

AM Reduction Target...

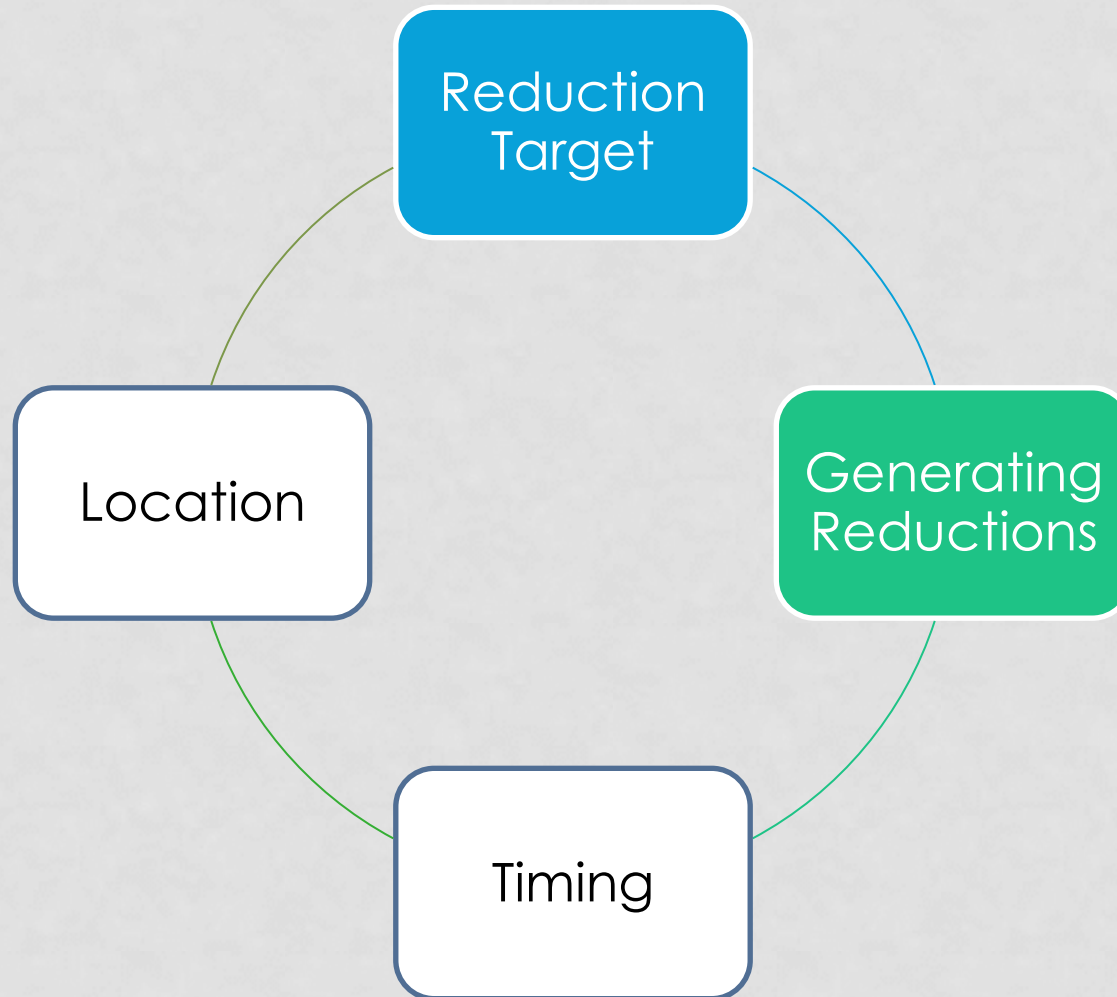
DANE IOWA



- Step 1. Calculate current loading to receiving water
 - Effluent load + In-stream load
 - 543 lbs/yr + 12,161lbs/yr
- Step 2. Calculate applicant's percent contribution
 - Effluent load/Total= 4.3% (543 lbs/yr/12,704 lbs/yr)
- Step 3. Calculate allowable load
 - Total flow*criteria*8.34*365= 10,810 lbs/yr
- Step 4. Determine needed reduction
 - Current load-Allowable load= 1,894 lbs/yr (12,704 lbs/yr – 10,810 lbs/yr)
- Step 5. Calculate proportional target
 - Needed reduction*Percent contribution
 - 1,894 lbs/yr*4.3% = **81 lbs/yr**
- *Step 6. Re-evaluate to achieve AM goal*



Key Concepts



More Permanent Practices...

- Livestock waste storage
- Barnyard Runoff Control
- Clean water management
- Waterways/permanent vegetation
- Stormwater retention
- Silage leachate containment
- Streambank stabilization



Photos provided by Greg Baneck,
Outagamie County

Year-by-Year Practices...

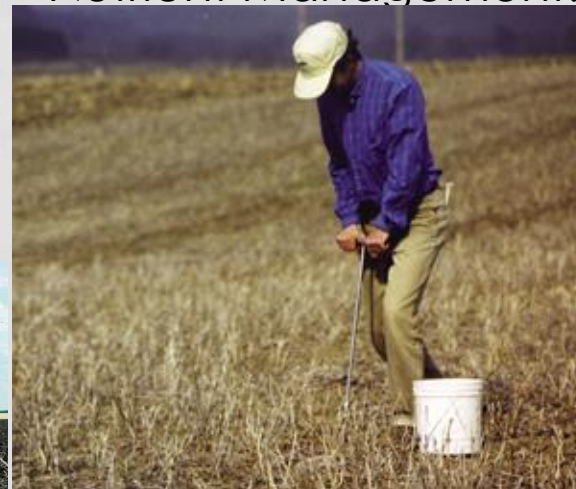
Cover Crops...



Conservation Tillage...



Nutrient Management...



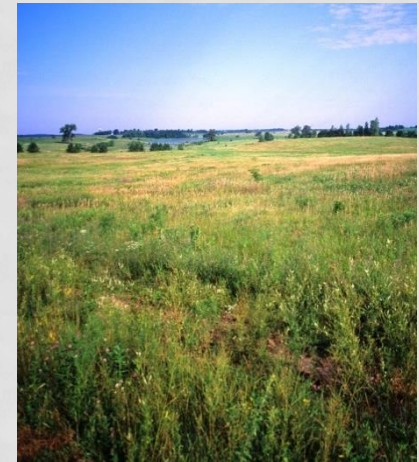
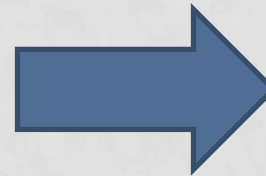
How to Generate Reductions...

BAKER CHEESE



Taking agricultural land out of production to establish prairie

- 20 acres
- 70 lbs/yr



- ✓ Permanent
- ✓ Limited risk
- ✓ Low maintenance

Other ideas:

- *Riparian buffers*
- *Harvestable buffers*
- *Grassed waterways*

How to Generate Reductions...

SPARTA



Streambank Stabilization

- Monroe County LCD
- Project addressing 330 ft
- Upland practices implemented
- Continual riprap, vegetation, & erosion checks requires
- Total credit = 353 lbs/yr
- BONUS → Aquatic habitat improvement!



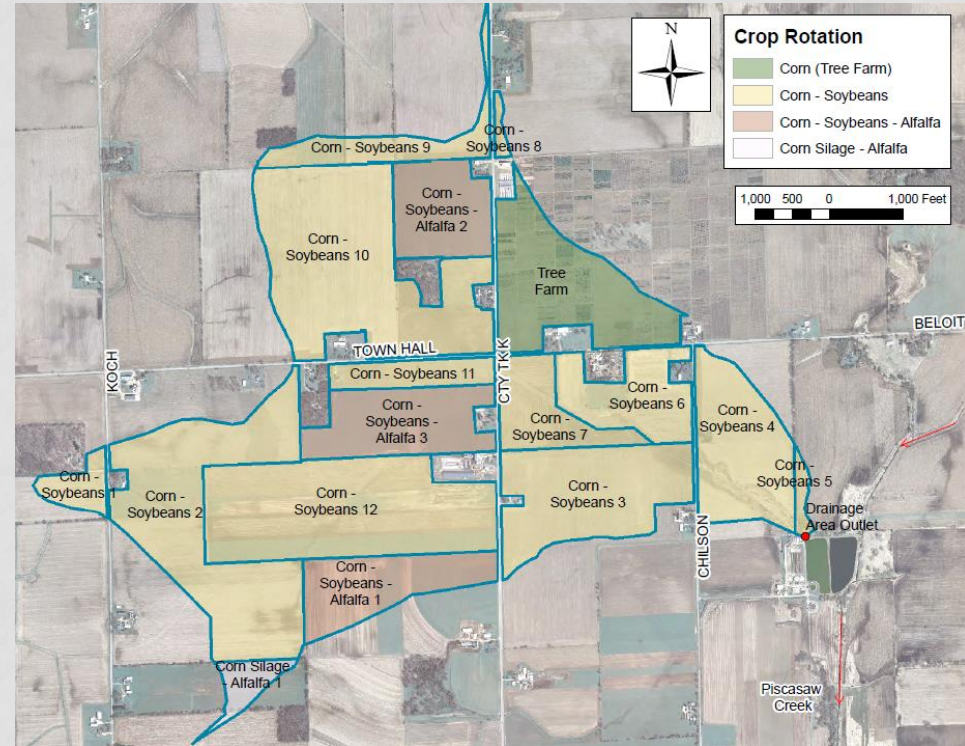
How to Generate Reductions...

FONTANA WALWORTH



1. WET Detention Basin

- Reduces TP loads from upstream ag. area
 - No contracts required!
- Fontana Walworth will own and operate basin on-site
- Drains approximately 1450 ac. with 2 basins
- Total pounds reduced = 2470 lbs
- Actual credit = 1230 lbs



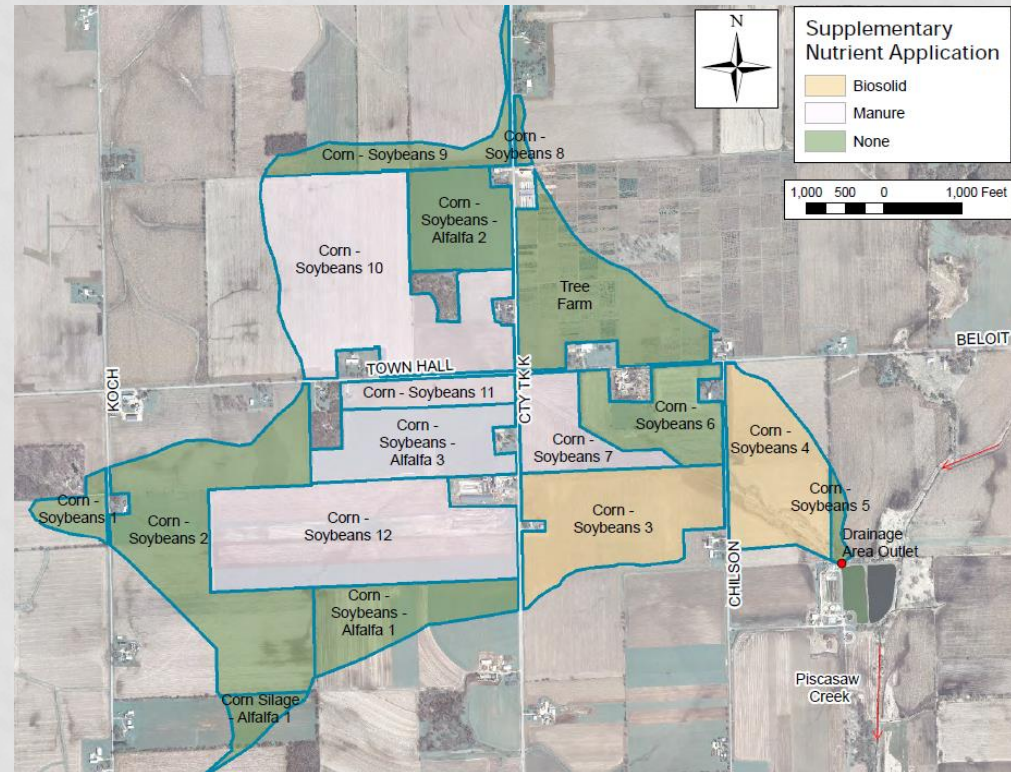
How to Generate Reductions...

FONTANA WALWORTH

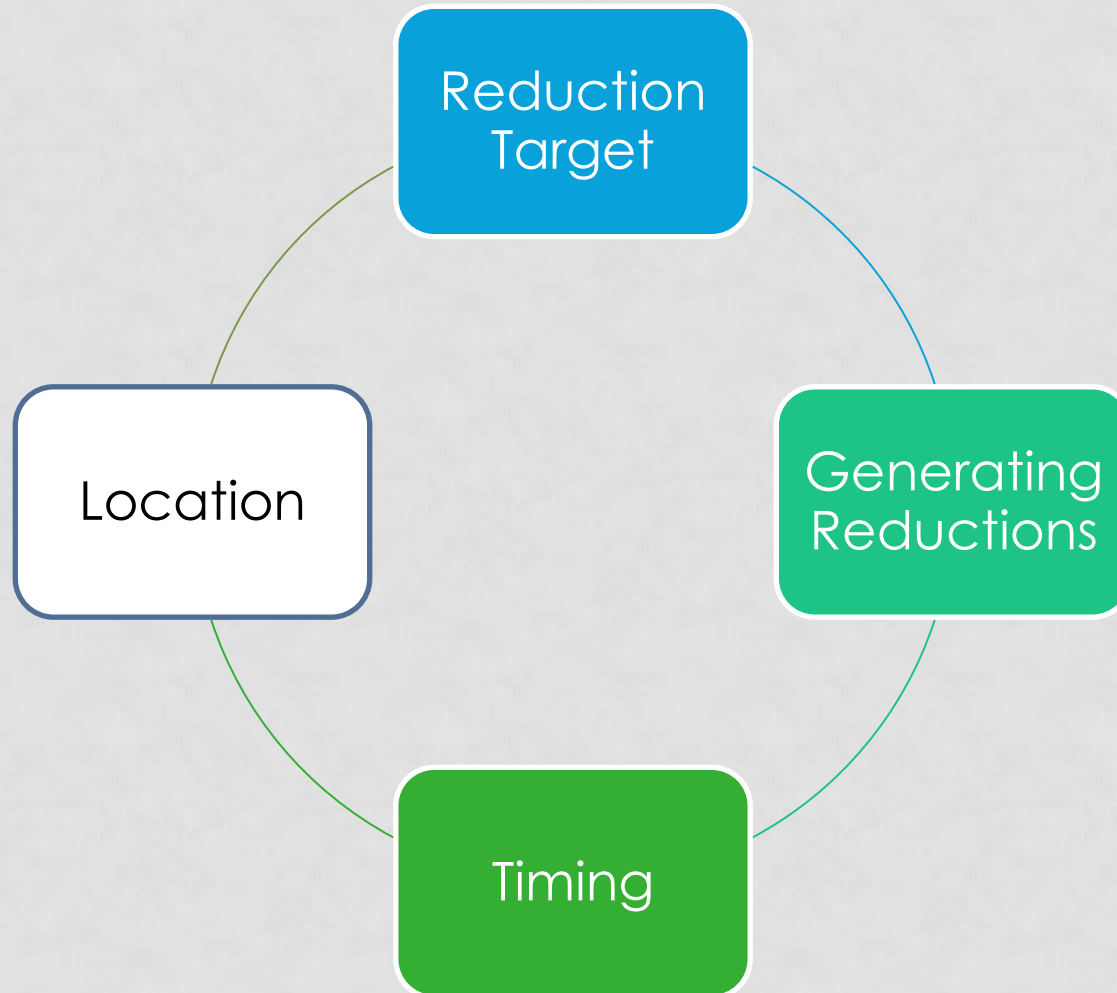


2. Adjusting Landspreading Program

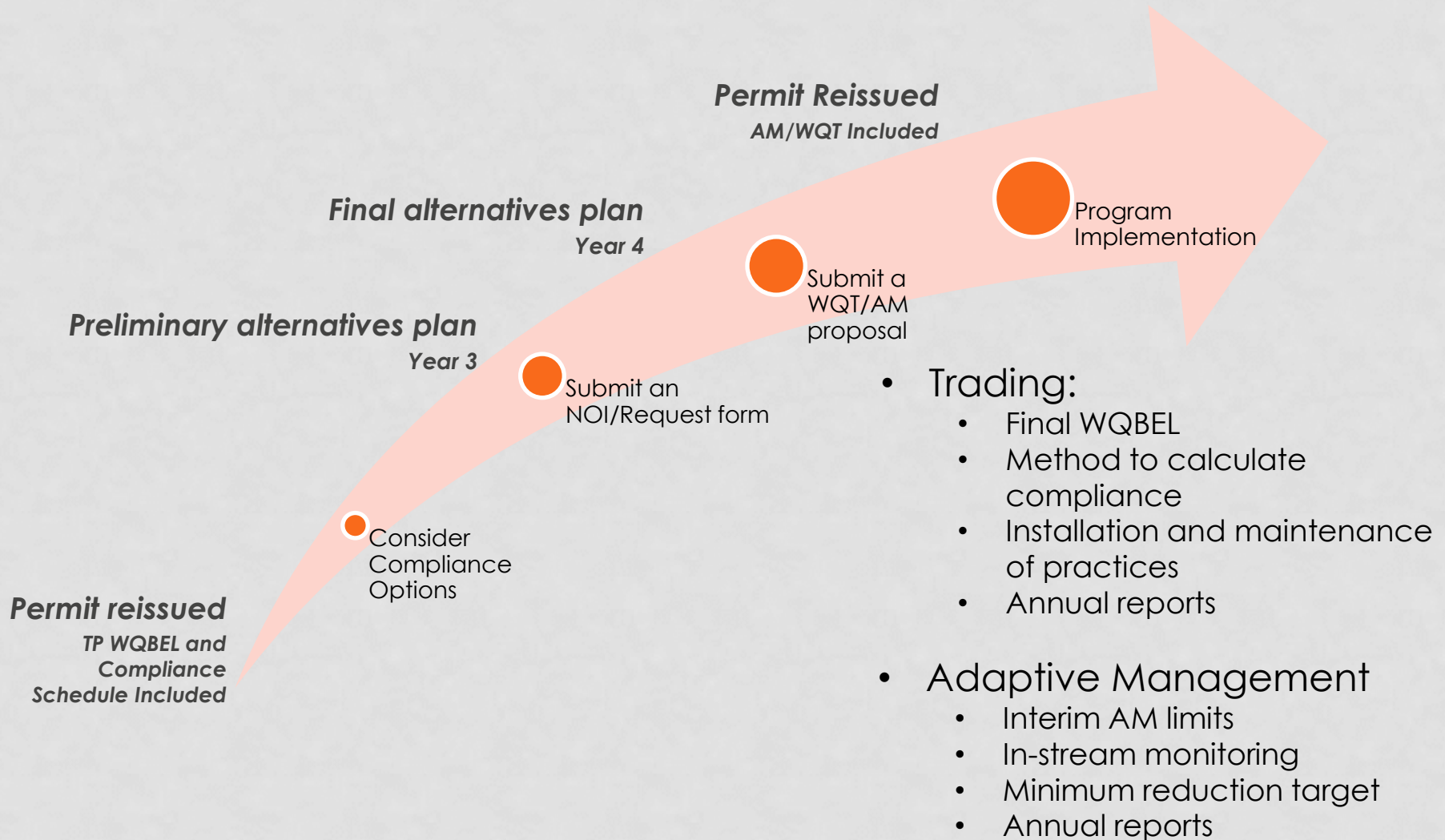
- Fontana Walworth owns 211 ac
- Changes to cropping practices and landspreading program can be implemented through rental agreements
- Total pounds reduced = 1550 lbs
- Total credit = 780 lbs



Key Concepts



Timing Relating to the Permit Cycle



Timing of AM and WQT

AM

Minimum TP reduction target must be achieved during permit term

In-stream monitoring

WQT

Practices must be established and effective to generate credits

Trade agreement required (s. 283.84)

Requires credits to be generated and used in same period

Timing of Credits...

PLYMOUTH



Key Principles:

- Credits must be generated & used in the same timeframe
- Trade agreement helps solidify trading practices vs. other practices (s. 283.84)
- Management practice registration form may also be helpful

- Permit issued 8/1/2013
- Preliminary compliance alternative plan due 7/31/2016
- Compliance deadline: 2022
- Sheboygan County LWCD & Nature Conservancy team up!
 - Projects may be ready NOW

Save Print Clear Data

State of Wisconsin
Department of Natural Resources
101 South Webster Street
Madison WI 53707-7921
dnr.wis.gov

**Water Quality Trading Management
Practice Registration**
Form 3400-207 (R 9/14)

Notice: Pursuant to s. 283.84, Wis. Stats., this form must be completed by any NPDES permittee that is using water quality trading as a method of complying with a permit limitation. Failure to complete this form would not result in penalties. Personal information collected will be used for administrative purposes and may be provided to requestors to the extent required by Wisconsin's Open Records Law (ss. 19.31 - 19.39, Wis. Stats.).

Applicant Information

Permittee Name _____ Permit Number _____ Facility Site Number _____
Facility Address _____ City _____ State ZIP Code _____
Project Contact Name (if applicable) Address _____ City _____ State ZIP Code _____
Project Name _____ City _____ State ZIP Code _____

Broker/Exchange Information (if applicable)

Was a broker/exchange be used to facilitate trade? Yes No

Broker/Exchange Organization Name _____
Address _____ Contact Name _____
Phone Number _____ Email _____

Trade Registration Information (Use a separate form for each trade agreement)

Type	Trade Agreement Number	Practices Used to Generate Credits	Anticipated Load Reduction	Trade Ratio	Method of Quantification
<input type="radio"/> Urban NPS					
<input type="radio"/> Agricultural NPS					
<input type="radio"/> Other					

Reminder, Year-by-Year Practices...

Make sure these occur the year(s) credits/reductions are needed

Cover Crops...



Conservation Tillage...



Nutrient Management...



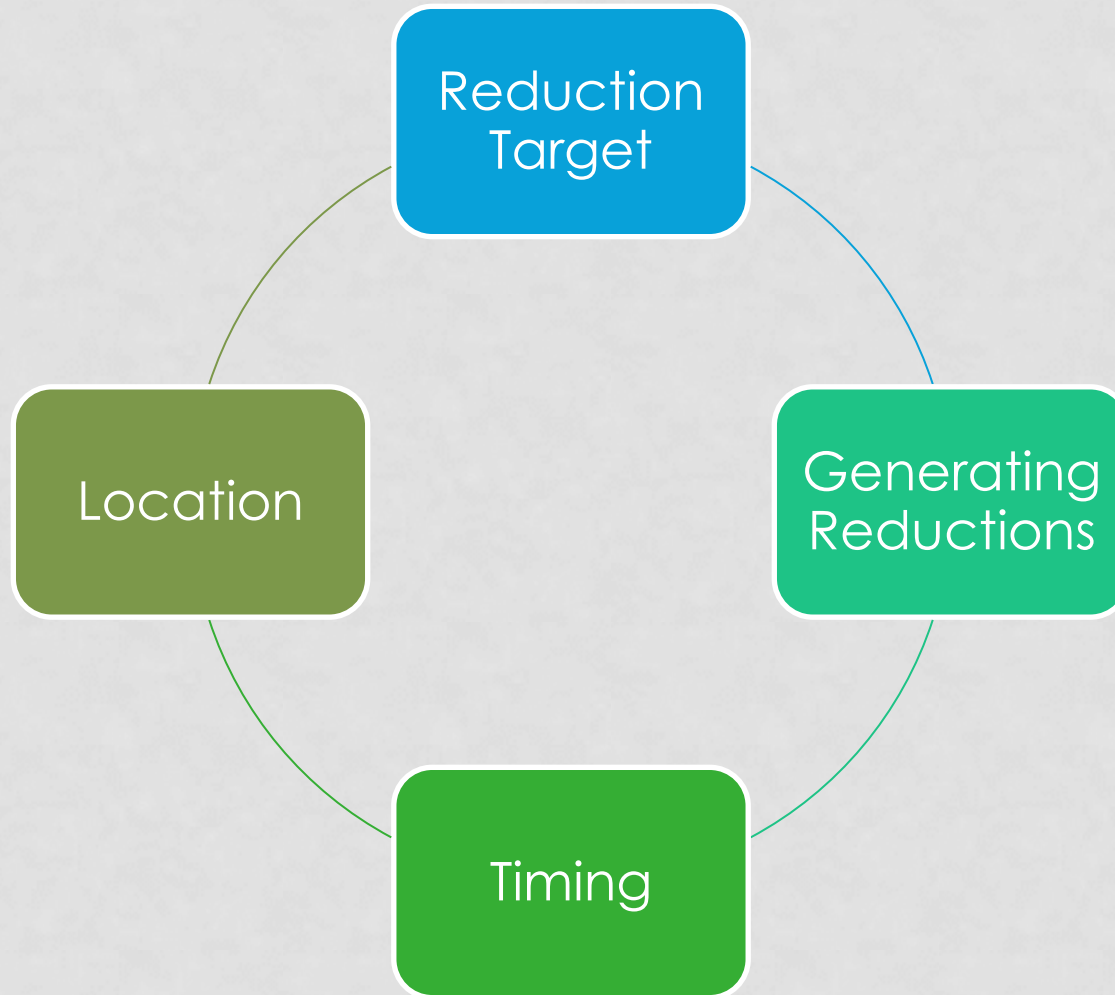
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Key Concepts

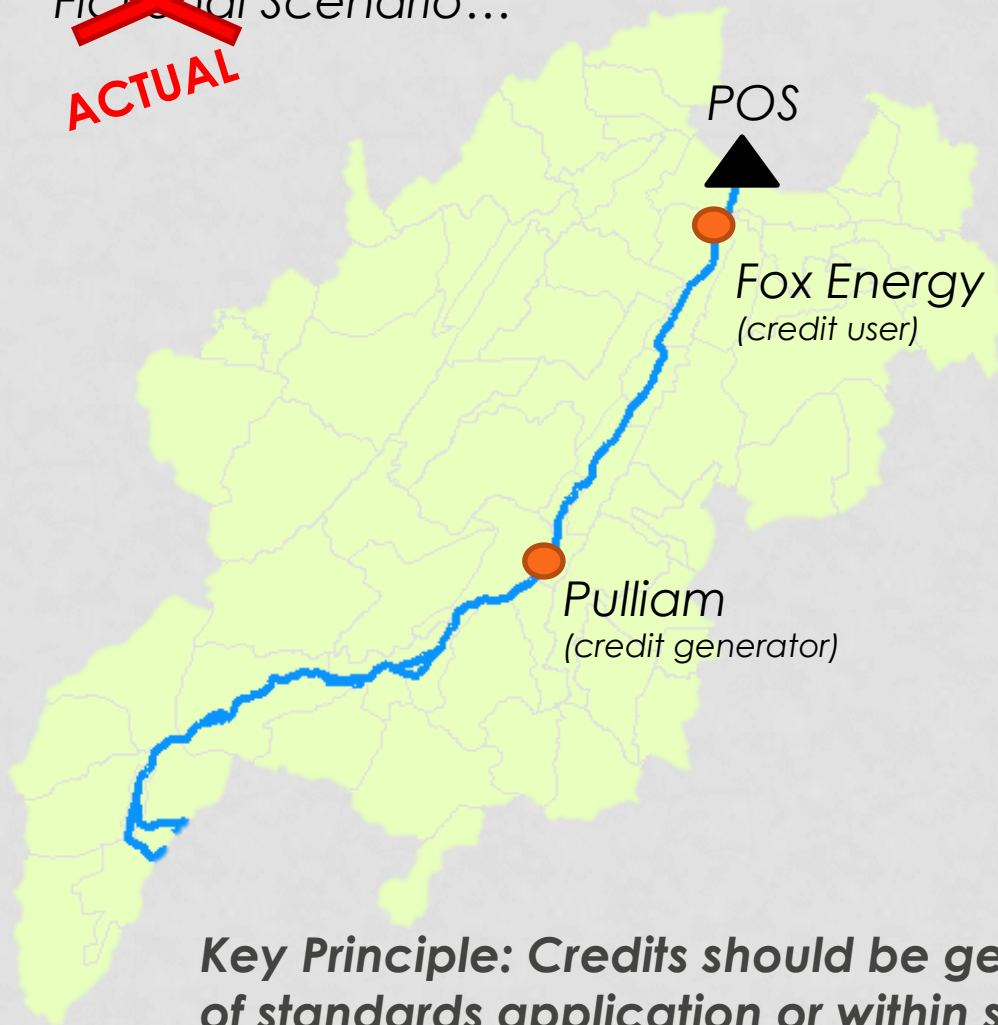


Where to trade... *FOX ENERGY*



~~Fictional Scenario...~~

ACTUAL



- Pulliam has excess allocation (credit generator)
- Fox Energy doesn't have enough (credit user)
- If a point to point source trade occurs, both permits will be modified and limits adjusted according to WQT plan
- Credit generator and user can re-evaluate every permit term

Key Principle: Credits should be generated upstream of the point of standards application or within same HUC12

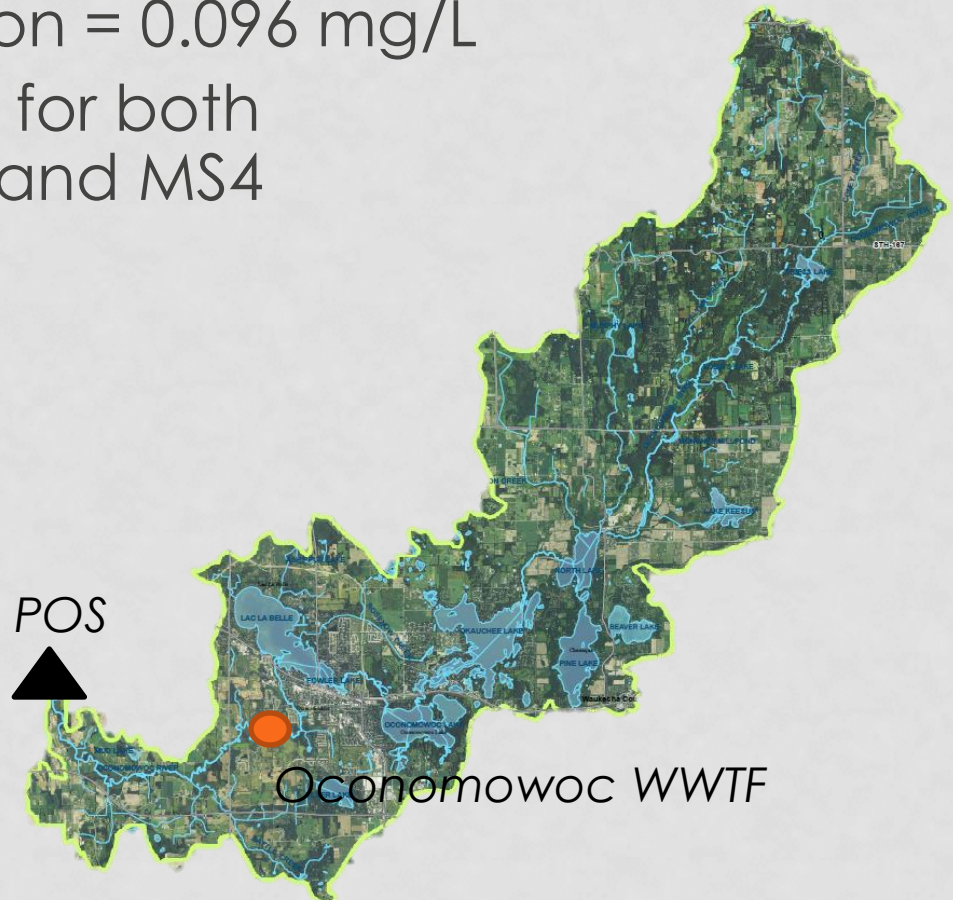
When to do AM instead...

OCONOMOWOC



- Rock River TMDL
- In-stream concentration = 0.096 mg/L
- Achieves compliance for both Oconomowoc WWTF and MS4
- Partnerships
 - County LWCDs
 - Environmental groups
 - Community support

- ✓ Time
- ✓ Substitutes available
- ✓ Grant/3rd party fund support



Other things to consider..

- Adaptive management can provide time to fill up the credit bank
- In-stream/edge-of-field monitoring can be used to justify site-specific trade ratio
- EPA does review AM/trading plans





QUESTIONS???

