

Design and Implementation of an Adaptive Management Pilot Project for the Silver Creek Watershed

Stakeholder Meeting

April 21, 2015

**NEW Water**  
The Brand of the Green Bay Metropolitan Sewerage District

**CH2MHILL**

**AgVentures**  
Multi-Sector Association

**McMAHON**  
ENGINEERS ARCHITECTS

## Welcome and Introductions

- Welcome – Tom Sigmund
- Introductions (All)
- Review from Kickoff Meeting
  - NEW Water’s compliance with permit
  - Measurable improvements in water quality
  - Evaluate if we can do this full scale
  - Diverse stakeholders with common goals
  - Collaboration with stakeholders and landowners to implement watershed improvements
- Meeting Purpose
  - Share progress updates with all stakeholders
  - Receive feedback from stakeholders
  - Transition of project leadership
  - Coordination with CH2M Hill




**CH2MHILL** **AgVentures** **ENVIRO-PROS** **McMAHON** **ENR**

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## Housekeeping, Meeting Approach, & Agenda

- **General housekeeping**
  - Restrooms
  - Emergency exits
- **Lunch plans**
  - Working lunch at 12:00 - Madison Adaptive Management Update – Kathy Lake
- **Meeting Approach**
  - More informal than kickoff meeting – not all presentation
  - Hope to generate discussions
- **Agenda**
  - Many updates to provide
  - Encourage discussion
  - Try to adhere to times on the agenda – plan to adjourn at 1:00
  - Presentation slides will be available on the NEW Water website
  - Meeting summary will be provided
  - “Parking Lot”


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## Project Stakeholders, Vision and Charter

- **Stakeholder**
  - Interested in, affected by, or perceives that they might be affected by a given action or decision.
- **Partner**
  - Actively contributing time and resources to assist with the project.
  - Committees


Wetlands

Vegetated Water Treatment

Grazing

→

Advisory Committees				
Steering	Modeling	Monitoring	Outreach	Implementation
NEW Water	Brent Brown, PE (CH)	NEW Water	NEW Water	Brent Brown, PE (CH)
Oneida Tribe	Rhona Albertin (CH)	Oneida Tribe	Oneida Tribe	Mike Miaziva (AgEP)
Oxide Farms	NEW Water	USGS	Brent Brown, PE (CH)	NEW Water
Brown County LWCD	LWGB	LWGB	Sabra Sutton (CH)	Oneida Tribe
Outagamie County LWCD		Brent Brown, PE (CH)		Oneida Farm
LWGB		Nancy Schultz, PE (CH)		Brown County LWCD
Brent Brown, PE (CH)				Outagamie County LWCD
				Palenske Agronomists
				USFWS
				The Nature Conservancy
				Ducks Unlimited


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## Project Stakeholders, Vision and Charter

- Many complimentary efforts with coordination between each

*A robust and collaborative pilot study in the Silver Creek subwatershed that is consistent with stakeholder ecological restoration goals, and that provides NEW Water with the information to make an informed and confident decision on whether to use the adaptive management approach to meet the phosphorus and total suspended solids reductions required to meet designated use and water quality goals in the Lower Fox River Basin.*

## Project Goal

- Expand upon team charter and vision statement to guide pilot project

*Design, implement, and evaluate stakeholder capacity for a cost effective, scientific-based agricultural-focused adaptive management pilot project that allows Silver Creek to achieve the phosphorus and sediment water quality standards.*

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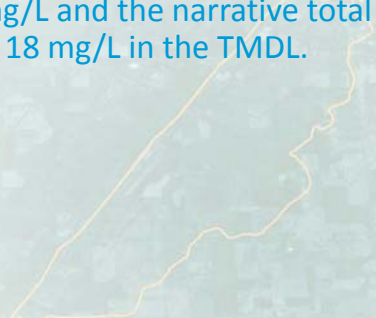
- Design a process that engages stakeholders, leverages relationships, baselines water quality, and collect soils and land management information on all agricultural lands to support nutrient and conservation planning and predictive watershed water quality modeling (e.g. SWAT) that is repeatable and scalable.
- Implement the recommendations within the plans through collaborative partnerships with agronomic, grower, and owner support that will achieve water quality while not threatening the vitality of farming, while evaluating the incentives required for permanent installation.
- Evaluate stakeholder capacity for their current ability to provide professional, regulatory, and personal support to landowners, growers, and NEW Water, and to determine resource needs and delivery platforms that could be scalable.




Design, implement, and evaluate stakeholder capacity for a cost effective, scientific-based agricultural-focused adaptive management pilot project that allows Silver Creek to achieve the phosphorus and sediment water quality standards.

- Evaluate the cost of the pilot project in terms that are scalable, that capture realized and future costs, and are comparable to other permit compliance options.
- Scientific-based process that integrates agronomic experts and other technical experts, regulators, advocates, and modelers to support plan implementation through partnerships with landowners and growers, to reduce uncertainty in evaluating project success and scalability.
- Agricultural-focused project design and implementation to a partner that may have the opportunity to simultaneously improve operations while improving water quality and soil health, but may not have the resources to do so.

Design, implement, and evaluate stakeholder capacity for a cost effective, scientific-based agricultural-focused adaptive management pilot project that allows Silver Creek to achieve the phosphorus and sediment water quality standards.






- Silver Creek watershed that is a representative agricultural dominated headwater watershed of manageable size where compliance can be associated with internal activities, to determine if compliance at its pour point can be evaluated.
- Evaluate the attainment of water quality standards including the phosphorus criterion of 0.075 mg/L and the narrative total suspended solids standard set to be 18 mg/L in the TMDL.






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## Soil Sampling in 2014


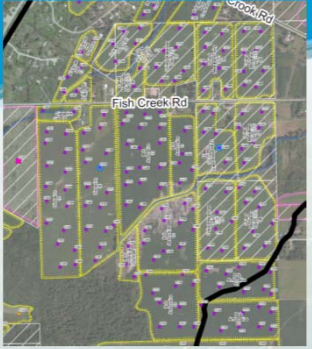
- **Soil sampling program @ 2.5 acre field grids**
  - Sampling parameters
  - Sampling locations (fields and pasture, non-crop, forests)
  - Sampling protocol
  - Field training
- **iPad application for field data collection**
- **Field training**
  - Multiple teams require consistent procedure
  - GIS database
  - iPad allows field teams to be paperless

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## Soil Sampling in 2014

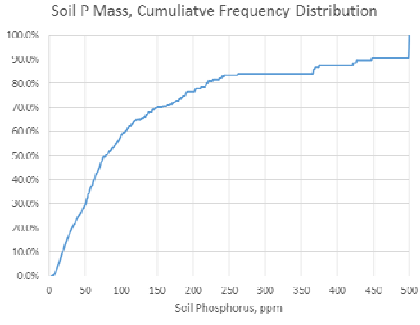
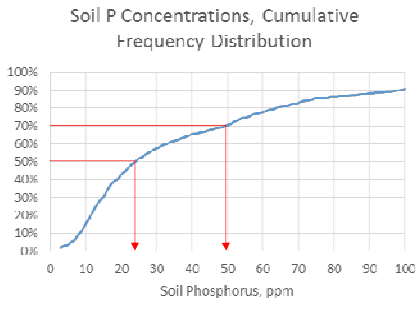
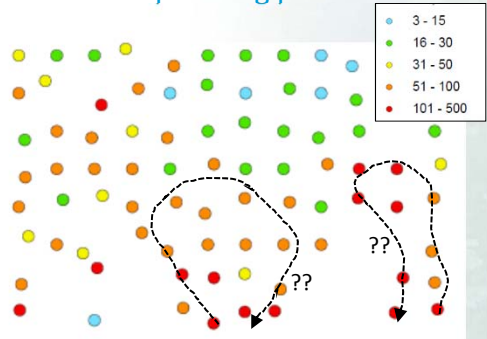
- 123 of 124 fields permission
- 100% specialized sampling completed
- 100% forest samples completed
- 100% non-cropland completed
- 100% modeling parameters completed
- All fields sampled except standing corn or soybean
  - ~900 of 960 samples complete (>90%)
  - Finish sampling in Spring 2015



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## Initial Results

- Variability**
  - Soil P: 3 to 553ppm
  - 27 fields (25%) > 50ppm average soil P
- Historic land use**
- Nutrient spreading patterns**



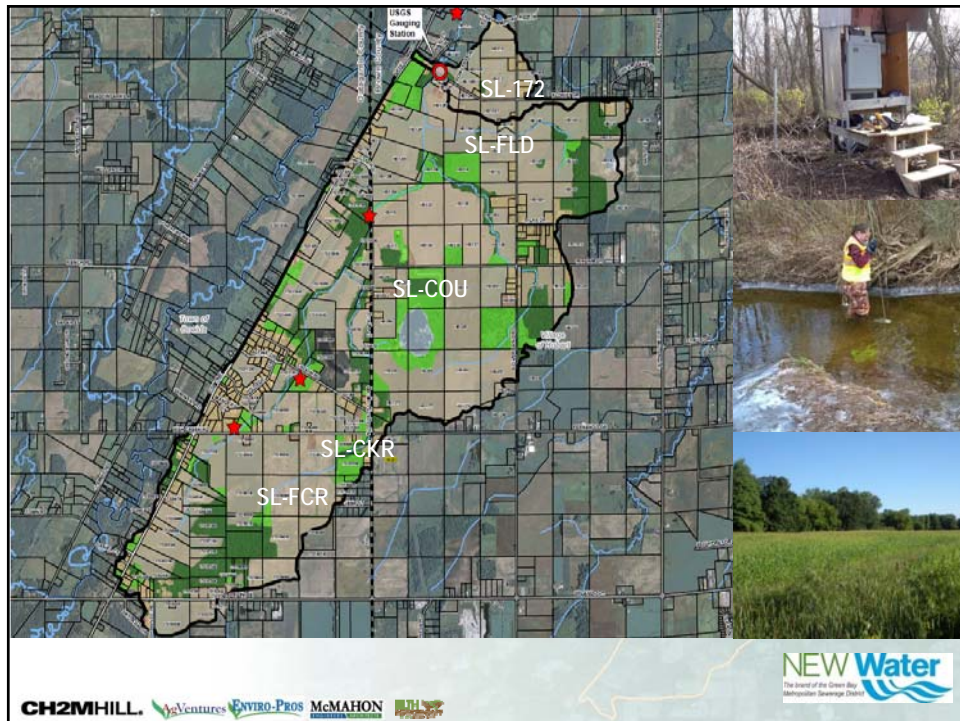
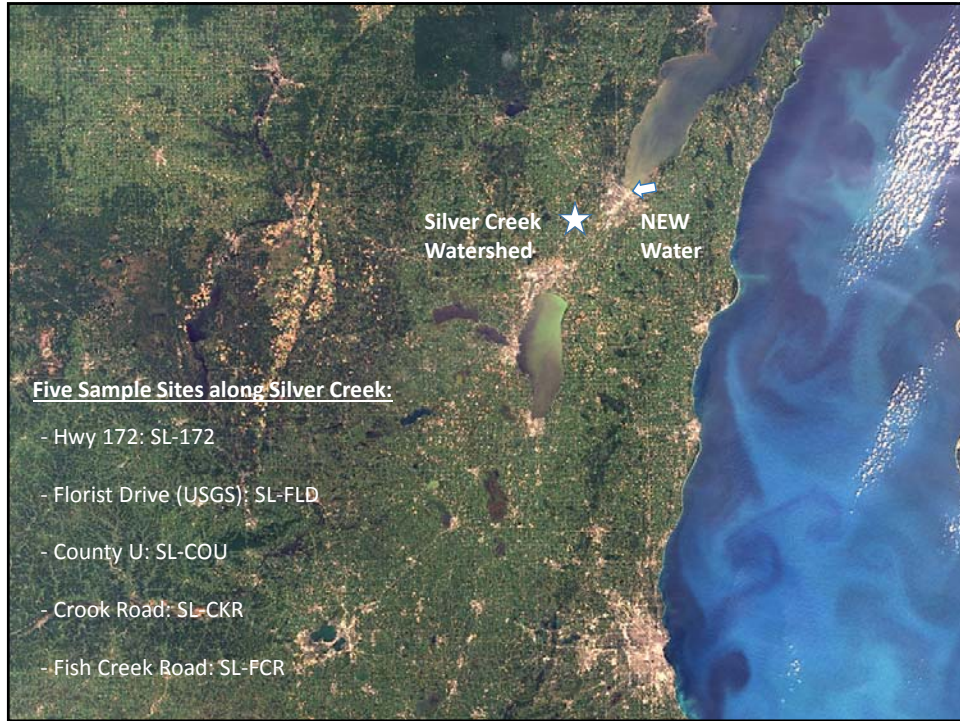
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## Soil Sampling

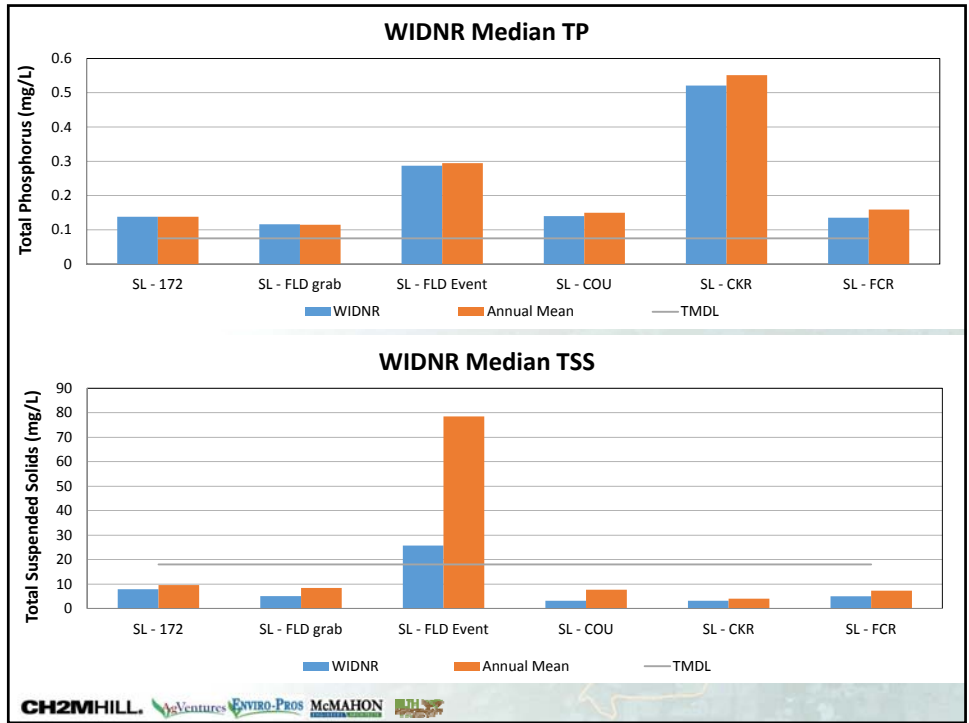
- Baseline watershed
- Support of Nutrient Management Plans
- Support prioritization and focus of Conservation Plan field walks
- Support future SWAT modeling
- Track progress over time...each point.

## Water Quality and Biological Monitoring

- Silver Creek Pilot Project Sampling Update
  - Erin Wilcox – Water Resources Specialist, NEW Water

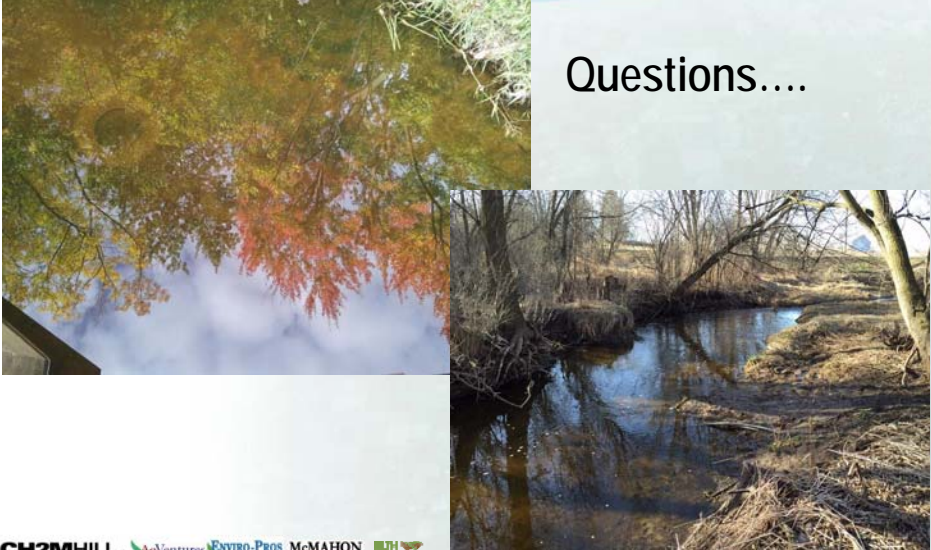










## Next Steps

- Continue grab sampling through 2015 in coordination with USGS and UWGB
- Collect sediment samples in creek to determine legacy sediment contribution to nutrient concentration in water
- Add sampling locations, as wetland projects and BMPs get implemented, to monitor change in water quality
- Attend wetland and other breakout group meetings to discuss additional monitoring, as needed



## Questions....

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## Nutrient Management Plans

- Nearly all fields in NMPs
- Updating existing NMPs
- Creating new NMPs
- “Enhanced” NMPs (ENMP)
  - Push convention
  - Opportunities
    - Rotations
    - Tillage
    - Cover or companion crops
    - Custom fertilizer blends
    - Variable application of multiple fertilizer blends
    - Variable manure application
    - etc.
  - Grower acceptance
  - Barriers to implementation



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# Enhanced NMP Worksheet

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Grower Name: Example  
 Fields: EX1, EX2  
 Date: March 20, 2015

Baseline Conditions													
Field ID	Rotation Years	Rotation	SnapPlus Output										
			1st Yr. PI (lbs/acre)	Min PI in Rot. (lbs/acre)	Max PI in Rot. (lbs/acre)	Rot. Avg. PI (lbs/acre)	Avg. Soil P (ppm)	Min Soil Test P (ppm)	Max Soil Test P (ppm)	Min Soil Loss in Rot (ton/acre)	Max Soil Loss in Rot (ton/acre)	Rot. Avg. Soil Loss (ton/acre)	SCI
EX1	2014-2017	A-Cg-Cg-Cg	0.6	0.6	6	1	4	2	100	0.3	4	0.5	0.6

Potential Measures of Enhanced Nutrient Management Plan (ENMP)													
NMP Measure (e.g. companion crop)	Field ID	Application (Rotation Yr. or All)	SnapPlus Output										
			1st Yr. PI (lbs/acre)	Min PI in Rot. (lbs/acre)	Max PI in Rot. (lbs/acre)	Rot. Avg. PI (lbs/acre)	Avg. Soil P (ppm)	Min Soil Test P (ppm)	Max Soil Test P (ppm)	Min Soil Loss in Rot (ton/acre)	Max Soil Loss in Rot (ton/acre)	Rot. Avg. Soil Loss (ton/acre)	SCI
Companion Crop	EX1	All	0.3	0.3	1	0.5	4	2	30	0.1	2	0.3	0.8
Companion Crop	EX1	2015-2017	0.6	0.6	1	0.7	4	2	50	0.2	3	0.4	0.7

Specific Measures Not Incorporated into ENMP (completed after grower meeting)			
NMP Measure	Field ID	Application (Rotation Yr. or All)	Brief Explanation Why Not Incorporated into ENMP
No Till	EX1	All	Clay Soils present a challenge. Grower interested but does not have proper equipment. Willing to try if compensated for being test field.

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# Silver Creek ENMPs

- Beyond NR 151
- Review by Counties and peers
- Consider target metrics for future
- Monitoring of ENMPs in subsequent years

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## Conservation Field Walks

- Expertise by professionals
  - Agronomists: conservationists and grower/owner liaison
  - County: conservationists
  - NRCS: conservationists
  - Engineer: storm water management expertise
- Focus on structural and operational opportunities
- Compliment nutrient management planning








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## Conservation Field Walks

- Identify potential BMP opportunities, regardless of priority or perceived owner/grower acceptance
- Documenting BMP priority if low or high
- Documentation supportive of County and NRCS practices



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## Conservation Field Walks

- Desktop Evaluation – “eyes of a storm water engineer”

- Base Map Layers

- LiDAR contours
- Aerial
- Potentially restorable wetlands
- Septic tanks
- Field boundaries
- Sampling points and P test value
- Streams
- Existing wetlands
- Hydric soils



- WDNR EVAAL

- Stream Power and Erosion Vulnerability

- Grassed waterways, buffers, crossings, tile lines and outlets

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## Conservation Field Walks

- Potential Opportunities

- Points

- Field Evaluation
- Tile Outlet
- Tile Vent or Inlet
- Water and Sediment Control Basin
- Diversion
- Stream or Ditch Crossing
- Manure or Fertilizer Storage Concern
- Miscellaneous Point Feature



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## Conservation Field Walks

### ■ Lines

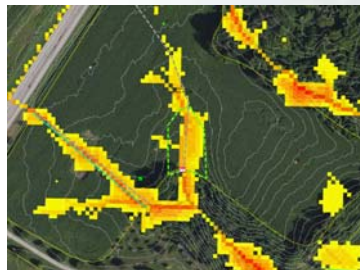
- Grassed Waterway
- Tillage Setback
- Stream or Ditch Bank Erosion
- Roof Runoff Structure and Gutters
- Livestock Exclusion
- Contour Strip (Permanent)
- Buffer
- Existing Drainage Furrow
- Terrace
- Vegetated Treatment Area (Farmstead Runoff)
- Miscellaneous Line Feature



## Conservation Field Walks

### ■ Polygons

- Poorly Drained Area
- Critical Area Planting
- Feature to Avoid
- Miscellaneous Polygon Feature



## Conservation Field Walks

- Complete within next 2 weeks
- Compile Data
- Review with Field and Desktop Teams
- Coordinate with Enhance Nutrient Management Plans
- Template Conservation Plan
  
- Opportunities and Implementation
  - Grower meetings
  - Program enrollment and financial planning
  - Implementation

## Wetland Committees Update

- Three team efforts:
  - Wetlands Team (USFWS, DU)
  - TNC Wetland Plans – The Fund For Lake Michigan
  - Vegetated Water Treatment System – GLRI
- Three teams collaborating as “Habitat Restoration Team”
  - Site selection
  - Project planning/overlap
  - May result in working together on site(s)
- Common goals between all three efforts
  - Looking for the best land use plan to improve water quality
  - Implementing permanent watershed improvements

## Demonstration Farm Network

- **Demonstration Farm Network Update**
  - Brent Peterson – Farm Demo Manager/Agronomist, Brown County LWCD



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## Madison Metropolitan Sewerage District Adaptive Management Update

- **Yahara WINS Project update**
  - Kathy Lake P.E – Environmental Specialist, Madison Metropolitan Sewerage District



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## Grants Update

### ■ NEW Water Grants

- Ducks Unlimited - \$140,000 – wetland restoration
- Natural Resource Damage Assessment (NRDA) - \$100,000
- Great Lakes Restoration Initiative - \$1.68M over 5 yrs
  - \$292,608 for yr 1
  - Help support Silver Creek Pilot Project
    - Contracted services
    - Nutrient management planning
    - BMP implementation
  - Subawards
    - County LWCDs
    - Grazing study – UWGB & Oneida Nation
    - Vegetated Water Treatment Study – UWGB & Oneida Nation

### ■ Other funding in Silver Creek

- The Nature Conservancy (TNC) – The Fund for Lake Michigan
- Other?

## Landowner and Grower Contact and Communication

### ■ Very systematic approach

- Private agronomists have met personally with landowners and growers - trusted
  - Tilt and AgVentures
  - Permission for soil sampling
  - Permission for conservation field walks
- Silver Creek Information Meeting – Feb 24, Lawrence Town Hall
  - Landowners and growers
  - Agronomists
- County/NRCS/Oneida staff involvement in conservation field walks
- Compile all results of conservation planning and wetland effort site selection to provide a package of options to landowners.

## Next Steps

- Finish Enhance Nutrient Management Plans
- Coordination with Conservation Plan
- Coordination with Committees
- Landowner and Grower Outreach
- Completion of Remaining 50% of Fields
  
- Plan for 2016 activities
- Planning for Full Scale Implementation

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## Thank You!

Next Stakeholder Meeting Date  
Wednesday, September 23, 2015

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