




Silver Creek Adaptive Management Pilot Project



**Jeff Smudde, NEW Water
Watershed Programs Manager
2016 Spring Biosolids Symposium**



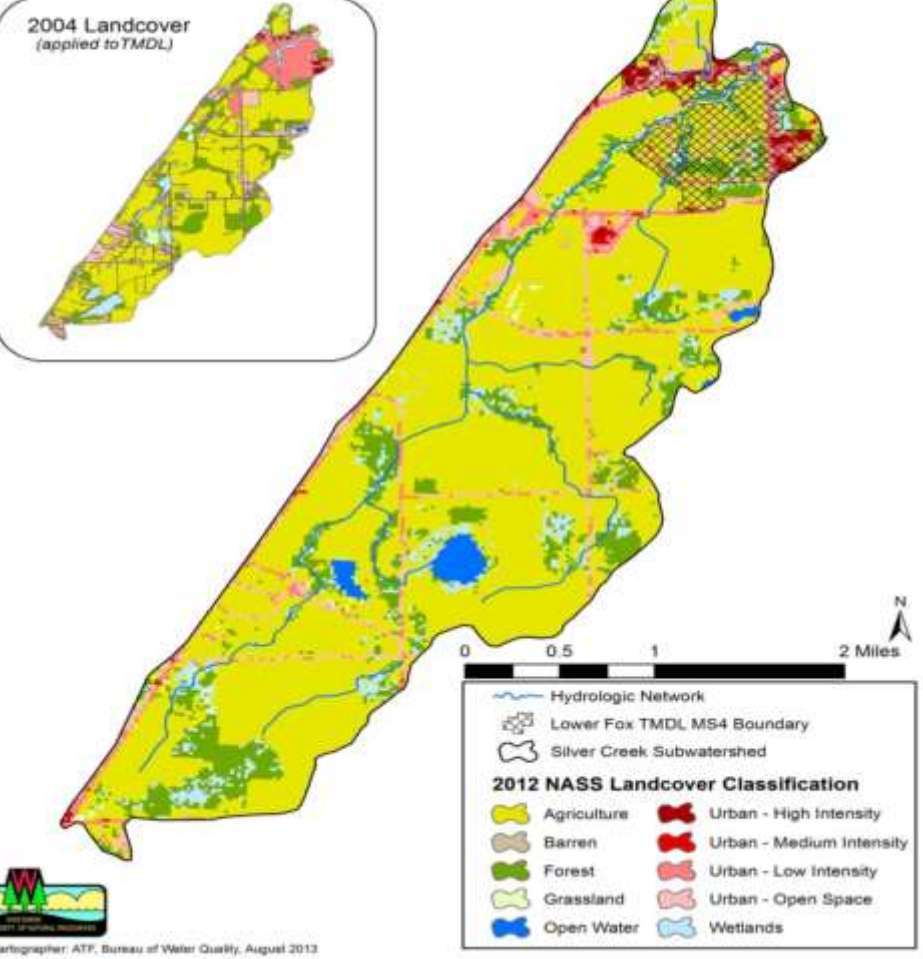
Adaptive Management - Background

- Fox River contributes 1/3 nutrients to Lake Michigan
- NEW Water issued new combined WPDES permit July 1, 2014
- 5-year-permit cycle
- New future Total Phosphorus and Total Suspended Solids reductions
- Several options for compliance
- Facility improvements:
\$223 - \$394 million capital cost + \$2 million annual O&M cost
- **Adaptive Management** addresses new phosphorus and solids limits
 - Current: AM Pilot + Plant Optimization



Photo credit: Steve Seilo
(www.photodynamix.com)

**Silver Creek Subwatershed Landcover
Lower Fox River Basin**



**NEW
Water**



- Watershed Size: 4,800 Acres
- Land Use: 48% Agriculture
- Stream Length: 15 Miles



Goals of the Silver Creek Pilot Project

Assess the ability to collaborate with a diverse group of partners

Test the willingness of landowners and growers to participate in a volunteer/incentive-based program

Measure water quality response after conservation practice installation

Evaluate the capacity of partners to assist

Estimate overall cost of Adaptive Management

Develop a framework for full scale Adaptive Management



Silver Creek Project Partners

Conservation Planning

- Private agronomists
- Brown & Outagamie Co LCD
- Oneida Tribe
- NRCS
- CH2M
- NEW Water

Water Quality Monitoring

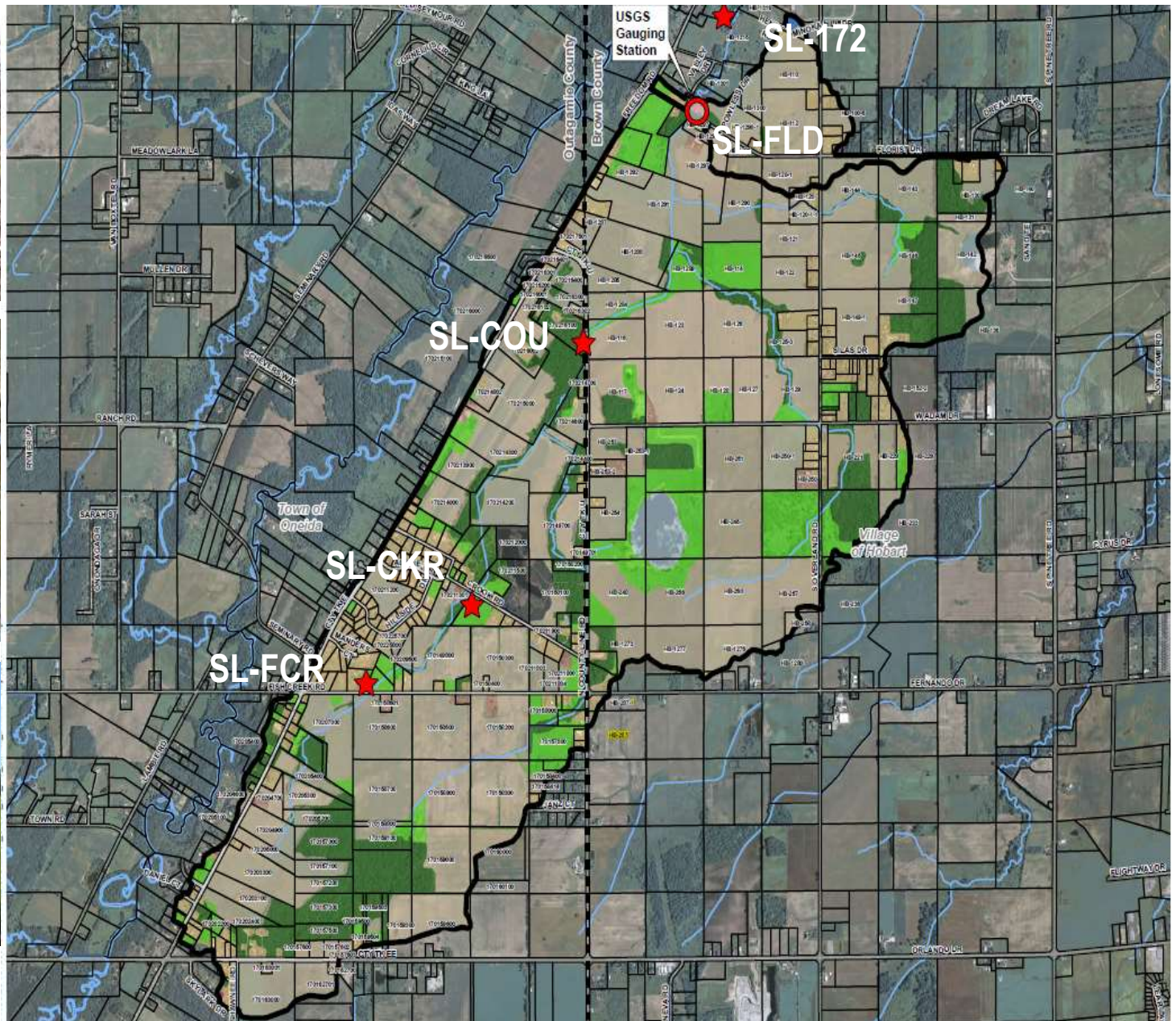
- NEW Water
- USGS
- UW-Green Bay

Wetland Restoration

- Ducks Unlimited
- US Fish and Wildlife Service
- The Nature Conservancy
- Oneida Tribe
- UW-Green Bay
- NEW Water

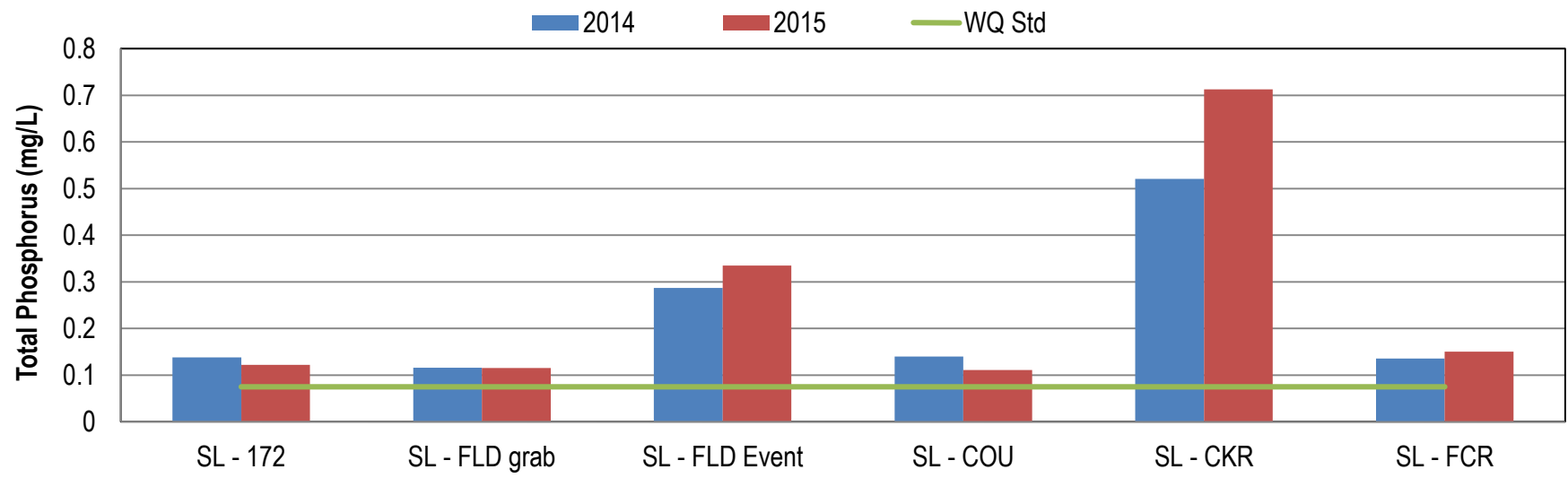
Managed Grazing

- NRCS
- Oneida Tribe
- UW-Green Bay
- NEW Water

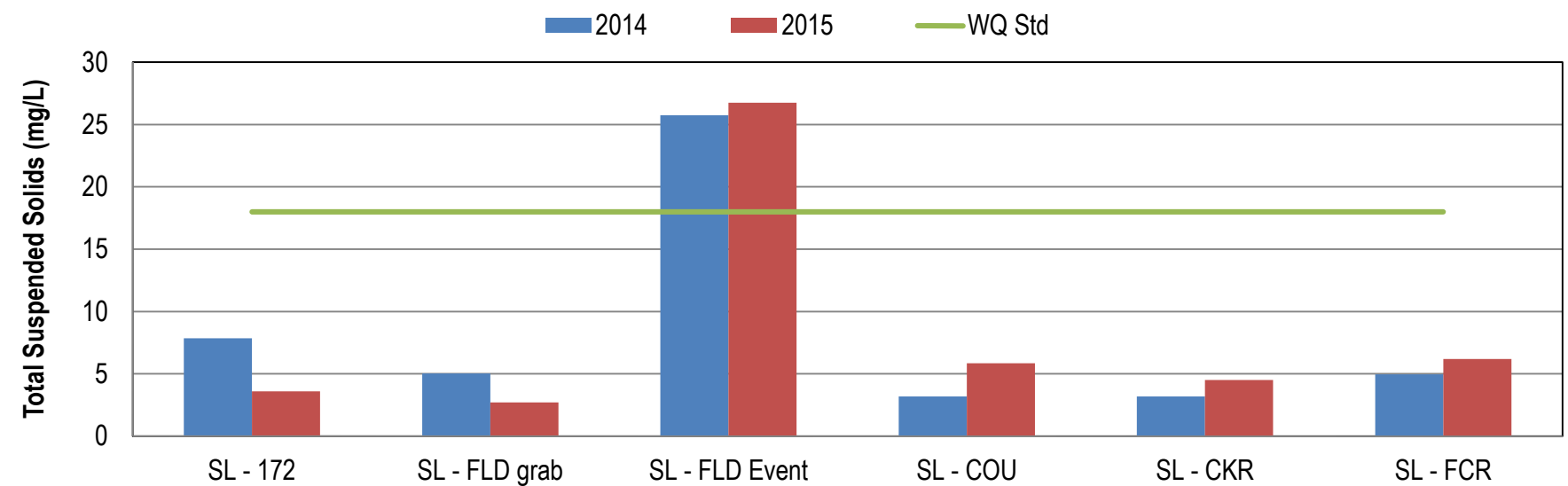




Silver Creek Total Phosphorus



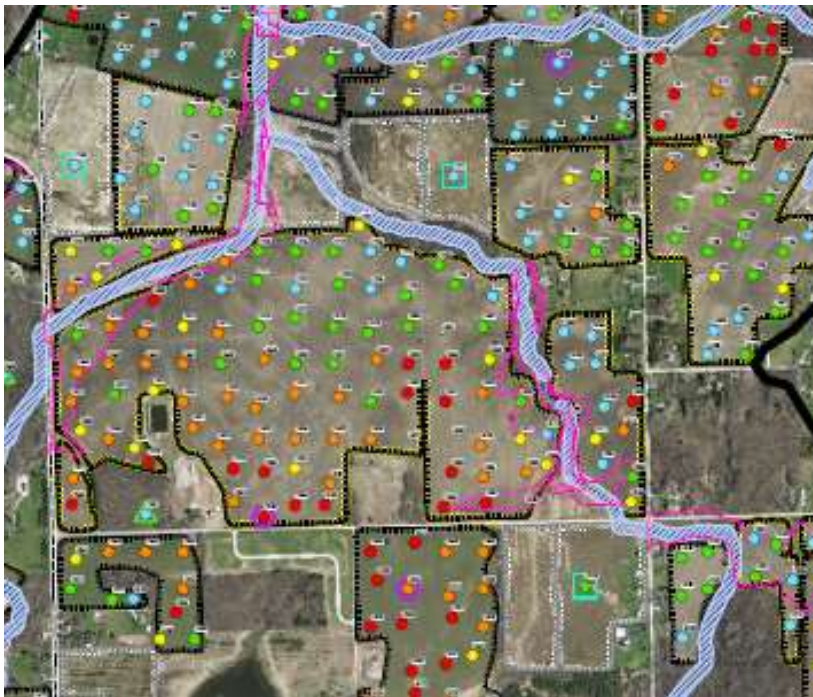
Silver Creek Total Suspended Solids





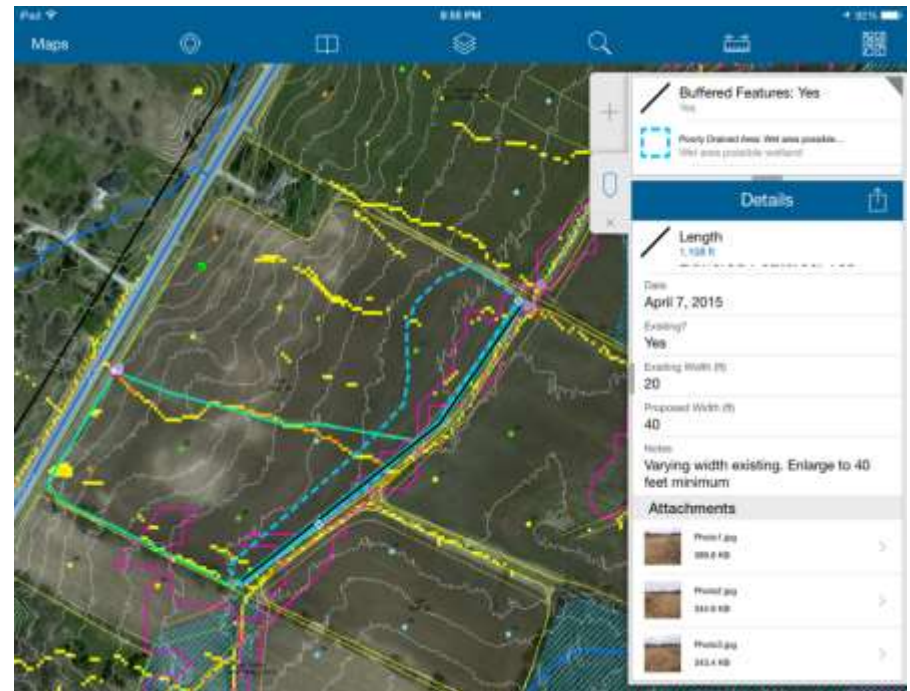
2015 – A Year of Inventory

Soil Sampling



- 108 Fields sampled – 2.5 acre grid

Comprehensive Field Evaluations



- ArcGIS Collector – tablet application



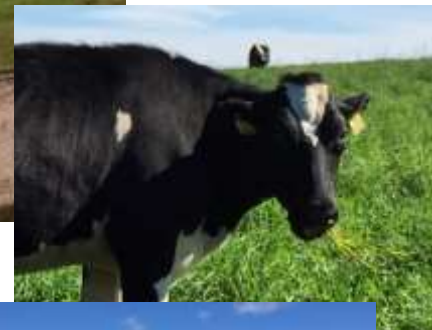
2015 – A Year of Inventory

Conservation Planning Meetings



- Agronomists, County, Oneida, NRCS, CH2M, NEW Water Staff

Grazing & Wetland Planning Meetings

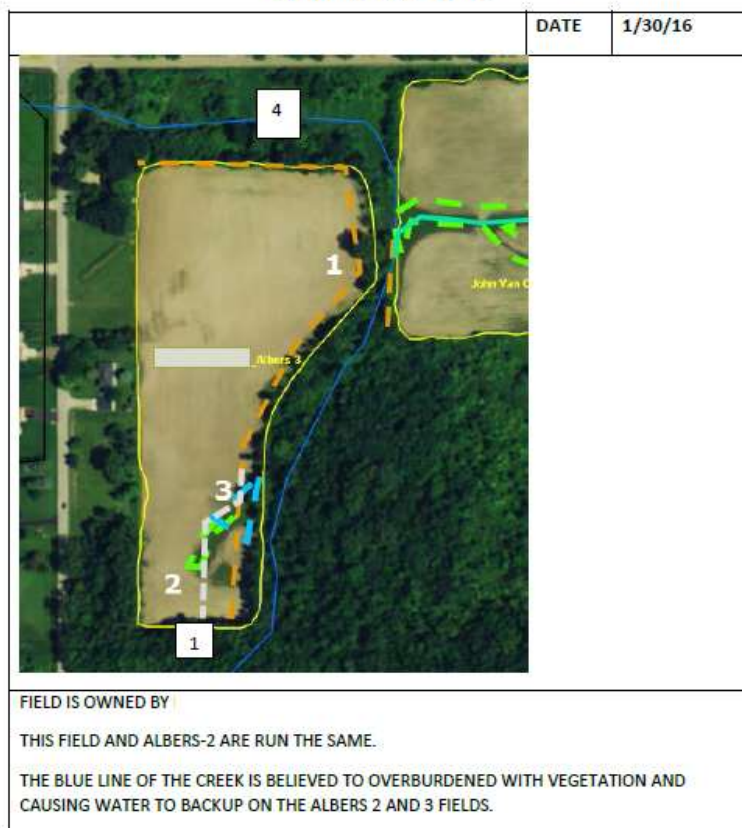




Conservation Plans

CONSERVATION & ENHANCED NUTRIENT MANAGEMENT PLAN

Crop Year: 2016



- Structural Practices
 - Grassed Waterways
 - Buffer Strips
 - Critical Area Plantings
- Operational Practices
 - Cover Crops
 - Reduced till/no till
 - Crop rotation modification
 - Precision nutrient application
 - Etc
- Nutrient Management Plan



Success in 2015



Critical Area Planting



Inter-Seeding



Cover Crops



Success in 2015



Perennial Forage



Waterway setbacks



No-Till



Winter 2016 - Planning

Wetland Site Plans



Grazing Site Plans





Next Steps – 2016

- March 4 NRCS EQIP Funding Applications
- “Kitchen table” meetings with growers and owners
- Refine Conservation Plans and Enhanced Nutrient Management Plans
- Cost-Share Agreements
- Establish grazing operation
- Wetland restoration
- Continued Water Quality Sampling
 - Sample in-stream sediment
- **Installing practices** ★





Observations From the Pilot Project

- Diverse field teams yield new perspectives for conservation opportunities
- Every field has a need
- Agronomists are a huge asset in opening lines of communication with land owners and growers
- Grower trust is critical, but can vary
- Growers are stewards, but businessmen first





What Is Impacting Biosolids Operations?

- Available land is diminishing
 - Urban sprawl
 - Increased herd sizes
 - Nutrient Management Plans
 - Applications based on soil P instead of crop N needs
 - Other crop-based restrictions
- May need to start evaluating alternative technologies and methods for biosolids use
 - Municipal WWTPs
 - Industrial WWTPs
 - Waste Haulers





Questions?



Jeff Smudde
Watershed Programs Manager
Green Bay Metropolitan Sewerage
District



T: (920) 438-1071

E: jsmudde@newwater.us

www.newwater.us