

# Adaptive Management Lower Fox River Basin

**McMAHON**  
ENGINEERS ARCHITECTS

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## Collaborative Initiative in Lower Fox River Basin

- NEW Water (Green Bay Metropolitan Sewage District)
- Heart of the Valley Metropolitan Sewerage District
- Appleton Wastewater Treatment Plant
- Grand Chute-Menasha West Sewerage Commission
- Neenah-Menasha Sewerage Commission



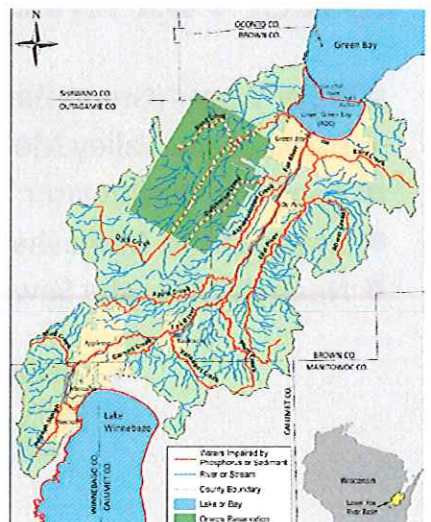
## Purpose of Initiative

- Assist WWTPs with evaluation of the Adaptive Management option for Lower Fox River Basin
- Conduct initial economic analysis (first step)
- Discuss potential challenges with policy makers
- Initiate contact with other potential stakeholders



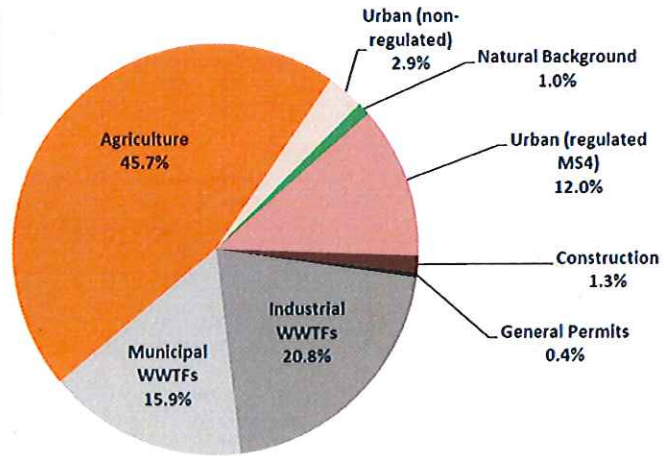
## Adaptive Management

- New compliance option
- Achieve phosphorus criteria for a stream, river or lake in the most economically efficient manner, and as soon as possible
- Considers contribution from point and nonpoint sources



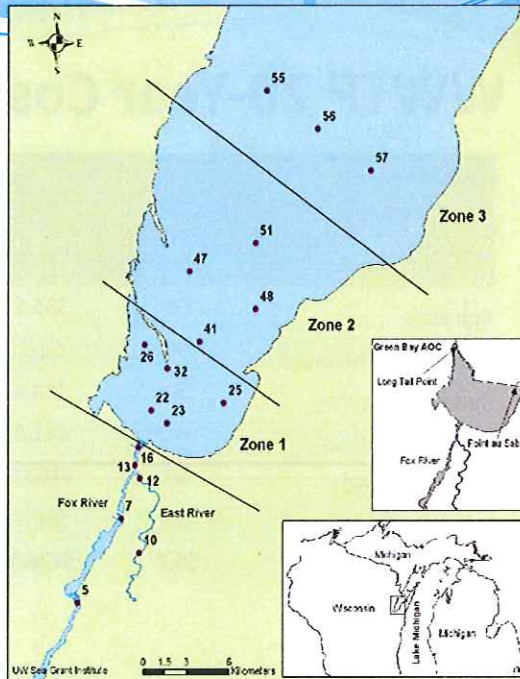
## Lower Fox River Basin TMDL Sources

Annual Phosphorus Baseline Load

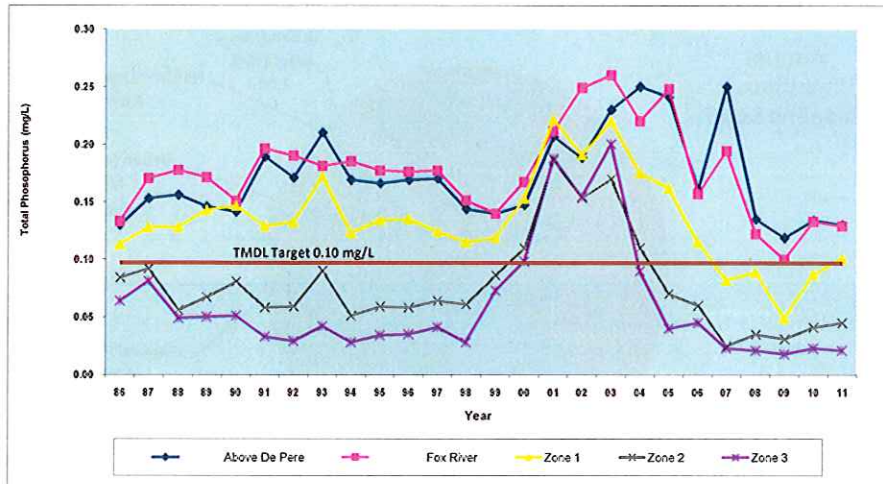


Source: Lower Fox River Basin TMDL

## Monitoring: Lower Fox River & Lower Green Bay



## Monitoring: Annual Average TP



Source: NEW Water (Green Bay Metropolitan Sewerage District)

## WWTP 20-Year Costs

WWTP	PV Capital Cost (millions)		PV Capital, Operation, & Maintenance Cost (millions)	
	TP Effluent 0.3 mg/L	TP Effluent 0.1 mg/L	TP Effluent 0.3 mg/L	TP Effluent 0.1 mg/L
Appleton	\$0	\$35.5	\$10.5	\$64.8
Grand Chute-Menasha	\$0	\$9.5	\$4.4	\$20.6
Heart of the Valley	\$0	\$50.6	\$9.0	\$71.4
Neenah-Menasha	\$4.7	\$11.8	\$11.8	\$23.9
NEW Water (GB)	\$0	\$160.5	\$0	\$195.7
NEW Water (DP)	\$0	\$58.2	\$0	\$71.5
<b>Total</b>	<b>\$4.7</b>	<b>\$326.1</b>	<b>\$35.7</b>	<b>\$447.9</b>

Optimize

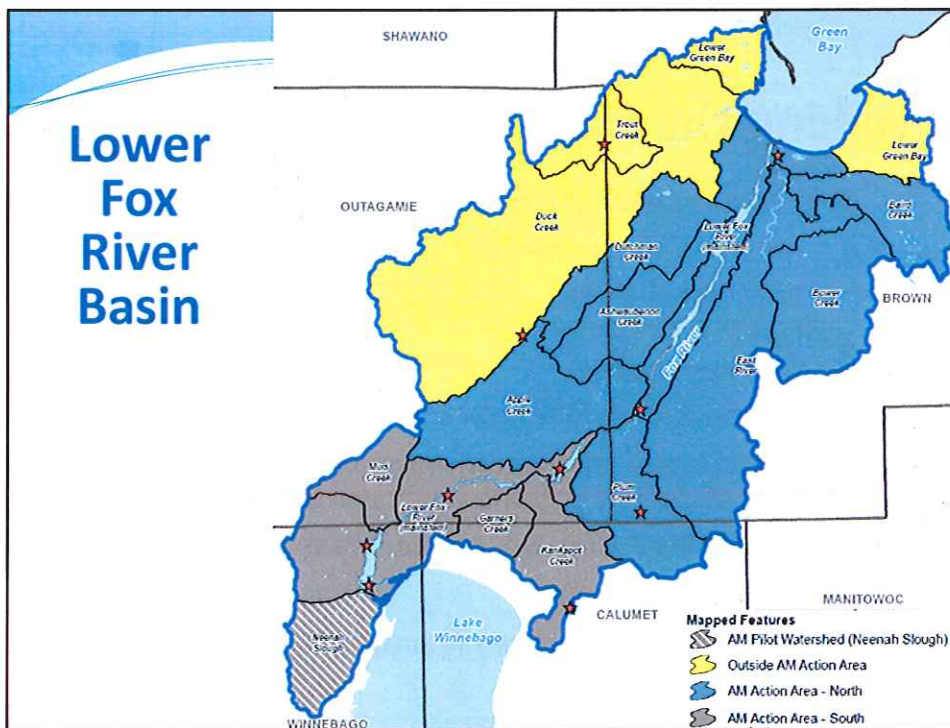
Upgrade

## Agricultural Team

- County Land & Water Conservation Departments
- Wisconsin Department of Agriculture, Trade & Consumer Protection
- Wisconsin Department of Natural Resources
- USDA Natural Resource Conservation Service



Source: Steve Seilo, Photodynamix



## AM 20 Year Fiscal Analysis

- Compare the five Municipal WWTP filtration costs to the following Agricultural BMP costs:

- Manure Storage & Farm Operation BMPs
- Manure Digester, Trucking, & Crop Growth (Reduce Soil P to 25 ppm)
- Soil Health (Nutrient Mgmt, 100% No/Zone Till, 100% Cover Crop)
- Wetland Restoration (tile & BMP layering), Stream / Gully Erosion

Agriculture BMP Cost Sharing	Lower Fox River (All Action Areas)	Lower Fox River (N & S Action Area)	Lower Fox River (S Action Area)
High	\$832 million	\$619 million	\$125 million
Low	\$167 million	\$116 million	\$16 million
	\$448 million	\$448 million	\$181 million

## Making the Right Decision

- Risk Management (cost vs. benefit):

- WWTP filtration upgrades
- Water quality trading
- Adaptive management
- Phosphorus variance

**Best Opportunity  
for Success**

- Wastewater vs. Stormwater Utility Rates

- In future, will urban stormwater requirements be more restrictive if TMDL is not successful?

- Pilot for BMP Effectiveness (reality vs. model)

- BMP Cost Share Rates

- Voluntary vs. Regulatory Approach