# Watershed Steering Committee

**Dean Johnson**- Watershed Coordinator DeKalb County Soil and Water Conservation District

**Teri Spartz/ Dan Templin**- DeKalb County Community Foundation

**Donna Prain**- DeKalb County Stormwater Management and Planning Committee

**Mike Holland/ Mark Eddington**- Kishwaukee River Water Reclamation District

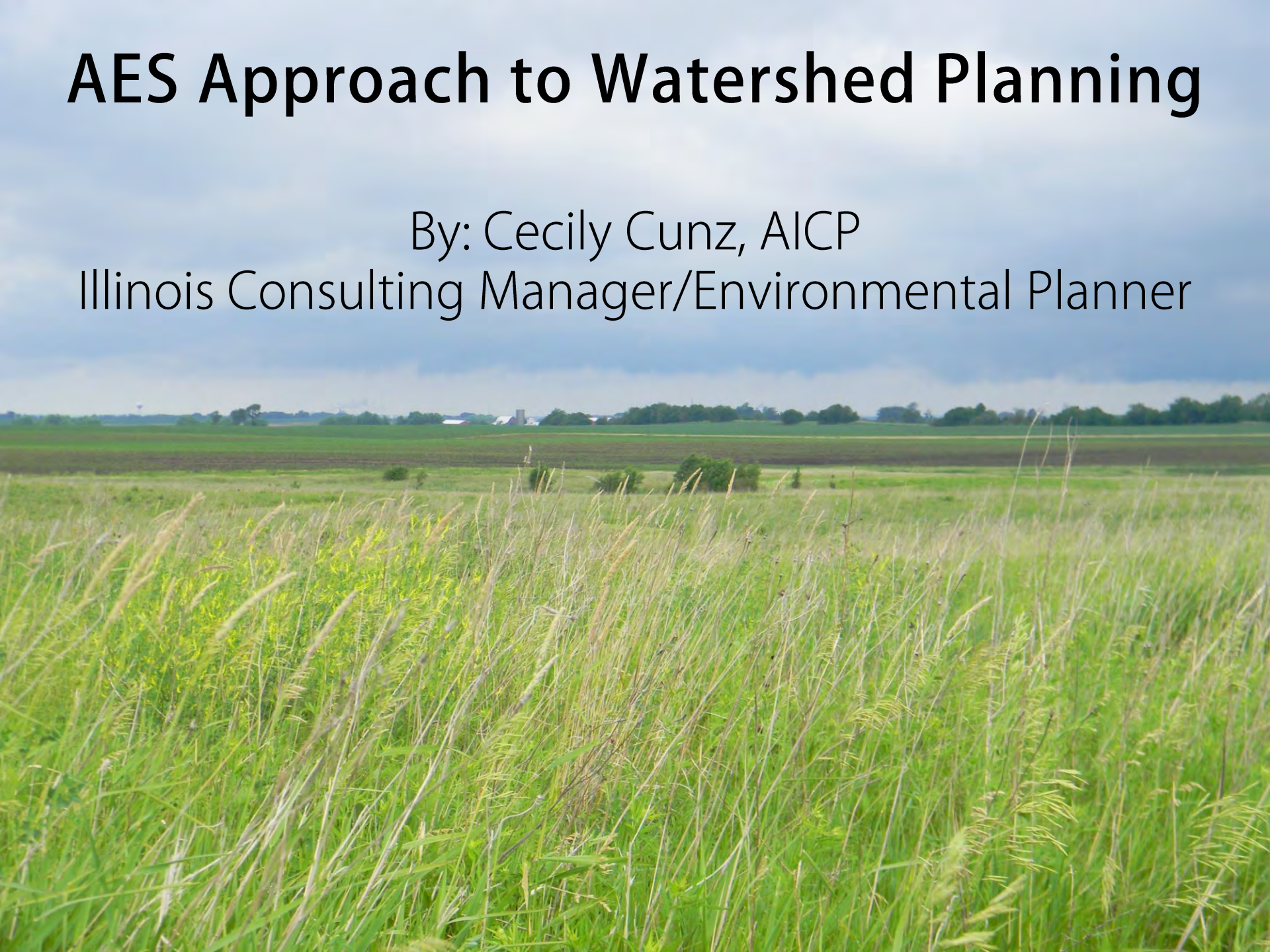
**Mike Konen**- Department of Geography NIU

# Watershed Steering Committee

**Zac Gill** – City of DeKalb
**Robb Mullins/Denny Johnson** – Shabbona-Milan Drainage District
**Derek Hiland** – DeKalb County Community Development Department
**Nathan Schwartz** – DeKalb County Engineer
**Kelsey Musich** – Illinois Tollway Authority
**Paul Stoddard** – DeKalb County Board
**Amy Doll** – DeKalb Park District

# AES Approach to Watershed Planning

By: Cecily Cunz, AICP
Illinois Consulting Manager/Environmental Planner



Applied Ecological Services is an Ecological Consulting Firm with a vision to:

"Bring the science of ecology to all land-use decisions"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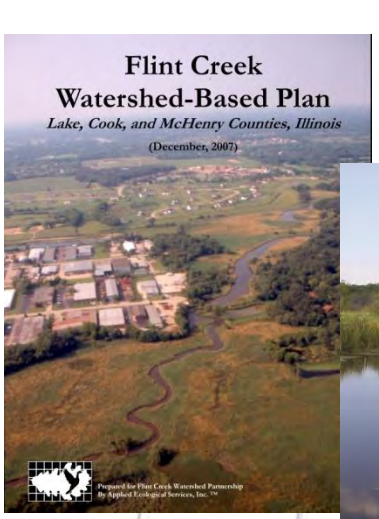
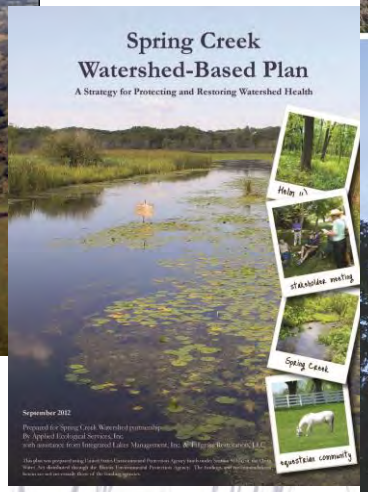
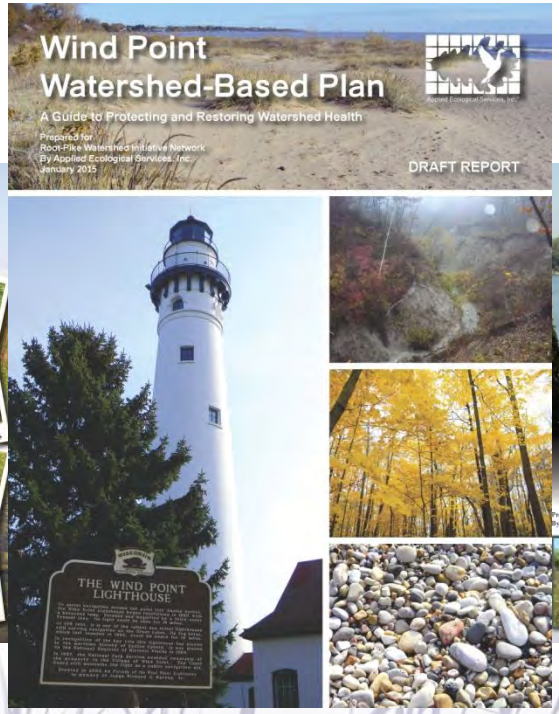
# AES Watershed Planning Experience

- AES has completed over 10 watershed plans across 3 states in the past 10 years.
- Illinois EPA references AES plans as a model.



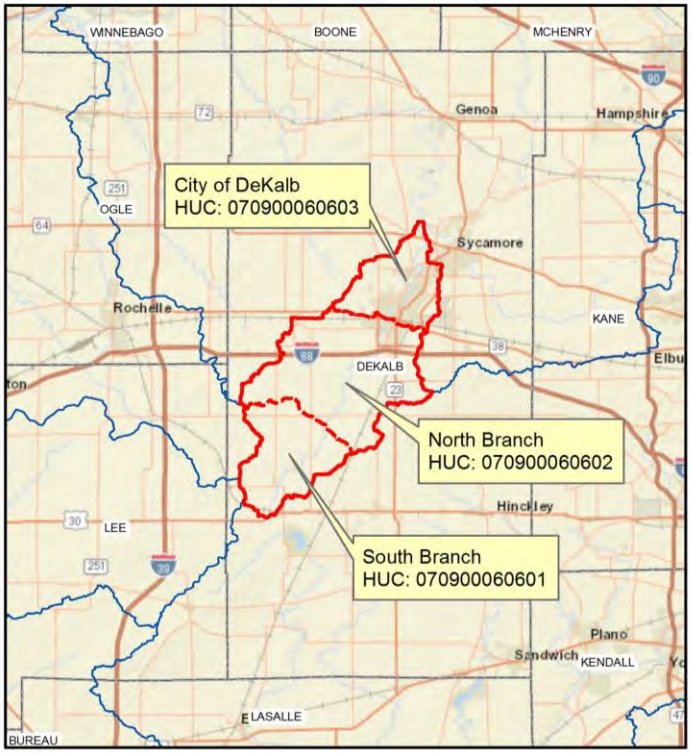





# What is a Watershed?

- A watershed is best described as an area of land where surface water drains to a common location such as a stream, river, or lake.
- Groundwater is not linked directly to a watershed boundary.

# Upper South Branch Kishwaukee


**Upper South Branch Kishwaukee Watersheds**
**DeKalb County**

Data Sources:
AES
ESRI
U.S. Geological Survey
Illinois State Geological Survey

Applied Ecological Services, Inc.

# What is Watershed Planning?

**Voluntary, community supported** approach to protecting and improving water quality in streams, lakes, and wetlands, protecting groundwater resources, restoring habitat, reducing flood damage, providing recreational & educational opportunities, and improving quality of life for people.

# CWA - Section 319

Congress enacted Section 319 of the Clean Water Act in 1987, establishing a national program to control NPS pollution.

- Addresses Nonpoint Source (NPS) pollution
- Delegated to states
- Encourages development of assessment reports; adoption of management programs; and implementation of those management programs.
- Promotes practices to protect watersheds
- Voluntary program – not enforceable

# USEPA 9 Elements

The 9 Elements aim to reduce non-point source pollution.

*Element A:* Identify causes and sources of impairment.

*Element B:* Estimate pollutant load reductions from Management Measures/BMPs.

*Element C:* Propose Management Measures/BMPs and identify "Critical Areas"

*Element D:* Identify technical and financial assistance needs.

*Element E:* Complete an information/education component.

*Element F:* Prepare a plan implementation schedule.

*Element G:* Describe interim, measurable milestones and project outcomes.

*Element H:* Develop criteria to determine if load reductions are being achieved over time.

*Element I:* Develop a monitoring plan to evaluate implementation efforts over time.

# Watershed Planning Steps

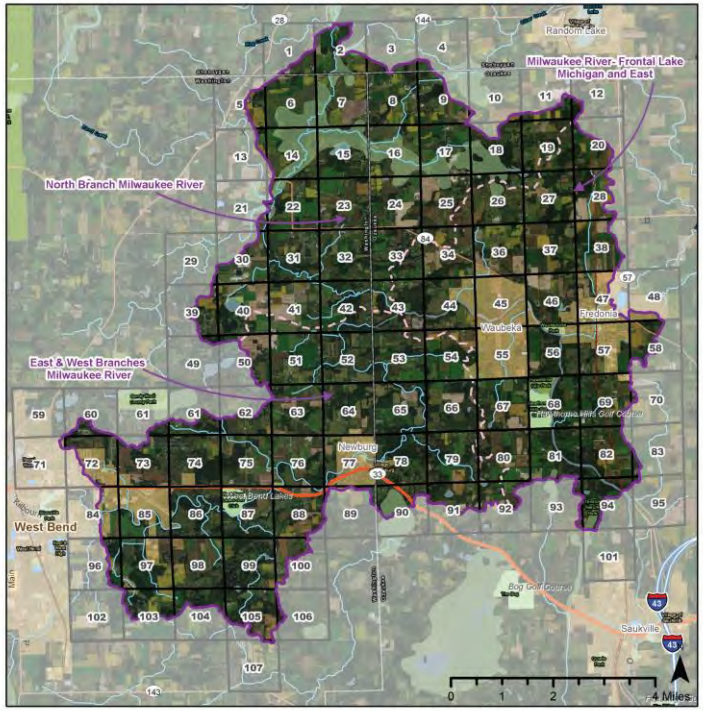
**(USEPA 9 Elements are Addressed)**

1) Watershed Field Inventory
2) Watershed Characteristics Assessment
3) Causes & Sources of Impairment
4) Vision, Goals & Objectives
5) Critical Areas & Reduction Targets
6) Action Plan
   - Programmatic Plan
   - Site Specific Plan
   - Education Plan
   - Monitoring Plan
7) Plan Evaluation

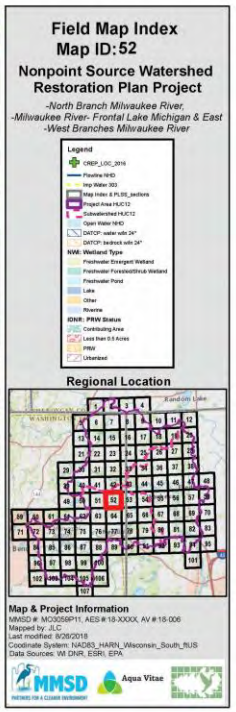
**Stakeholder meetings are held throughout.

# 1) Watershed Field Inventory

- A field inventory/windshield survey of the watershed is expected to begin in April or May.
- Results will be used to identify potential watershed improvement projects & protection areas, verify land uses, etc.





# Water Quality Monitoring

- Likely to begin in spring
- Will agree to locations with Committee
- Two collections: one during baseline conditions and another after a greater than 1 inch rain event

# 2) Watershed Characteristics Assessment

- Topography/Watershed Boundary
- Geology, Soils, Historic Vegetation
- Demographics
- Existing and Future Land Use
- Ordinance Review
- Green Infrastructure
- Natural Areas
- Drainage System
- Water Quality & Pollutant Loading
- Groundwater

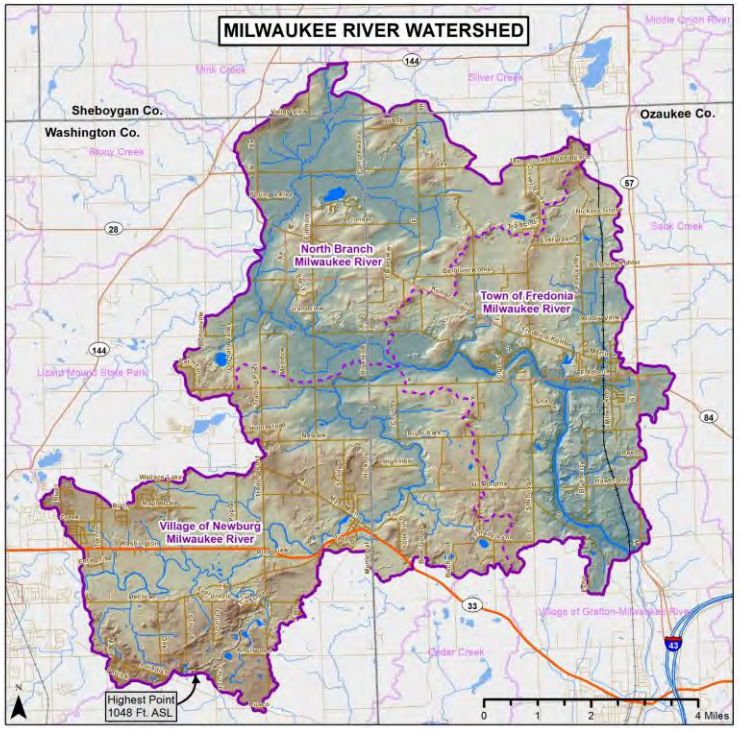
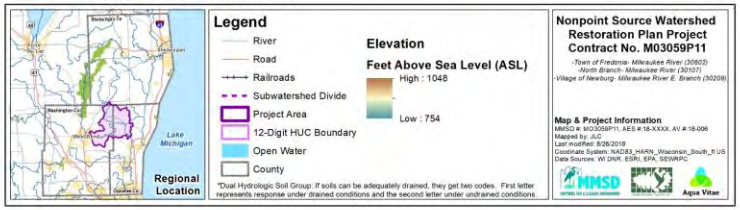



Figure X: Digital Elevation Model



# 3) Identify  Causes & Sources of Impairment

- Nutrients, sediment, bacteria
- Urbanized areas
- Agricultural areas
- Eroded streambanks
- Invasive species
- Stormwater facility retrofits
- Future development sites
- Pollutant hotspots

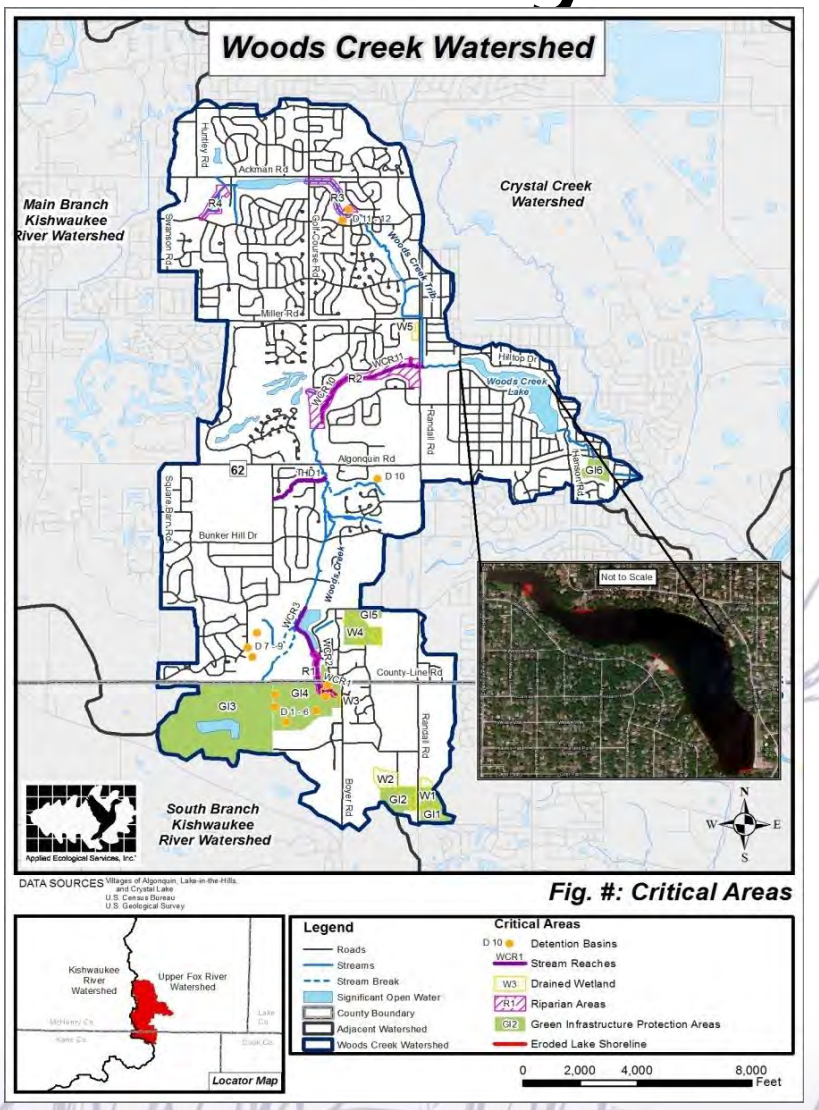
# 4) Develop Vision, Goals & Objectives

- Stakeholders will develop goals based on the watershed assessment & personal knowledge.

- Stakeholders will help develop measurable objectives for each goal that can be evaluated in the future.

# 5) Critical Areas & Reduction Targets

- Look at all causes and sources of impairment and find "Critical Areas"



# Reduction Targets

- Set pollutant "Reduction Targets" based on existing water quality data and numeric standards.

- Use model to estimate pollutant reduction from "Critical Areas" and other high priority projects to see if targets are attainable.

# 6) Develop an Action Plan

Programmatic Measures: general remedial, preventive, and policy watershed-wide Management Measures that can be applied across the watershed by various stakeholders.

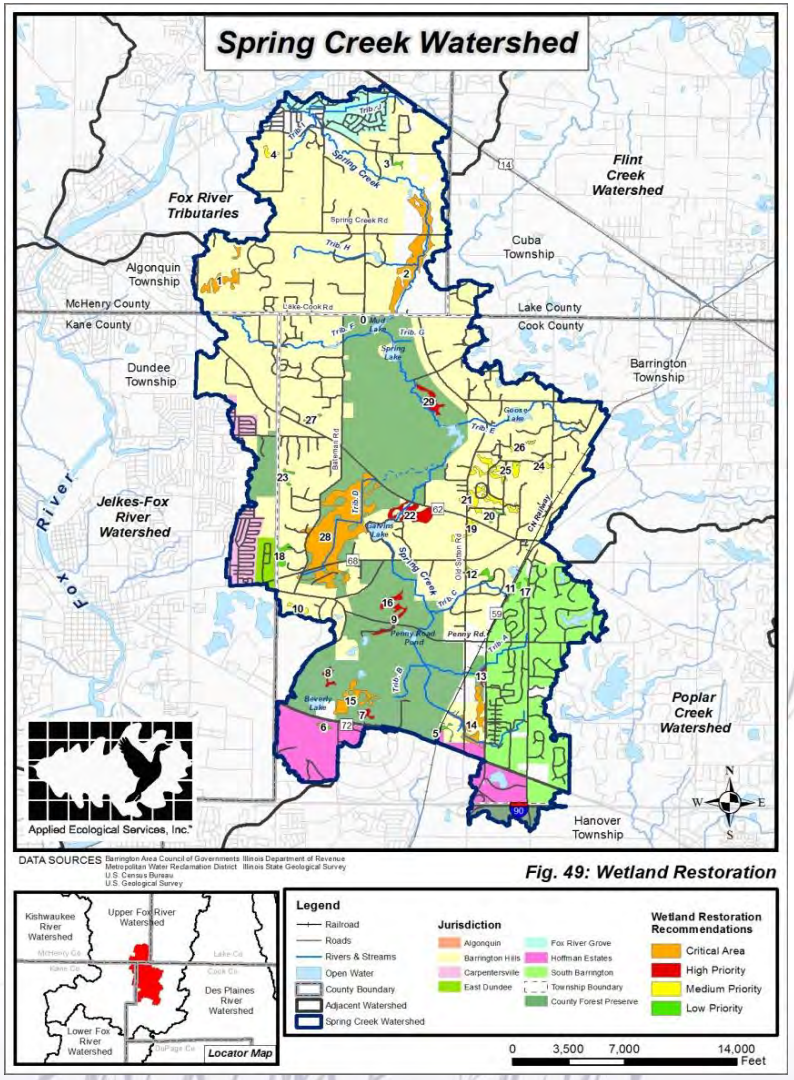
Site Specific Measures: actual locations where Management Measure projects can be implemented to improve surface and groundwater quality, green infrastructure, and flooding.

# Policy Recommendations

- Plan Adoption & Implementation
- Green Infrastructure Network
- Groundwater
- Road Salt
- Lawn Fertilizer
- Stormwater Management
- Native Landscaping/Natural Area Restoration
- Pavement Alternatives

# Site Specific Action Plan

- Streambank & Riparian Area Restoration
- Detention Basin Retrofits
- Wetland Restoration
- Agricultural Practices
- Green Infrastructure Protection
- Rain Gardens/Bioswales



# Site Specific Action Plan Table

## MOUNT PLEASANT

| ID# | Location | Units (size/ length) | Owner (public or private) | Existing Condition | Management Measure Recommendation | Pollutant Reduction Efficiency | Priority | Responsible Entity | Sources of Technical Assistance | Cost Estimate | Implementation Schedule (Years) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **STREAMBANK & CHANNEL RESTORATION (see Figure 60)** | | | | | | | | | | | |
| **Technical and Financial Assistance Needs:** Stream restorations are complex and require high technical and financial assistance needs to protect land, design, construct, monitor, and maintain the restoration. The project becomes more complex in areas that flow through several governing bodies or multiple private residences. Technical and financial assistance associated with stream maintenance is generally low for minor tasks such as removing debris. | | | | | | | | | | | |
| Pike River Trib. C (PRTC) | Tributary to Pike River that lies south of Oakes Rd. | 2,473 lf | Owners (mostly private) | 2,473 lf of stream that is highly channelized and moderately eroded with moderate sediment accumulation | Install grade controls | TN = 98 lbs/yr, TP = 49 lbs/yr, TSS= 49 tons/yr | High | Owner, MP | USACE, Consultant, WDNR, NRCS | $10,000 to install 5 grade controls | 25 Years + (2039+) |
| North Branch Reach 9 (PR09) | North Branch from just south of State Highway 11, south to State Highway 31 | 12,024 lf | Owners (mostly private) | 12,024 lf of stream with moderate erosion, high channelization, and poor riparian area adjacent to cropland | Remeander stream channel where possible, restore streambanks using bioengineering techniques, improve channel using riffles, and restore existing riparian area | TN= 2,989 lbs/yr, TP = 1,495 lbs/yr, TSS = 1.495 tons/yr | Critical Area | MP, Somers, Farm, Owner | USACE, Consultant, WDNR, NRCS | $180,000 design/permit; $1,800,000 install; $85,000 riparian area | 25 Years + (2039+) |
| Chicory Creek (PRCC) | Tributary to North Branch north of Braun Road | 5,517 lf | Owners (private), Sturtevant | 5,517 lf of highly channelized and moderately eroded stream with no floodplain connection | Improve channel using riffles | TN = 192 lbs/yr, TP = 96 lbs/yr, TSS = 96 tons/yr | High | MP, Sturtevant | USACE, Consultant, WDNR, NRCS | $15,000 to install 5 artificial riffles | 25 Years + (2039+) |
| Waxdale Creek (PRWC) | Tributary to North Branch just north of State Highway 11 | 11,371 lf | Owners (private), Mount Pleasant, Sturtevant, SC Johnson | 11,371 lf of moderately channelized and moderately eroded stream with abundant debris jams and no floodplain connection | Remove debris jams and improve channel using riffles at downstream half | TN = 396 lbs/yr, TP = 198 lbs/yr, TSS = 198 tons/yr | High | MP, Sturtevant | USACE, Consultant, WDNR, NRCS | $10,000 to remove debris jams; $15,000 to install 5 artificial riffles | 10-25 Years (2024-2039) |
| **RAVINE RESTORATION (see Figure 61)** | | | | | | | | | | | |
| **Technical and Financial Assistance Needs:** Ravine restorations are complex and require high technical and financial assistance needs to protect land, design, construct, monitor, and maintain the restoration. The project becomes more complex in areas that flow through several governing bodies or multiple private residences. Technical and financial assistance associated with ravine maintenance is generally low for minor tasks such as removing debris. | | | | | | | | | | | |
| Ravine just east of RCOC Park (32B) | east of RCOC Park and Sheridan Rd between Derby Ave and Chicory Rd | 440 lf | Owners (Private) | 440 lf of heavily eroded ravine east of RCOC Park and draining directly into Lake Michigan; ravine buffer is dominated by invasive shrubs | Design, permit, and implement ravine stabilization project | TN= 438 lbs/yr, TP = 219 lbs/yr, TSS = 219 tons/yr | Critical Area | Owner, MP | USACE, Consultant, WDNR | $25,000 to design and permit; $130,000 to install | 10-25 Years (2024-2039) |


Funding for the projects YOU want to accomplish

# 319 Implementation Funding Examples

Carpenter Creek (Carpentersville)

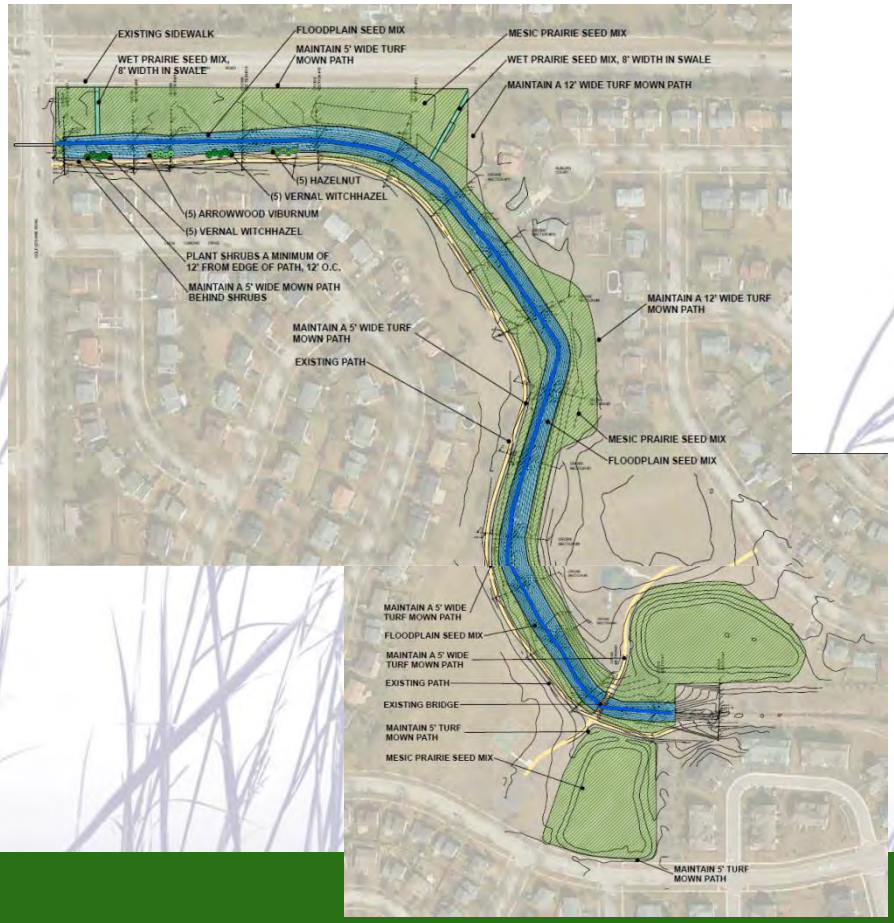
- $1.2M to restore 4,600 lf of creek, **$600K match**

Woods Creek (Algonquin)

- $786K to restore 3,100 lf of creek, **$472K match**

Fetzner Park (Crystal Lake)

- $180K to restore critical area, **$110K match**



# Information & Education Plan

- Purpose: change social behavior, public cooperation, and motivation to take action to meet plan goals

| Education Action | Target Audience | Package (vehicle) | Lead and Supporting Organizations | Outcome/Behavior Change |
|---|---|---|---|---|
| Educate the general public about the importance of groundwater recharge and quality | General Public | Partnership hold an annual "event" day with workshops and field trips around the watershed | Partnership; SWCD | "Event" day attendees understand the importance of groundwater recharge and begin to change everyday activities. |

# Water Quality Monitoring Plan

- Purpose: methods and locations where water quality monitoring should occur in the future and set of criteria to measure success

| Site | Recommended or Existing Monitoring Entity | Sampling Location (See Figure 58) | Sampling Frequency | Parameters Tested |
|---|---|---|---|---|
| **Existing Monitoring Programs** | | | | |
| Woods Creek Lake | IEPA Volunteer Lakes Monitoring Program | 2 sites on lake (IEPA # IL RTZZ 1w) | Annually | Physical; Chemical; Biological |
| Woods Creek Lake | Illinois Department of Natural Resources | Entire lake | Every 5 Years | Biological (Fish) |
| **Recommended Monitoring Programs** | | | | |
| Woods Creek & Tributaries | Cooperative effort between WCWC partners: Algonquin, Lake in the Hills, Crystal Lake, and Crystal Lake Park District | 3 sites: Woods Creek @ Dennis Ave. and Ken Carpenter Park west of Randall Rd; Woods Creek Tributary @ Morningside Park | Every 5 Years | Physical and Chemical |
| Woods Creek | Jacobs High School Biology Department in cooperation with RiverWatch & WCWC | Woods Creek @ Bunker Hill Drive | Yearly | Physical, Chemical, Biological (Macroinvertebrates) |

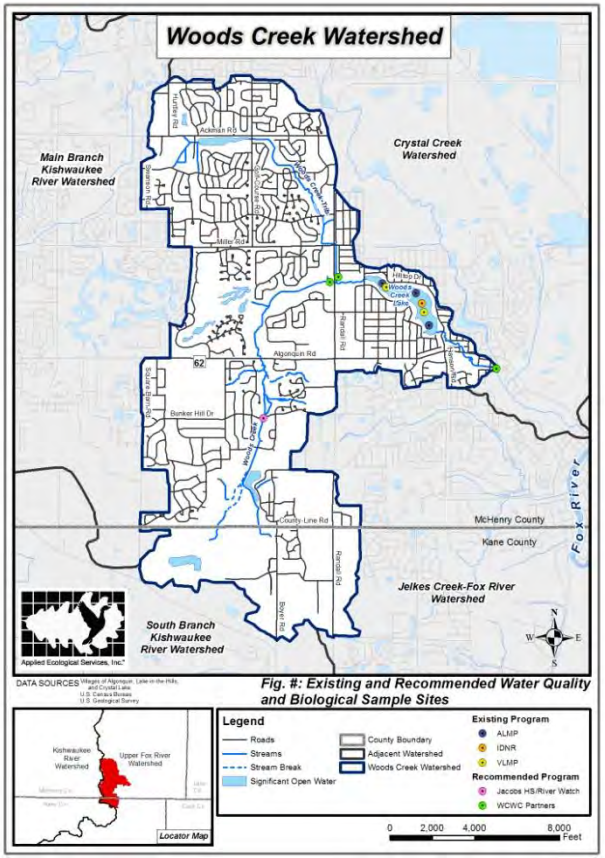
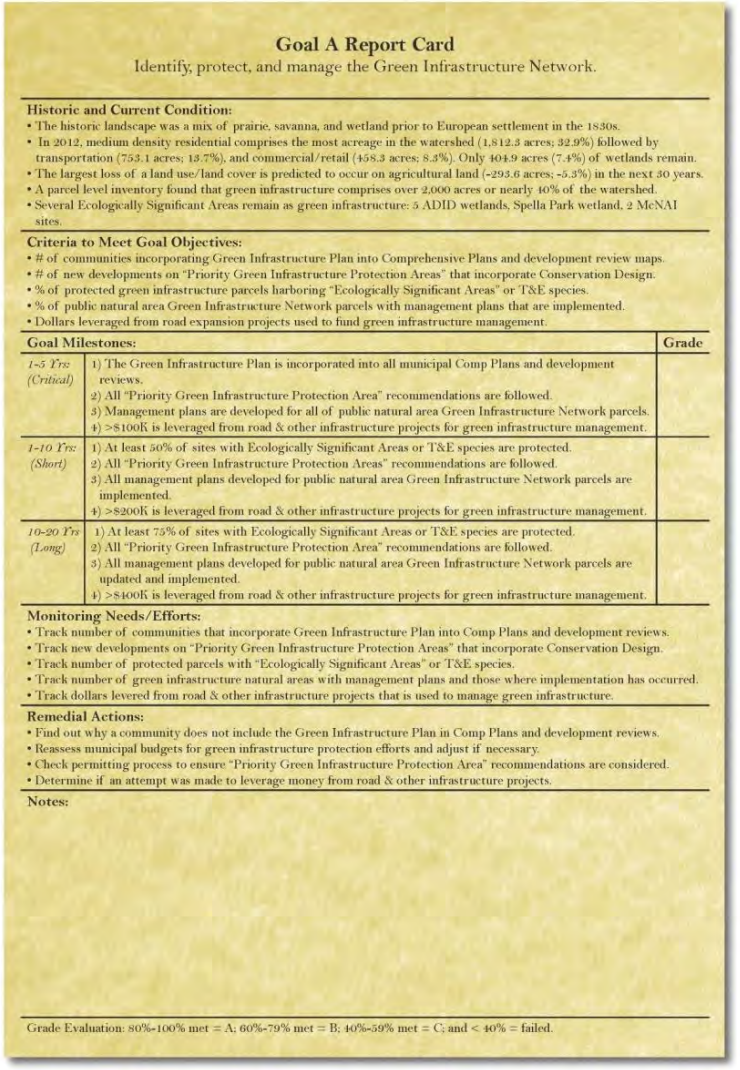


Fig. #: Existing and Recommended Water Quality and Biological Sample Sites

# 7) Plan Evaluation

- A progress report card will be created for each plan goal to help evaluate implementation progress.
- The progress report card is designed to be used/evaluated every five years.



**Goal A Report Card**

Identify, protect, and manage the Green Infrastructure Network.

**Historic and Current Condition:**

- The historic landscape was a mix of prairie, savanna, and wetland prior to European settlement in the 1830s.
- In 2012, medium density residential comprises the most acreage in the watershed (1,812.3 acres; 32.9%) followed by transportation (753.1 acres; 13.7%), and commercial/retail (458.3 acres; 8.3%). Only 404.9 acres (7.4%) of wetlands remain.
- The largest loss of a land use/land cover is predicted to occur on agricultural land (-293.6 acres; -5.3%) in the next 30 years.
- A parcel level inventory found that green infrastructure comprises over 2,000 acres or nearly 40% of the watershed.
- Several Ecologically Significant Areas remain as green infrastructure: 5 ADID wetlands, Spella Park wetland, 2 MeNAI sites.

**Criteria to Meet Goal Objectives:**

- # of communities incorporating Green Infrastructure Plan into Comprehensive Plans and development review maps.
- # of new developments on "Priority Green Infrastructure Protection Areas" that incorporate Conservation Design.
- % of protected green infrastructure parcels harboring "Ecologically Significant Areas" or T&E species.
- % of public natural area Green Infrastructure Network parcels with management plans that are implemented.
- Dollars leveraged from road expansion projects used to fund green infrastructure management.

| **Goal Milestones:** | | **Grade** |
|---|---|---|
| *1-5 Yrs (Critical)* | 1) The Green Infrastructure Plan is incorporated into all municipal Comp Plans and development reviews.<br>2) All "Priority Green Infrastructure Protection Area" recommendations are followed.<br>3) Management plans are developed for all of public natural area Green Infrastructure Network parcels.<br>4) >$100K is leveraged from road & other infrastructure projects for green infrastructure management. | |
| *1-10 Yrs (Short)* | 1) At least 50% of sites with Ecologically Significant Areas or T&E species are protected.<br>2) All "Priority Green Infrastructure Protection Areas" recommendations are followed.<br>3) All management plans developed for public natural area Green Infrastructure Network parcels are implemented.<br>4) >$200K is leveraged from road & other infrastructure projects for green infrastructure management. | |
| *10-20 Yrs (Long)* | 1) At least 75% of sites with Ecologically Significant Areas or T&E species are protected.<br>2) All "Priority Green Infrastructure Protection Area" recommendations are followed.<br>3) All management plans developed for public natural area Green Infrastructure Network parcels are updated and implemented.<br>4) >$400K is leveraged from road & other infrastructure projects for green infrastructure management. | |

**Monitoring Needs/Efforts:**

- Track number of communities that incorporate Green Infrastructure Plan into Comp Plans and development reviews.
- Track new developments on "Priority Green Infrastructure Protection Areas" that incorporate Conservation Design.
- Track number of protected parcels with "Ecologically Significant Areas" or T&E species.
- Track number of green infrastructure natural areas with management plans and those where implementation has occurred.
- Track dollars levered from road & other infrastructure projects that is used to manage green infrastructure.

**Remedial Actions:**

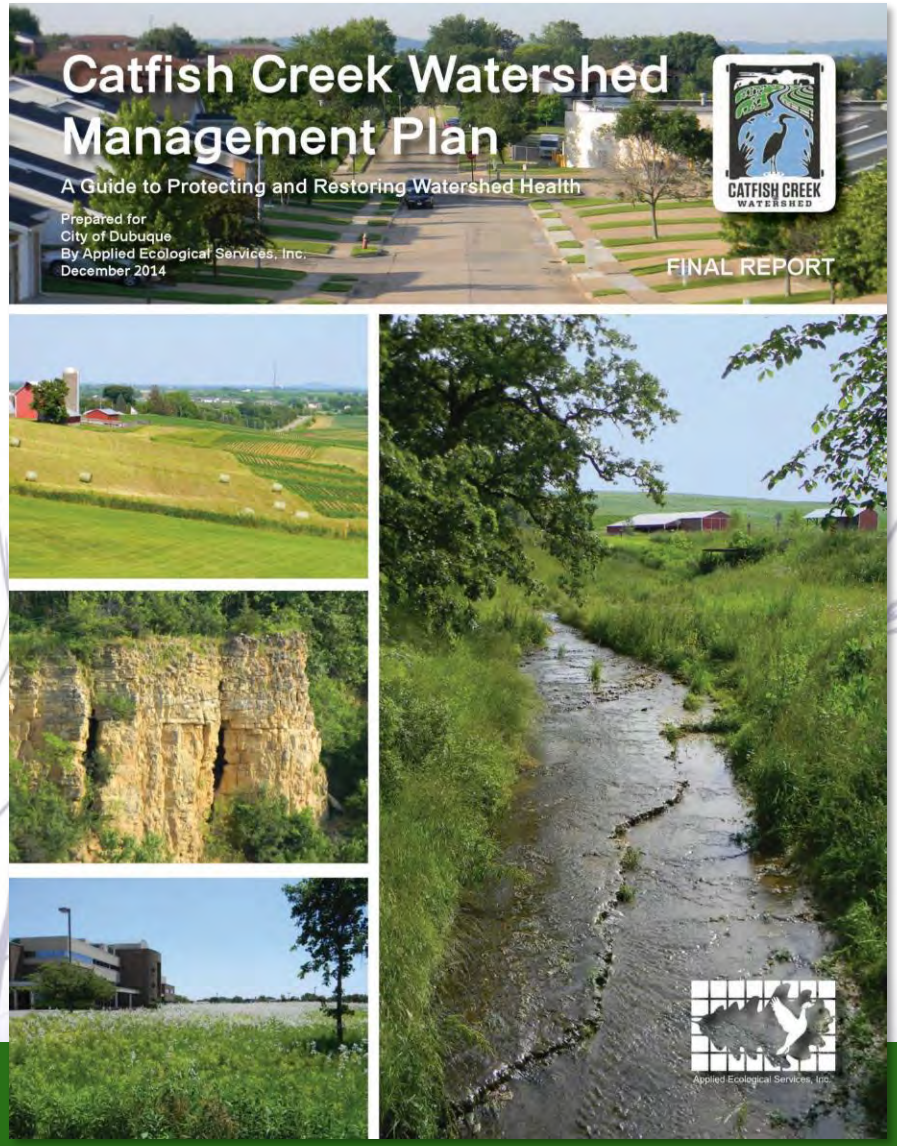
- Find out why a community does not include the Green Infrastructure Plan in Comp Plans and development reviews.
- Reassess municipal budgets for green infrastructure protection efforts and adjust if necessary.
- Check permitting process to ensure "Priority Green Infrastructure Protection Area" recommendations are considered.
- Determine if an attempt was made to leverage money from road & other infrastructure projects.

**Notes:**

Grade Evaluation: 80%-100% met = A; 60%-79% met = B; 40%-59% met = C; and < 40% = failed.

# Final Executive Summary & Plan

- Will create a brochure-style Executive Summary.
- Once the final draft is approved, we will put the plan in InDesign.
- Includes instructions for sending to printer.



# Watershed Planning Schedule

Meetings generally every other month over the next 2 yrs:

*February (today!)* – Kickoff Meeting

*April* – Watershed Characteristics Assessment, Part 1

*June* – Watershed Tour

*August* – Field Inventory Results

*October* – Watershed Characteristics Assessment, Part 2

*January '20* – Water Quality, Initial Modeling Results

*March '20* – Watershed Goals & Prioritization

*May '20* – Critical Areas and Action Plan

*July '20* – Outreach Plan, Monitoring Plan, & Milestones

*September '20* – Presentation of Draft Plan

# We need your help!

## We want your input, knowledge and data!

Important resources/areas to protect or preserve

What projects might you need additional funding for?

Water quality data – chemical, physical, biological

Habitat information

Rare, threatened or endangered species information

*What do you know about this watershed that we don't??*


Questions?