

**Geosyntec**  
consultants

# What is NARP?

Nutrient Assessment Reduction Plan

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# What is a NARP?



## Speaker:

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Certified Lake Professional  
Certified Floodplain Manager

## Project Manager

- North Branch Watershed Workgroup NARP Workplan
- Village of Huntley NARP Workplan
- Village of Huntley NARP
- Village of Hampshire NARP Workplan
- City of Decatur NARP

## Project Involvement

- Rock River Watershed Partnership NARP Workplan
- Des Plaines River Watershed Workgroup NARP
- Fox River Study Group FRIP

What is a NARP?



**ILMA-LAKES**  
ILLINOIS LAKES MANAGEMENT ASSOCIATION



# Nutrient Assessment Reduction Plan (NARP)

# What is a NARP?



## Overview of NARP Framework

# Overview



## Nutrient Assessment Reduction Plan (NARP)



## Who Needs a NARP?



## How to Get Started?

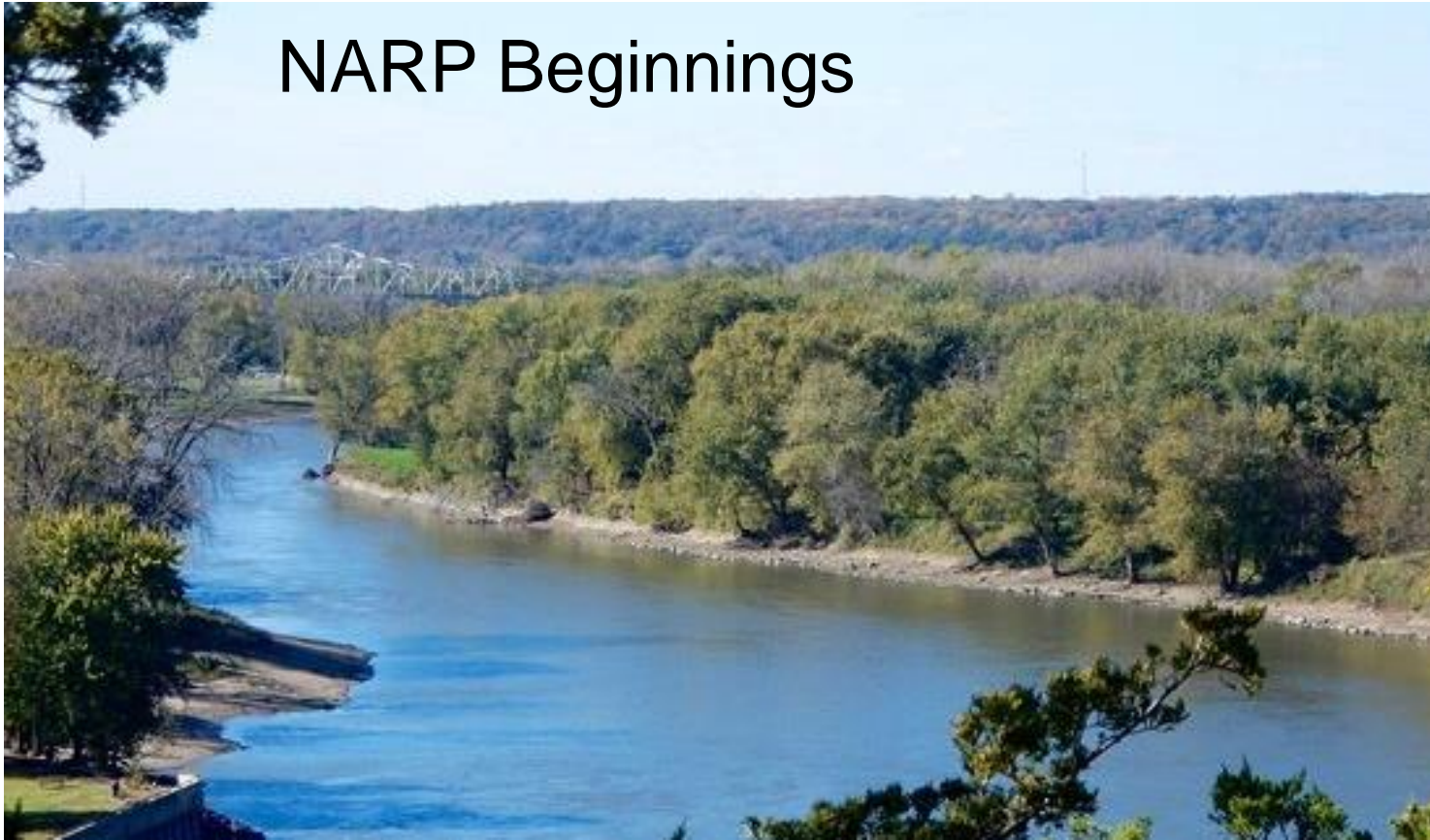


## Which Nutrient Targets?

# What is a NARP?



## NARP Beginnings



- IAWA
- Non-Governmental Organizations
- Illinois EPA

NARP was negotiated to avoid litigation over phosphorus limits in individual permits

## NARP Objective(s)

- **Address phosphorus causing**
  - Excessive algae
  - Dissolved oxygen problems
  - pH problems
- **Other contributing factors**
  - Hydraulic modifications (dams, channelization)
  - Lack of riparian shading
  - Excessive streambank erosion
  - Loss of groundwater replenishment



Lower Des Plaines River. Photo by Cynthia Skrukrud.

# What is a NARP?



## New Special Conditions in NPDES Permits Require that NARP Include

- **Targets to address the P-related impairments**
  - Nutrient Science Advisory Committee recommendations, OR
  - Develop own watershed-specific target levels
- **Controls required (or not)**
  - Point source reductions
  - Nonpoint source reductions
  - Other measures
- **Schedule for implementation of controls**

**Option to  
Join a  
Workgroup**

What is a NARP?



# Who Needs a NARP?



# What is a NARP?



## NARP Required If Discharging into an Impaired Water or at “Risk of Eutrophication”



### **PHOSPHORUS RELATED IMPAIRMENT**

Listed on 303(d) list

- Dissolved oxygen
- Offensive condition (algae and/or aquatic plant growth)



### **RISK OF EUTROPHICATION**

Information that plant, algal, or cyanobacterial growth is causing or will cause violations of water quality standards

- pH
- Dissolved oxygen
- Chlorophyll-a



### **OTHER**

Permit can be re-opened if

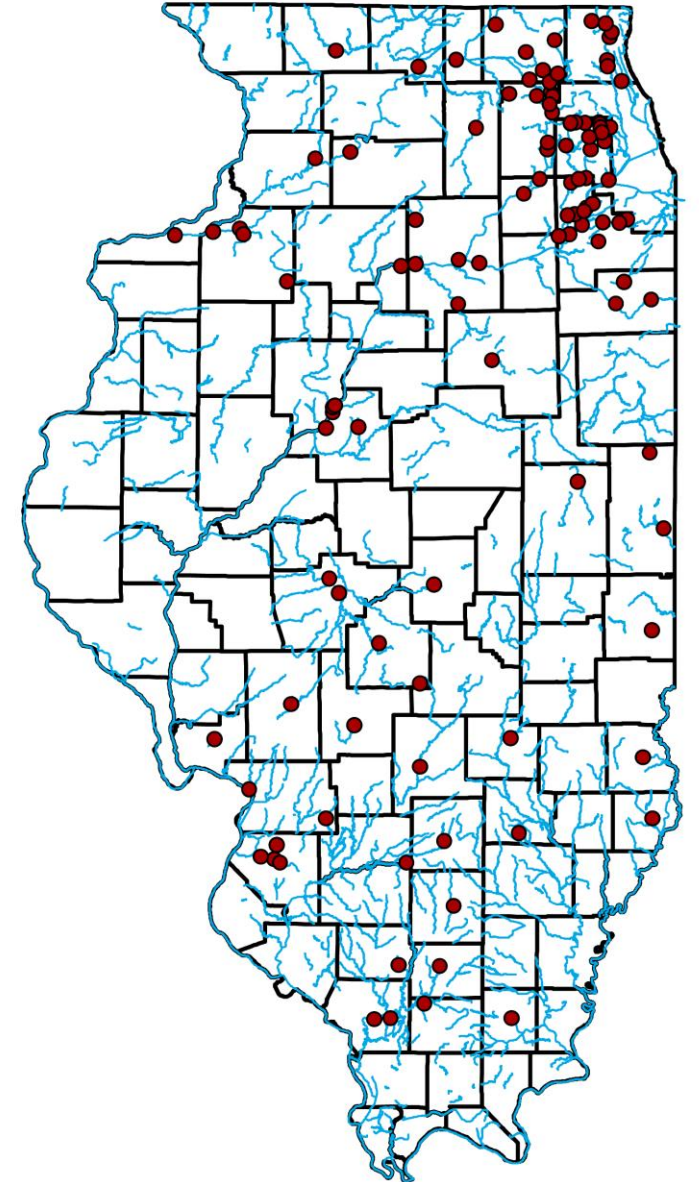
- Phosphorus related impairment
- Risk of eutrophication

# What is a NARP?

## Impaired Status

### 270 POTWs Discharging to Impaired




- **Caution!!!** Make sure you understand underlying data for the impairment listing
  - Aesthetic issues (plants or algae)
  - When listed?
  - What data?
  - Where was data collected?
  - Data quality?

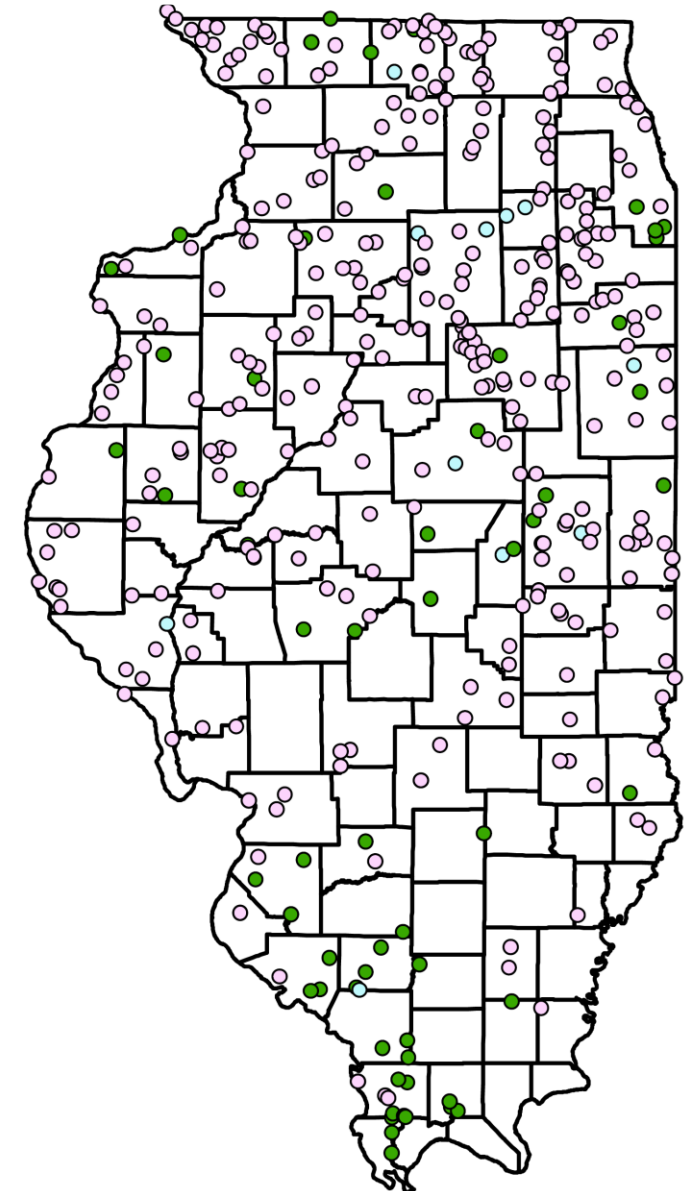


# What is a NARP?

## Risk of Eutrophication (IEPA)

### 480 Stream Sites Met Criteria for Risk of Eutrophication

	Criterion	Number of Stations
		
	pH > 9.0	50
	Median chlorophyll-a > 26 ug/L	83
	pH > 8.35 & DO sat > 110% for 2+ days	347
	Total	480



# What is a NARP?



## New Data or NARP Can Change What Needs to

- **Newly assessed data by Illinois EPA**
  - Show waterbody is impaired or at risk of eutrophication
  - Illinois EPA may re-open and modify permit
- **NARP concludes**
  - No impairment related to P
  - Point source reductions in P not needed
  - Point source reductions in P needed
  - P-reductions needed from both point and nonpoint sources
  - P-reductions not needed but other measures needed



What is a NARP?



# How to Get Started?

# What is a NARP?

## What does a Watershed Group Look Like?

- If you have a group, assess existing data across the watershed
- If not, consider forming group
  - Can benefit all WWTPs in watershed
  - Include Municipal Separate Storm Sewer Systems (MS4s)
  - Include nonpoint sources?
  - Include environmental groups?
    - Member?
    - Advisory role?

## *Fox River Study Group*



DuPage River Salt Creek Workgroup



DES PLAINES RIVER  
WATERSHED  
WORKGROUP



NORTH BRANCH  
CHICAGO RIVER  
WATERSHED  
WORKGROUP

Lower DuPage River  
Watershed Coalition

# What is a NARP?

## Objectives: Minimum and Preferred Establish Management Objectives

- Phosphorus only?
- Phosphorus & nitrogen?
- Other impairments?
  - Dams
  - Stream erosion / sedimentation
  - Flow-related impairments
  - Agricultural impacts
- Need to establish attainable restoration targets?



# What is a NARP?



Journey may shape Objectives

Every watershed and waterway is unique

- This is not one size fits all
- Process takes time and assistance:
  - Legal
  - Planning
  - Monitoring & Biology
  - Modeling
  - Financial





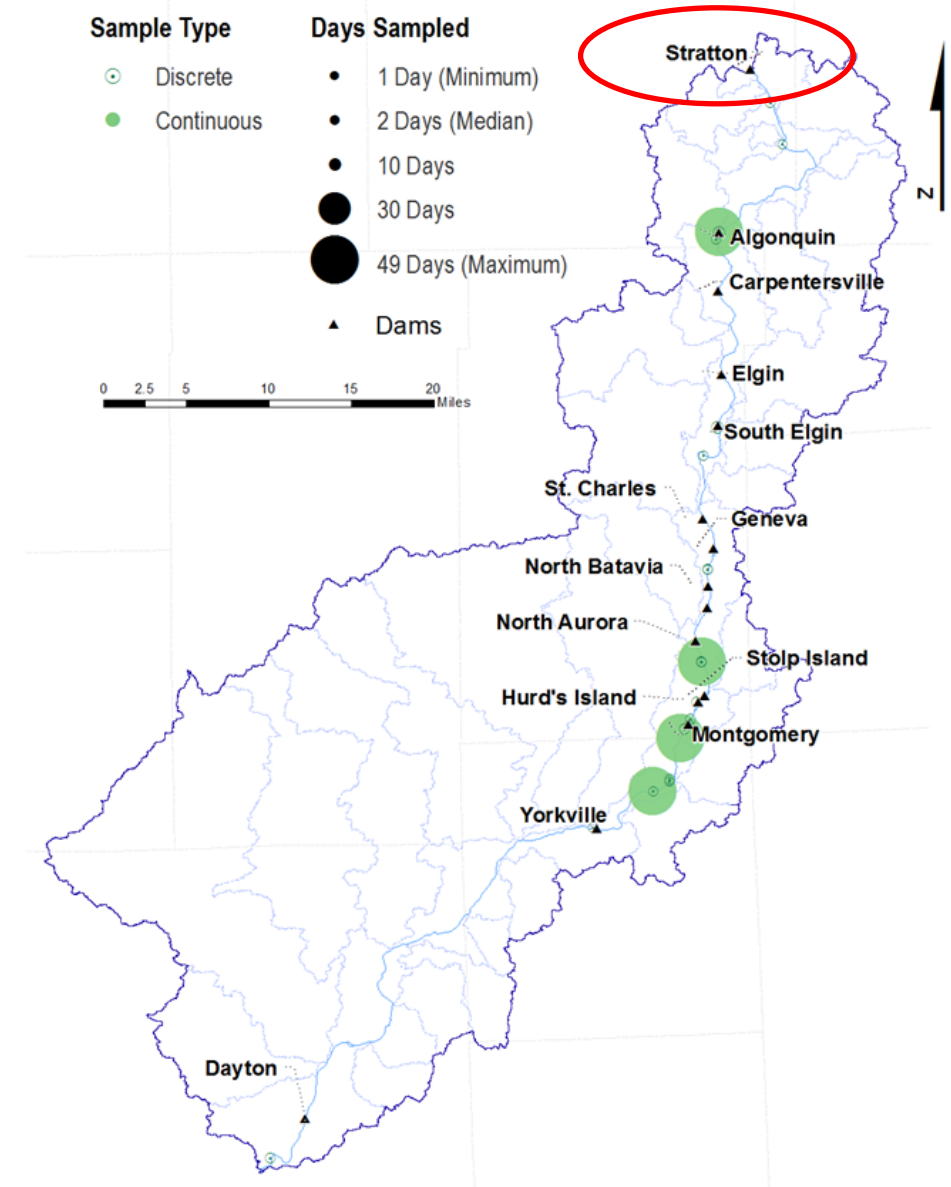
# What is a NARP?



## Data helps tell the Story

### Assess Monitoring Needed & Establish Program

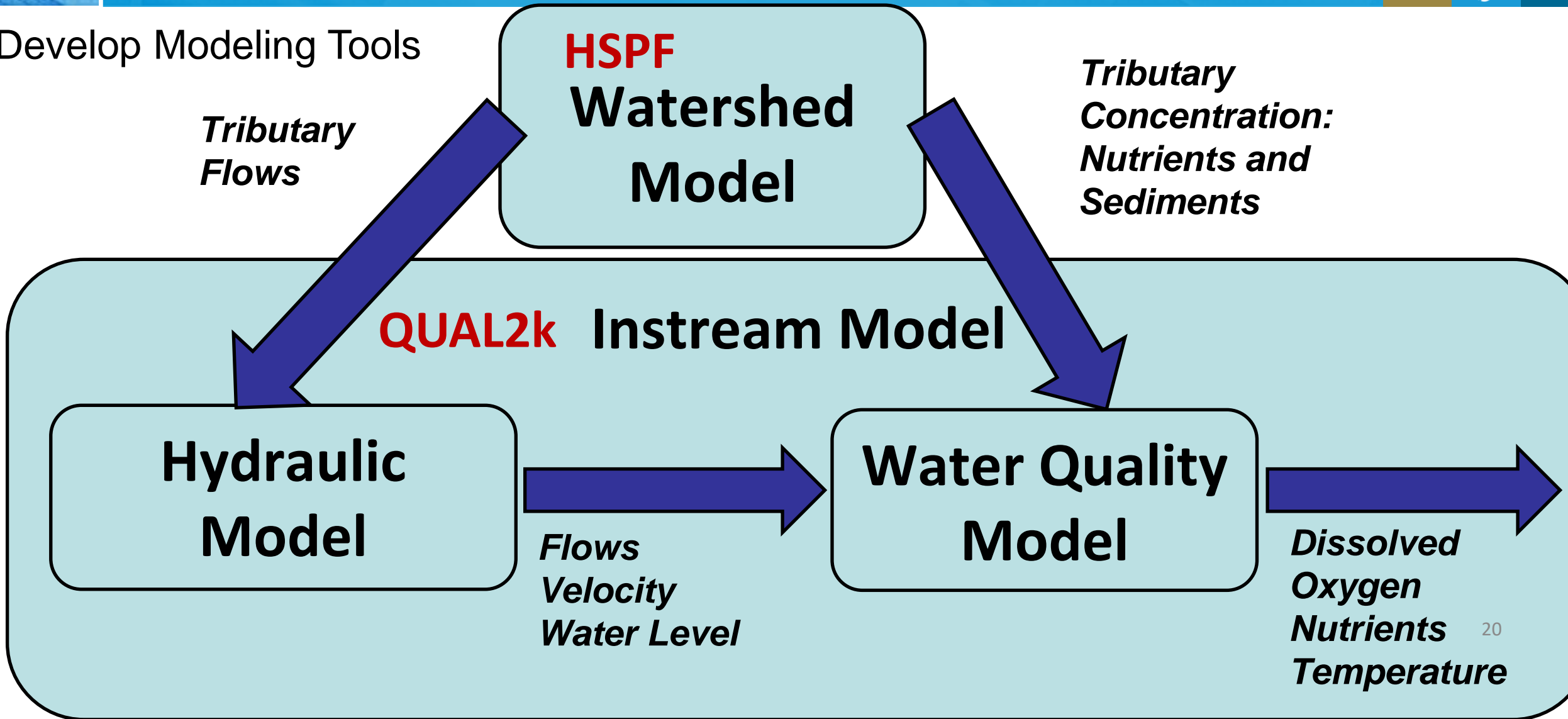
- Spatial distribution of stations
- Type of data to collect
  - Instream physical/chemical/biological
  - Effluent physical/chemical
- Frequency of collection
- Depends on model selection



# What is a NARP?



Develop Modeling Tools

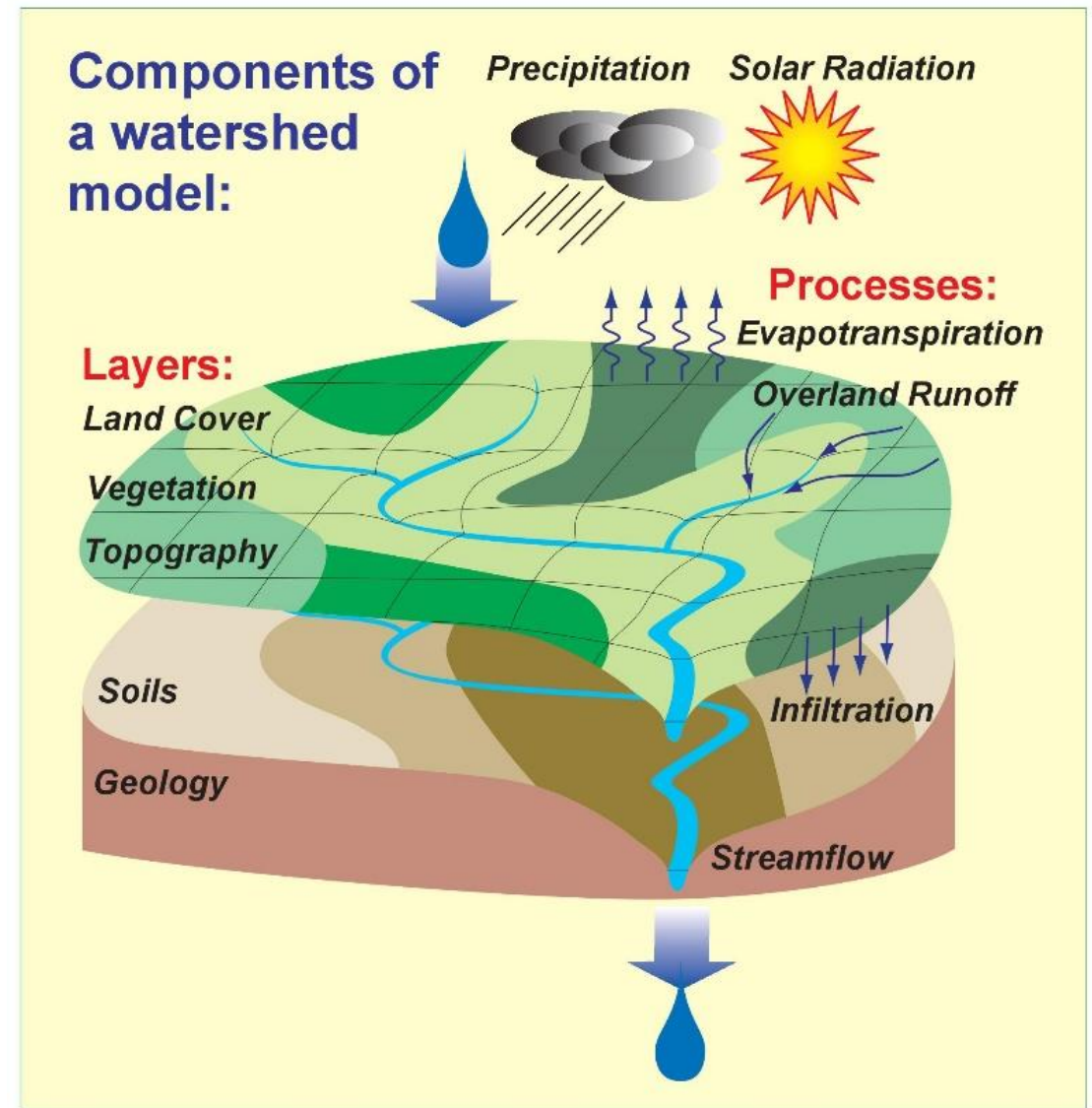


# What is a NARP?



## Hydrology Watershed Model Uses

- Establish baseline loads
- Evaluate potential reductions from control alternatives
- Assess effectiveness of placement of stormwater best management practices



# What is a NARP?

## Water Quality Model (Stream Model)

### Hydraulic Model

- Flows
- Velocities
- Depth

### Water Quality Model

- Temperature
- Dissolved oxygen
- Nutrients
- Chlorophyll-a (algae)

### Uses

- Evaluate benefits of potential control alternatives
- Establish site-specific instream nutrient targets
- Reviews stream chemistry at low where impacts have greatest likelihood of occurrence



Image Courtesy of Fox River Study Group

# What is a NARP?



## Nutrient-related Impairments and Solutions can be complex

- Consider long-term monitoring and adaptive management
- Modeling will likely be useful throughout the process
  - Help develop NARP
  - Fills in gaps in monitoring data – temporal and spatial
  - Help assess whether goals are being achieved
  - Explain unusual events
- The NARP recognizes that addressing impairments will take time
- If eliminating impairments is unattainable, use information to conduct a Use Attainability Analysis (UAA)

# What is a NARP?



## Site-Specific Targets

- Procedures not defined
- Many different approaches
- Most likely will rely on
  - Robust monitoring data
  - Water quality models
  - Technology and economic feasibility analyses
  - Management alternatives
    - Variances?
    - Use Attainability Analyses?
    - Total Maximum Daily Load (TMDL) alternatives?





## What have we seen so far?

- People have varying opinions on what NARP is and how to address it
  - Permittees
  - Consultants
  - Stakeholders
  - NFPs/NGOs
- Variable approaches to address NARP requirements

# What is a NARP?



## What is for certain?

- For now, there are no simple answers
- This is an investment in your community and surface waters where some answers are addressed nearby, and others are not
- Trying to skirt the issue or invent a better mousetrap costs money and resources most people do not have and can cost even more to course correct
- This is a project that is a process and will unfold over several years and must be flexible and adaptable



# What is a NARP?



## Why do I care?

- Many of our lakes are impoundments
- Many of our lakes are impaired
- Many of our lakes are in these same watersheds
- Unlike watershed planning, the NARP has regulatory drivers
- The result is meant to be measurable, i.e. result measurable water quality improvements
- Projects needed to get to the end result may be point and non-point
- Non-involvement can result in a missed opportunity.
- <https://illinois-epa.maps.arcgis.com/apps/webappviewer/index.html?id=4fe629ea19a74af3bf71a1547196c75e>

# What is a NARP?



**QUESTIONS?**

**THANK YOU!**

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# What is a NARP?



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