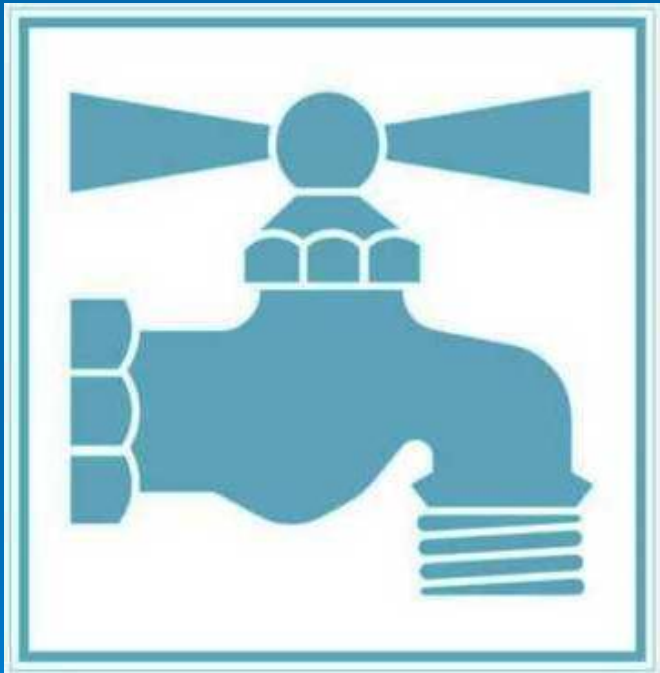


Shallow Groundwater Aquifers in Kane County



Presented to
The Conservation
Foundation / CMAP
Blackberry Creek and
Ferson-Otter Creek
Stakeholder Meetings

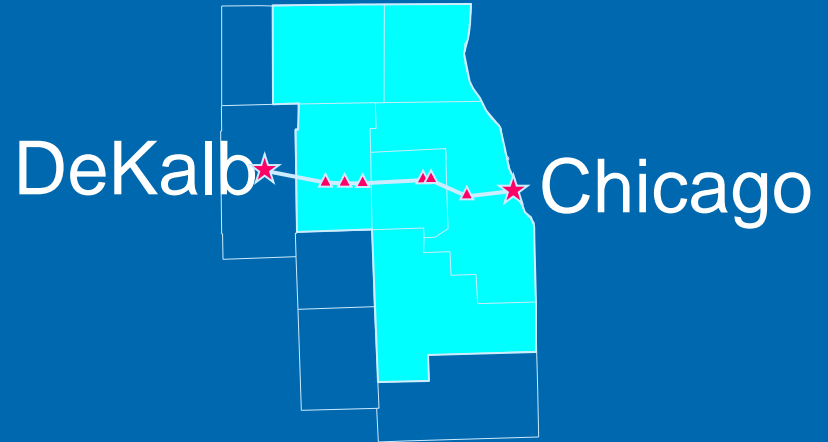
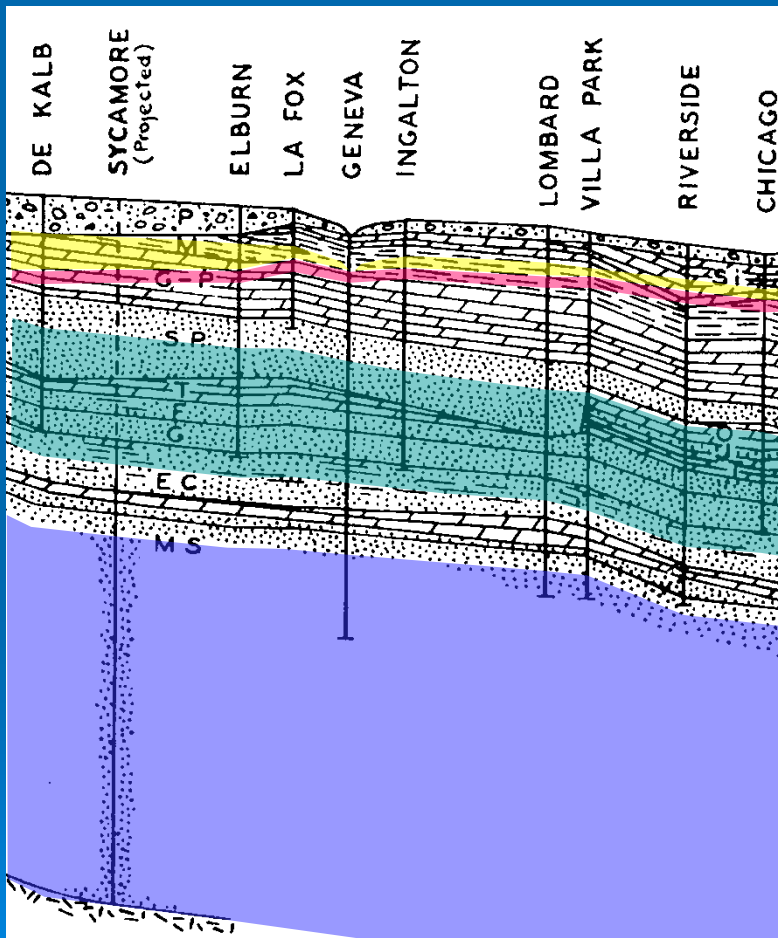
Paul M. Schuch, P.E., Director
Water Resources Division

December 14 & 16, 2010

Aquifers of Northeastern Illinois

West

East



Unconsolidated Aquifer System



Shallow Bedrock Aquifer



Deep Bedrock Aquifer System



Elmhurst-Mt. Simon Aquifer

Cross-Section Modified from Bretz (1939)

Kane County Water Resources Investigations by the ISWS/ISGS

Kane has spent close to \$2 million over the last 7 years on:


Geologic & Hydrogeologic Models:

- Deep Bedrock Aquifer
- Shallow Aquifer

Flow Accounting Model:


- Surface water from the Fox River

Exhibit A



Illinois State Water Survey

Main Office • 2204 Griffith Drive • Champaign, IL 61820-7495 • Tel (217) 333-2210 • Fax (217) 333-6540
Peoria Office • P.O. Box 697 • Peoria, IL 61662-0697 • Tel (309) 671-3196 • Fax (309) 671-3106



RESEARCH PROPOSAL

SUBMITTED TO: Kane County Development Department
Geneva, Illinois

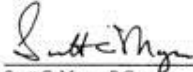
GRANTEE: Board of Trustees, University of Illinois
State Water Survey Division

SCIENTIFIC GROUP: IL State Water Survey IL State Geological Survey
2204 Griffith Drive 615 E. Peabody
Champaign, IL 61820 Champaign, IL 61820

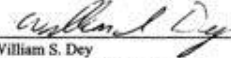
TITLE: Water-Resources Investigations for Kane County, Illinois

Amount Requested: \$1,818,578 **Proposed Duration:** 5 years

Principal Investigators

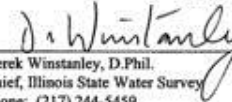


Scott C. Meyer, P.G.
Illinois State Water Survey
Phone: (217) 333-5382




William S. Dey
Illinois State Geological Survey
Phone: (217) 244-2779

Approving Administrative Official

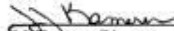


Derek Winstanley, D.Phil.
Chief, Illinois State Water Survey
Phone: (217) 244-5459

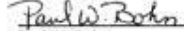


William W. Shilts
Chief, Illinois State Geological Survey
Phone: (217) 333-5111

Approving University Officials



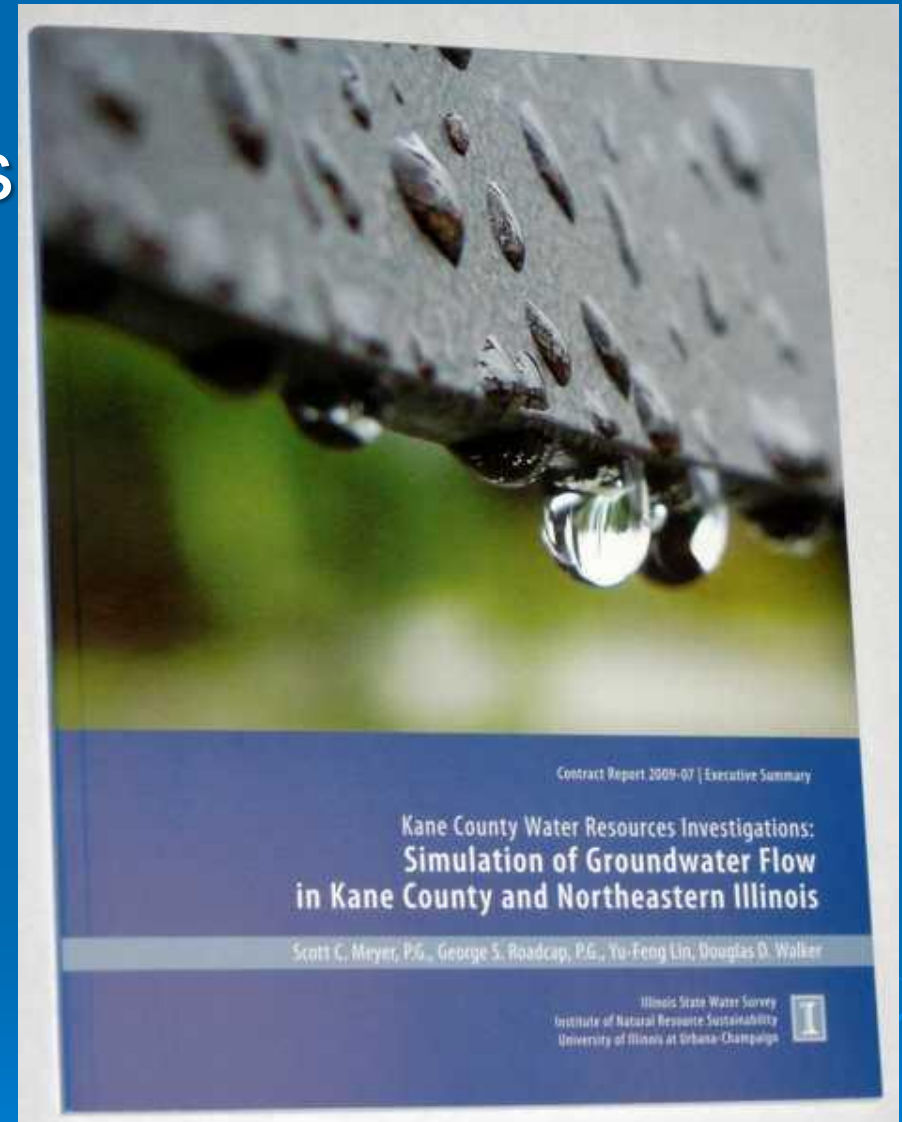
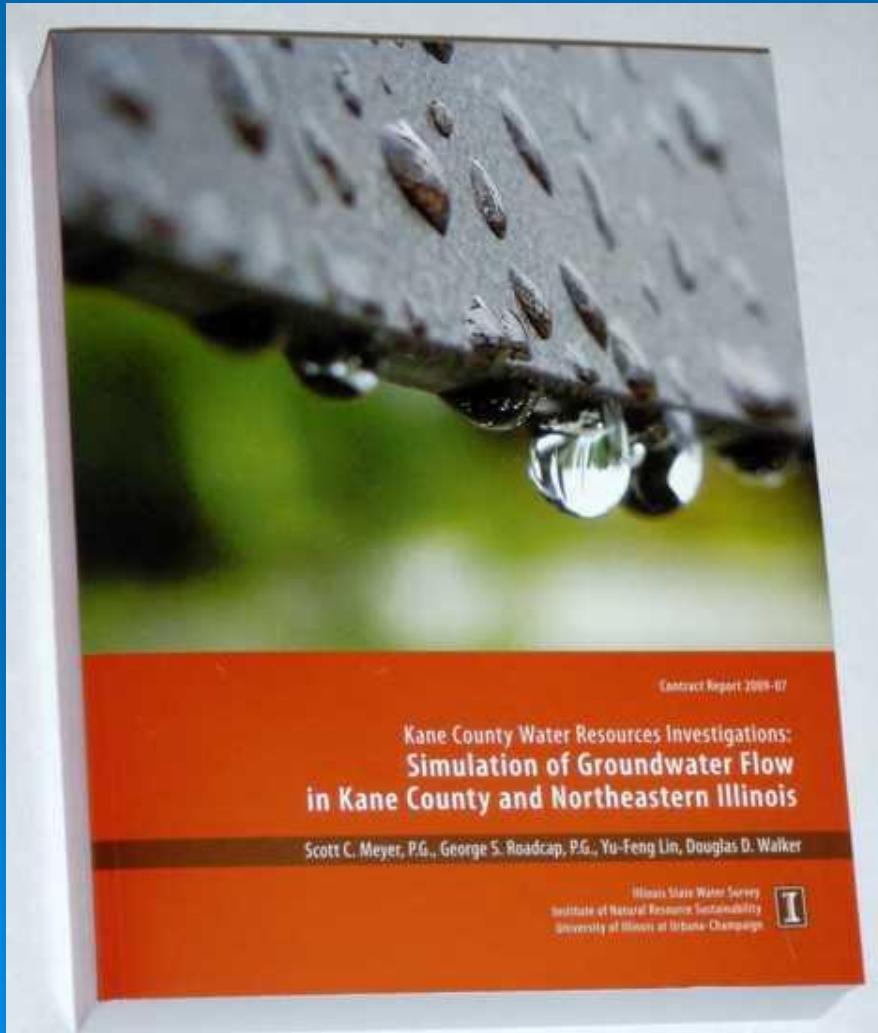
J. J. Kasherer, Director
Grant & Contract Administration
University of Illinois
Phone: (217) 333-2187



Paul W. Bohn
Interim Chair, Research Board
University of Illinois
Phone: (217) 333-2187

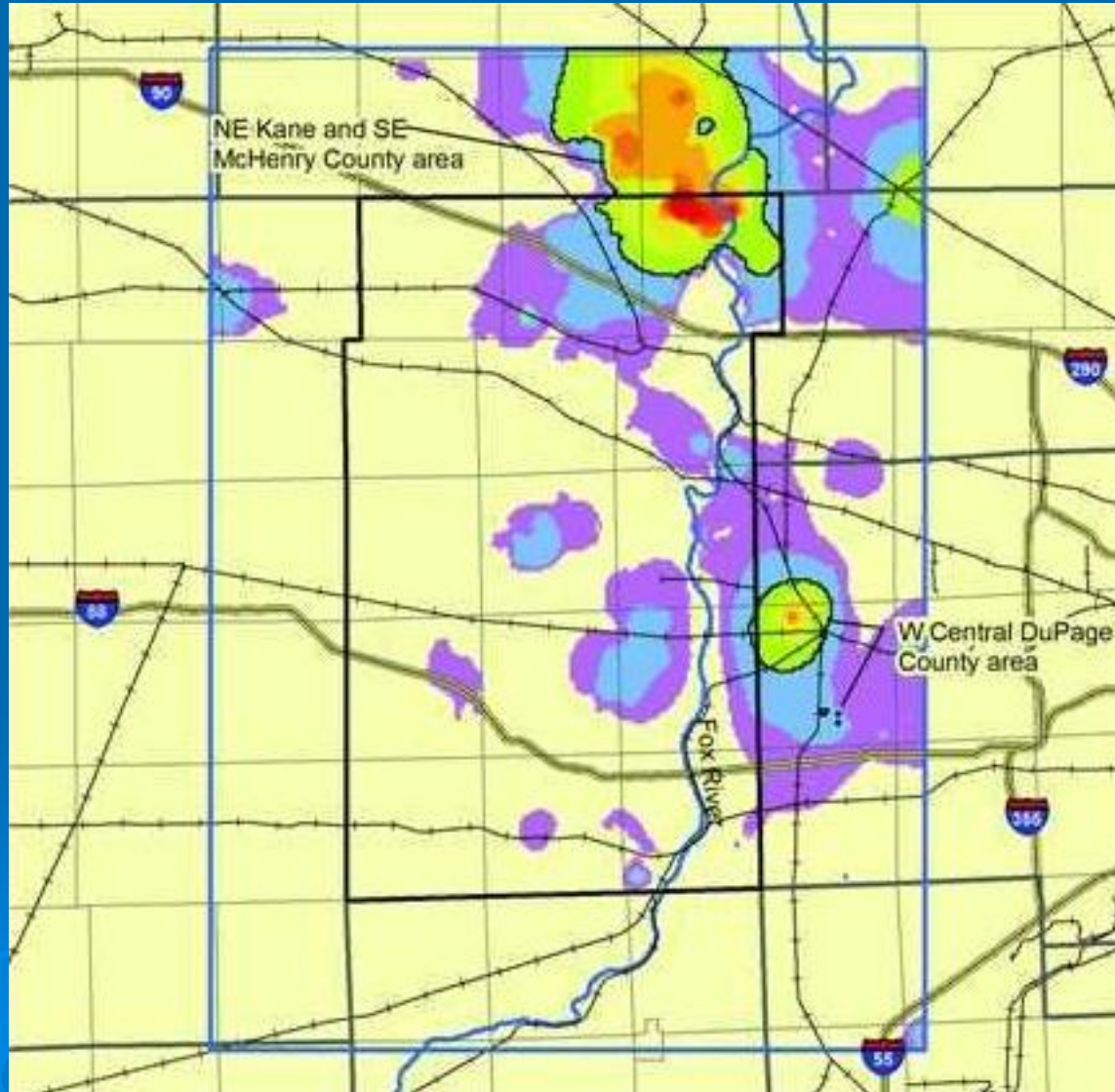
Printed on recycled paper

Kane County Water Resources Investigations 2002 - 2009

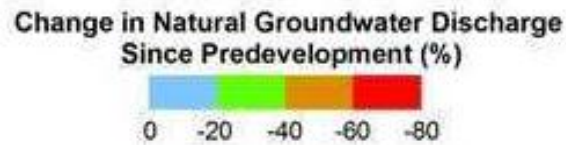
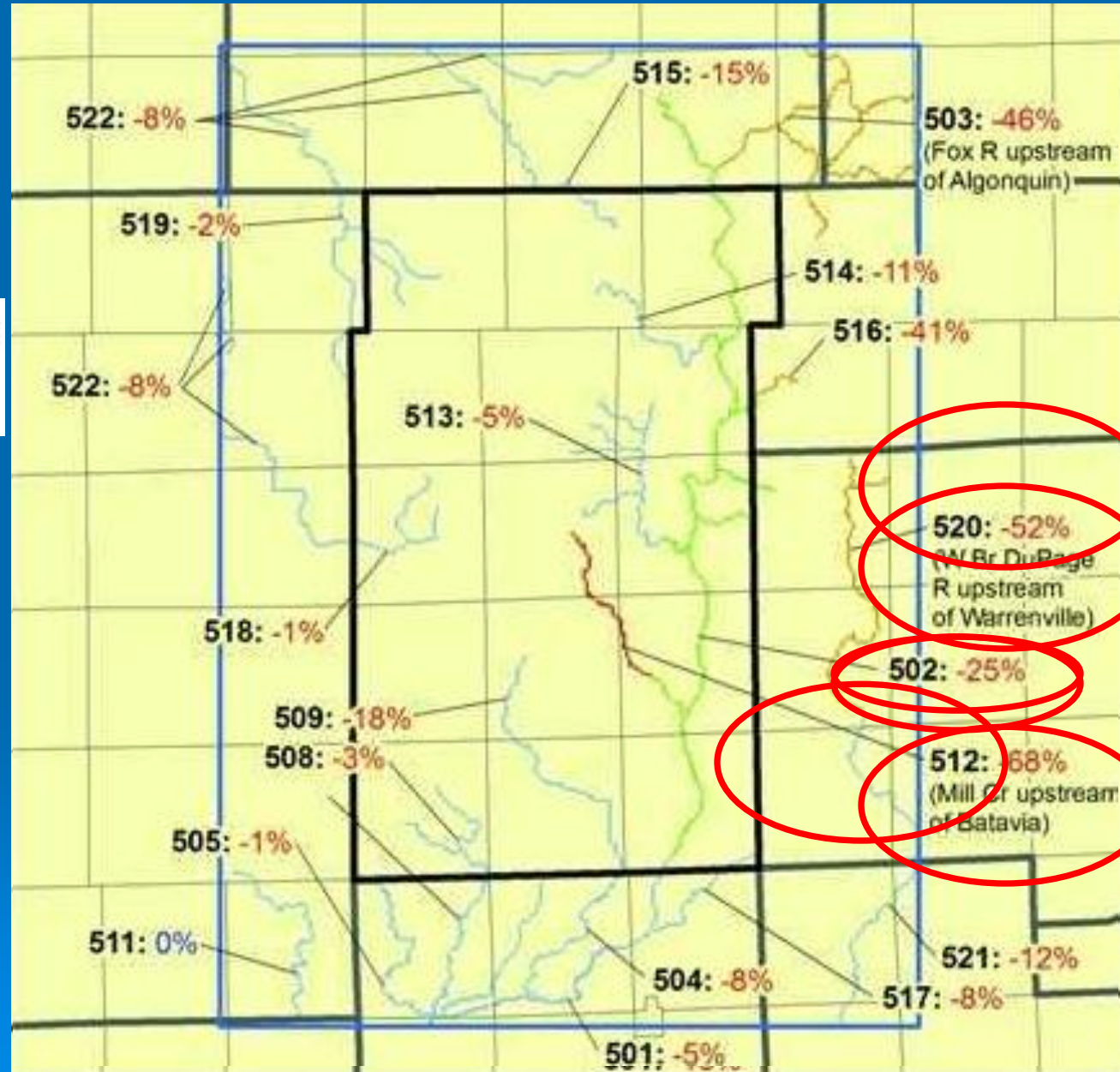


[http://www.isws.illinois.edu/
docs/pubs/ISWSCR2009-07/](http://www.isws.illinois.edu/docs/pubs/ISWSCR2009-07/)

Change in Drawdown in Shallow Bedrock Aquifer 2003 to 2049



Change in Streamflow Discharge 2003 to 2049



Key to labeling

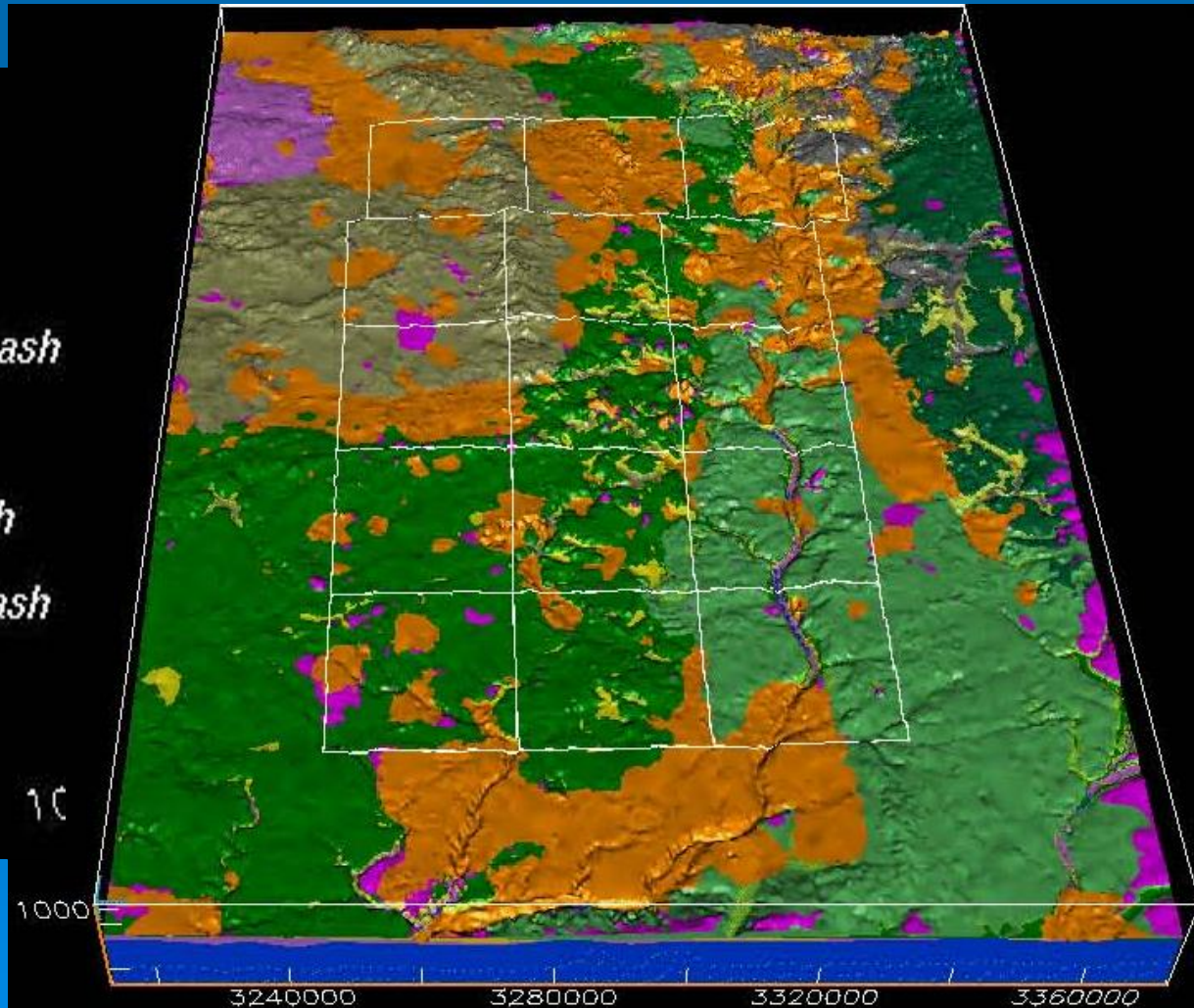
Reach number: 515: -23%

Change in natural groundwater discharge (red=decrease, blue=increase or no change)

3D Geological Model All Units


Zone color key

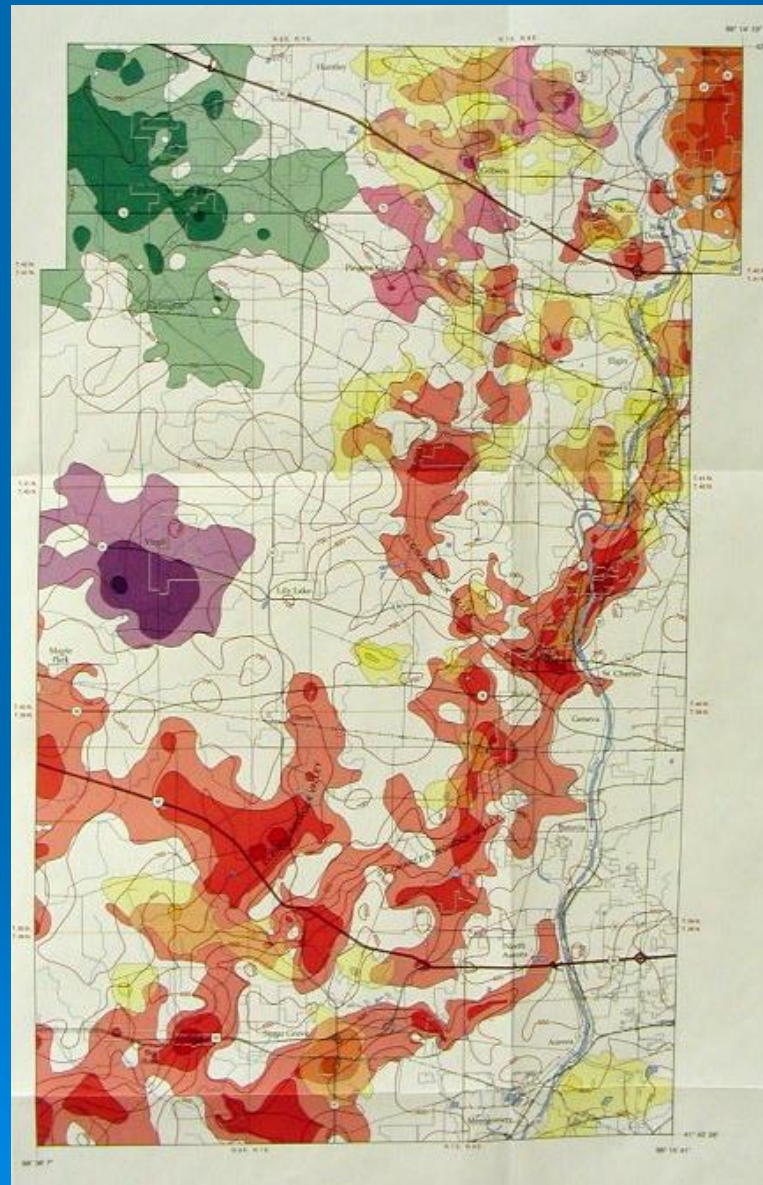
15		<i>surficial henry</i>
14		<i>equality</i>
13		<i>wadsworth</i>
12		<i>wadsworth_outwash</i>
11		<i>haegar</i>
10		<i>beverly</i>
9		<i>yorkville</i>
8		<i>yorkville_outwash</i>
7		<i>batestown</i>
6		<i>batestown_outwash</i>
5		<i>tiskilwa</i>
4		<i>ashmore</i>
3		<i>glasford</i>
2		<i>bedrock</i>
1		<i>model_bottom</i>
















Preliminary Data
Source: ISWS

Major Shallow Aquifers

Major Quaternary Aquifers	
	Carpentersville > 100
	50 - 100
	20 - 50
	Gilberts -- 50-100
	20 - 50
	Hampshire > 100
	50 - 100
	20 - 50
	St. Charles > 100
	50 - 100
	20 - 50
	Unnamed > 100
	50 - 100
	20 - 50
	Virgil > 100
	50 - 100
	20 - 50



Aquifer Sensitivity to Contamination

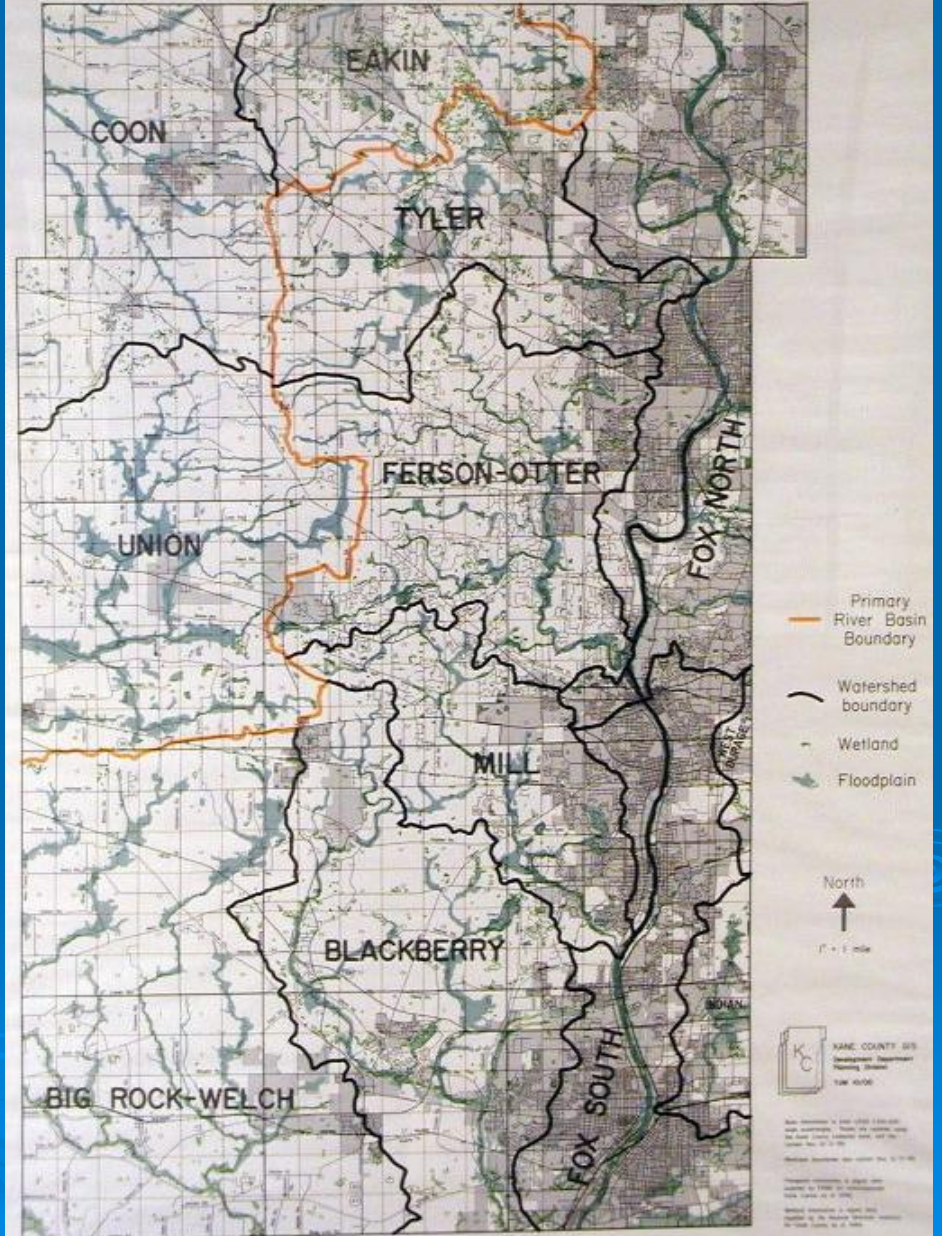
Aquifer Sensitivity to Contamination	
	High Potential -- A1
	A2
	A3
	A4
	Moderately High -- B1
	B2
	Moderate Potential -- C1
	C2
	C3
	Moderately Low -- D1
	D2
	D3
	Low Potential -- E



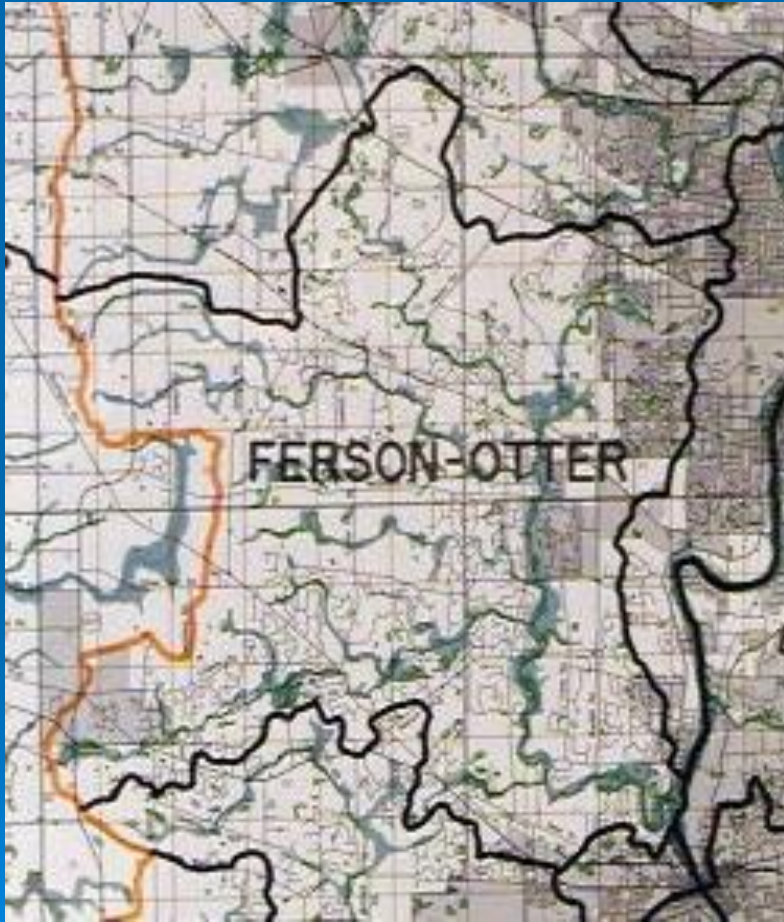
Blackberry Creek Watershed Map



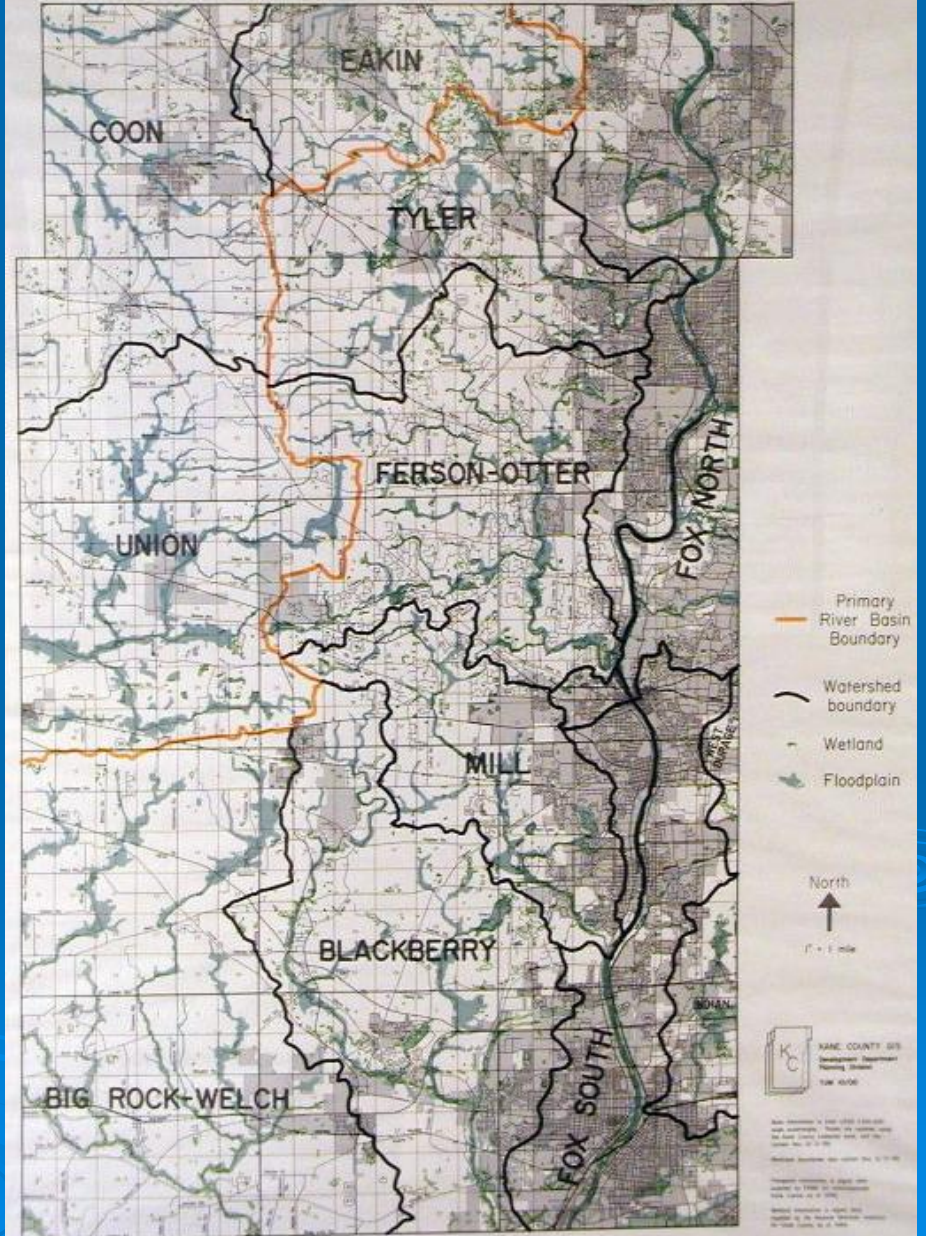
WATERSHEDS, WETLANDS and FLOODPLAINS Kane County, Illinois



Ferson-Otter Creek Watershed Map



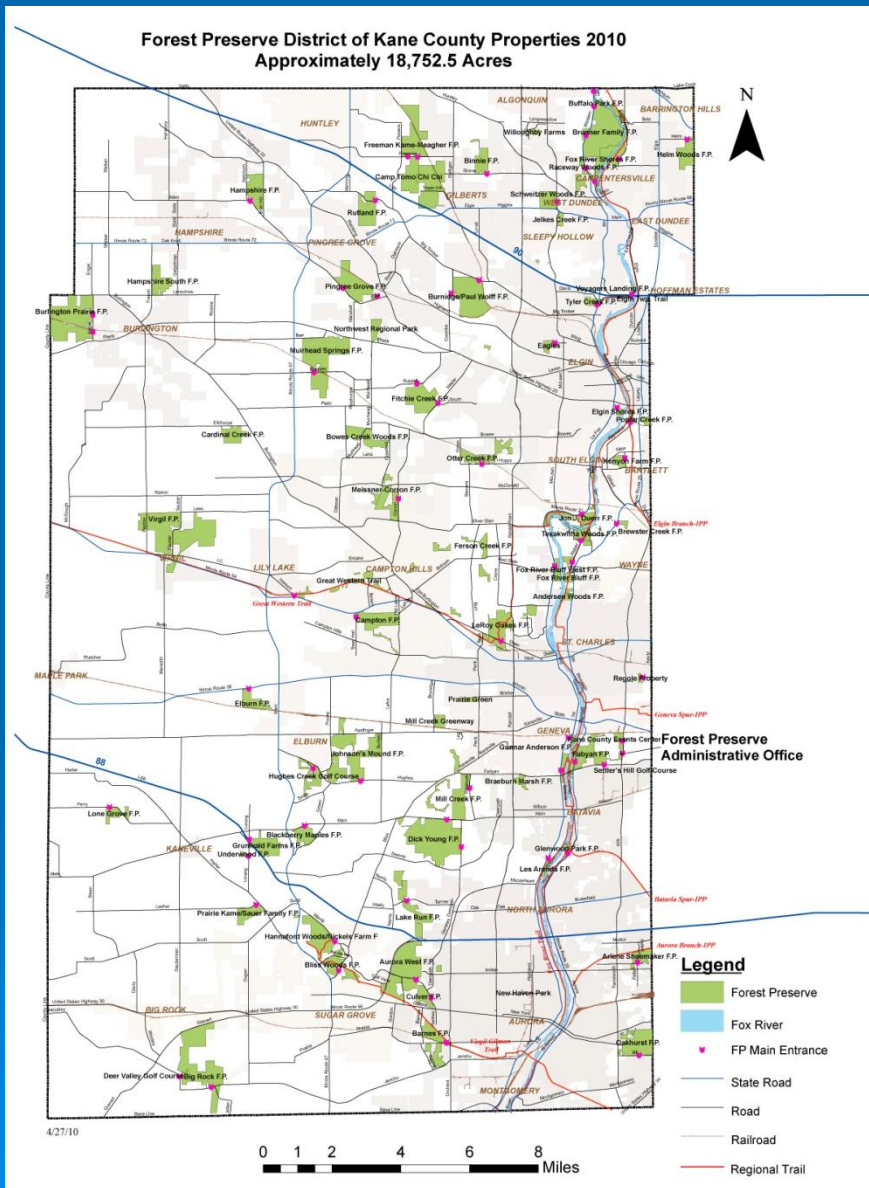
WATERSHEDS, WETLANDS and FLOODPLAINS Kane County, Illinois



Open Space

Forest Preserve District of Kane County

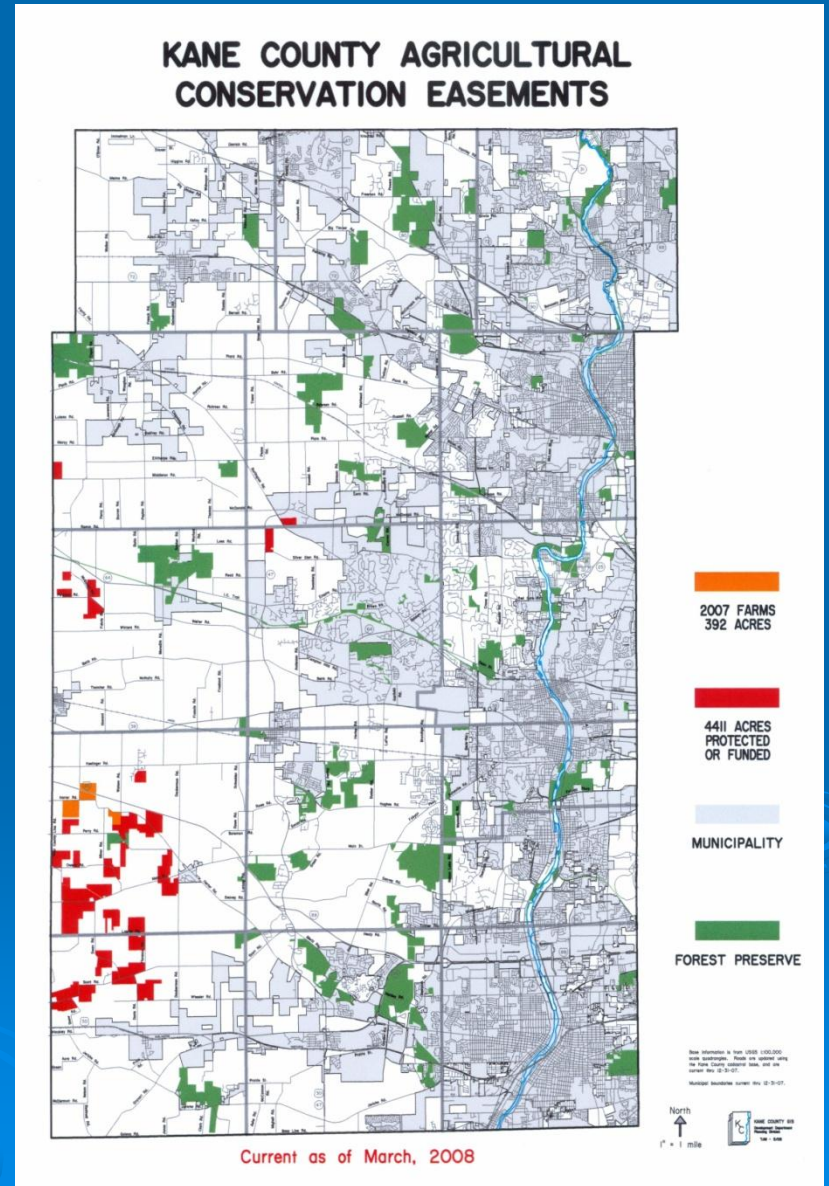
18,752 Acres









Open Space

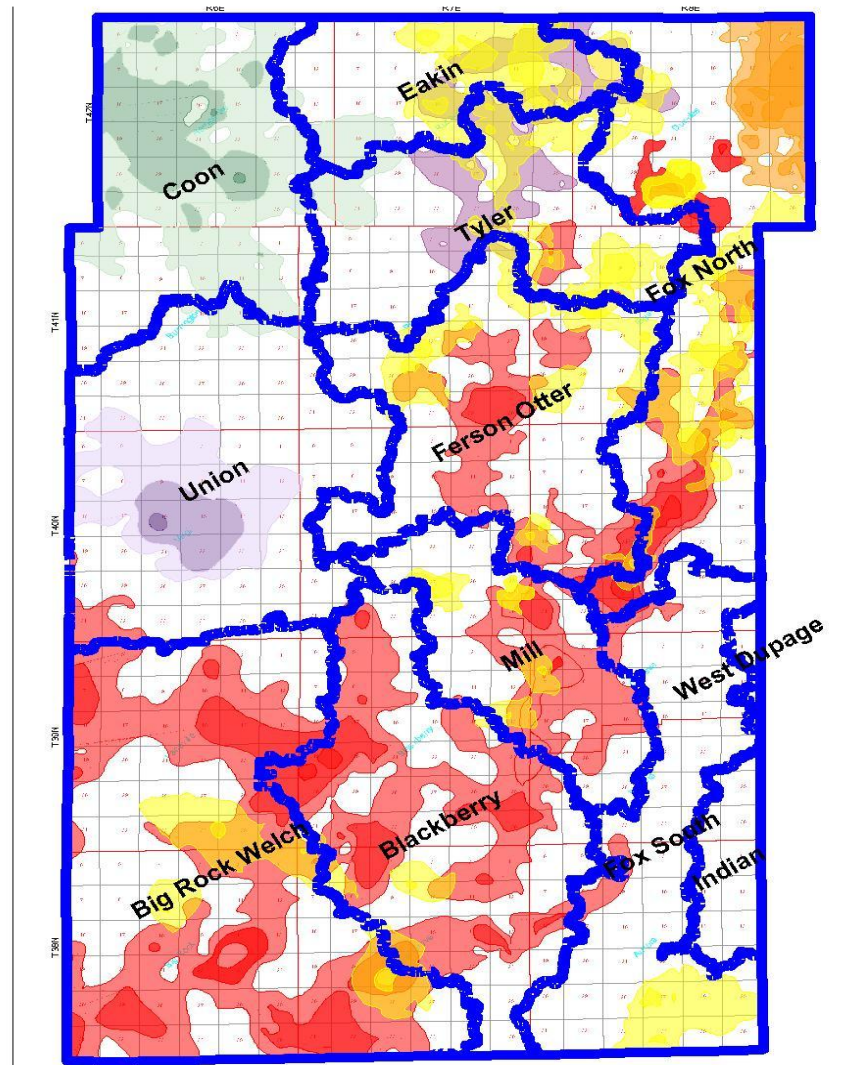
Farmland
Preservation
Program
4,803 Acres

Combined Total
23,555 Acres =
36.8 sqmi = 7%
















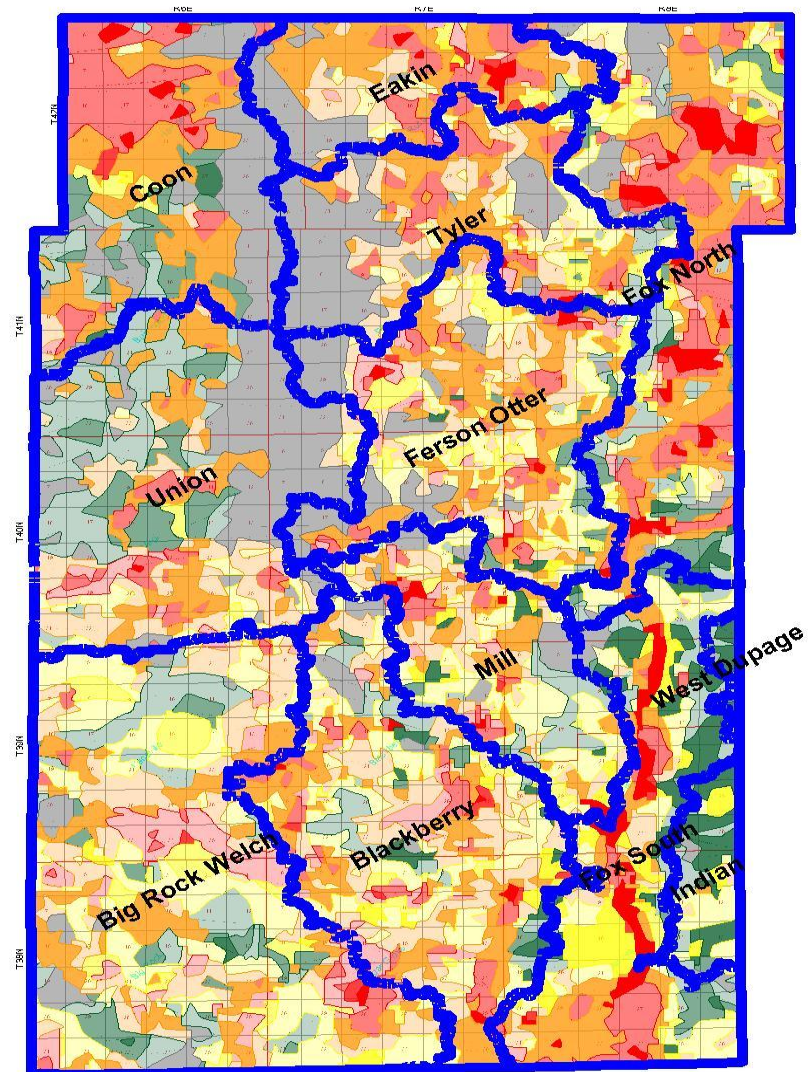
Watersheds and Major Shallow Aquifers

Major Quaternary Aquifers	
	Carpentersville > 100
	50 - 100
	20 - 50
	Gilberts -- 50-100
	20 - 50
	Hampshire > 100
	50 - 100
	20 - 50
	St. Charles > 100
	50 - 100
	20 - 50
	Unnamed > 100
	50 - 100
	20 - 50
	Virgil > 100
	50 - 100
	20 - 50



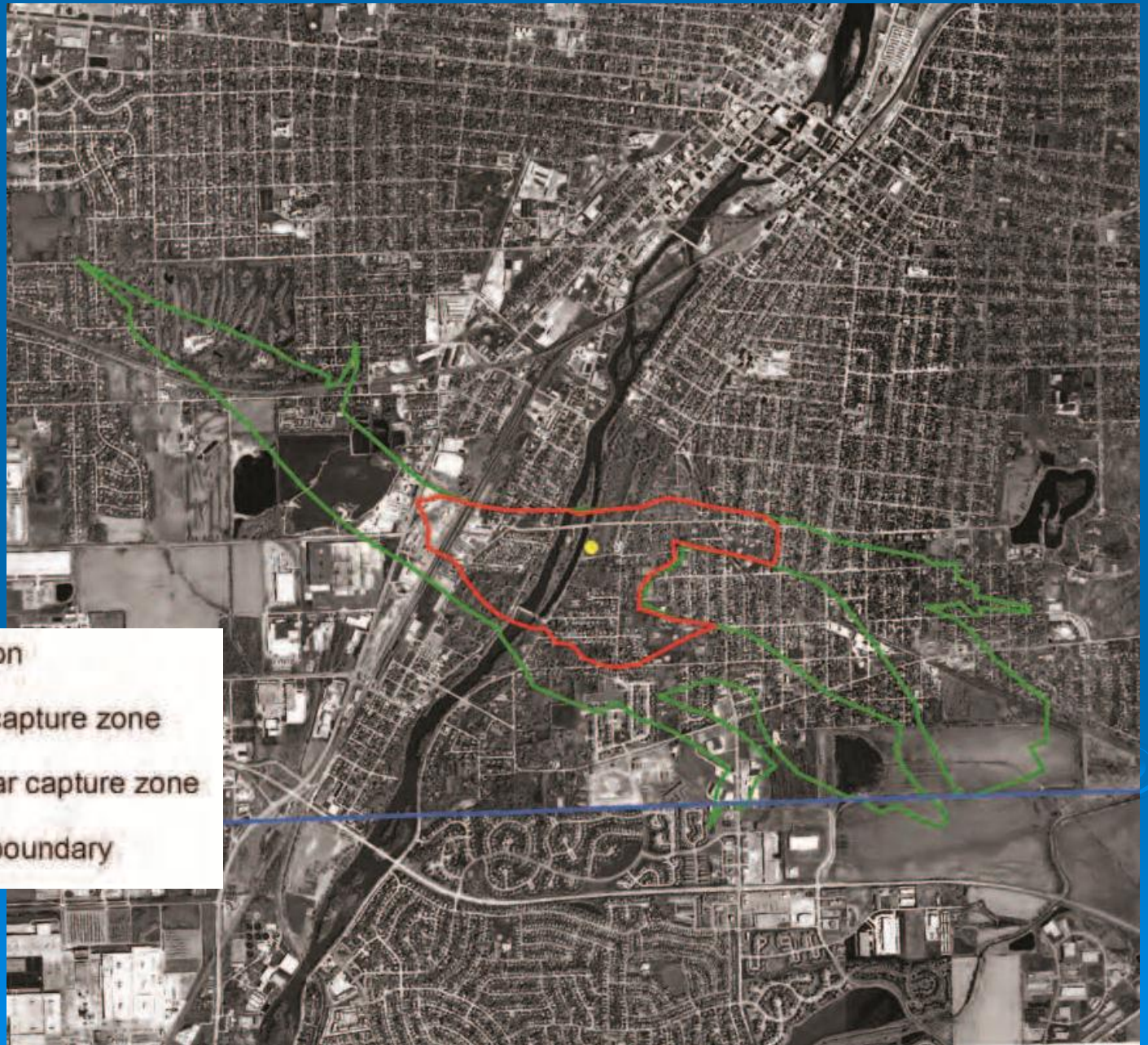
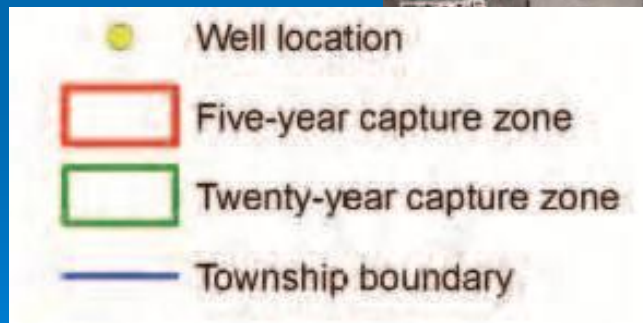
Watersheds and Shallow Aquifer Sensitivity to Contamination

Aquifer Sensitivity to Contamination	
	High Potential -- A1
	A2
	A3
	A4
	Moderately High -- B1
	B2
	Moderate Potential -- C1
	C2
	C3
	Moderately Low -- D1
	D2
	D3
	Low Potential -- E



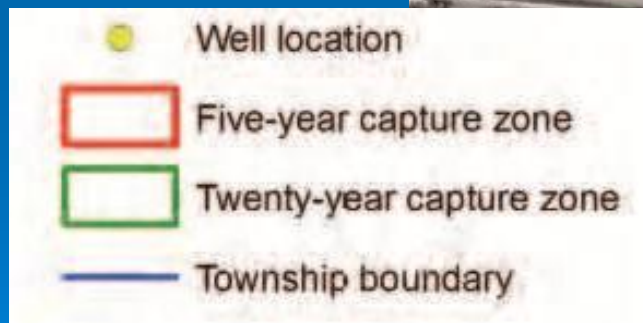
Capture Zones

Montgomery Well #13

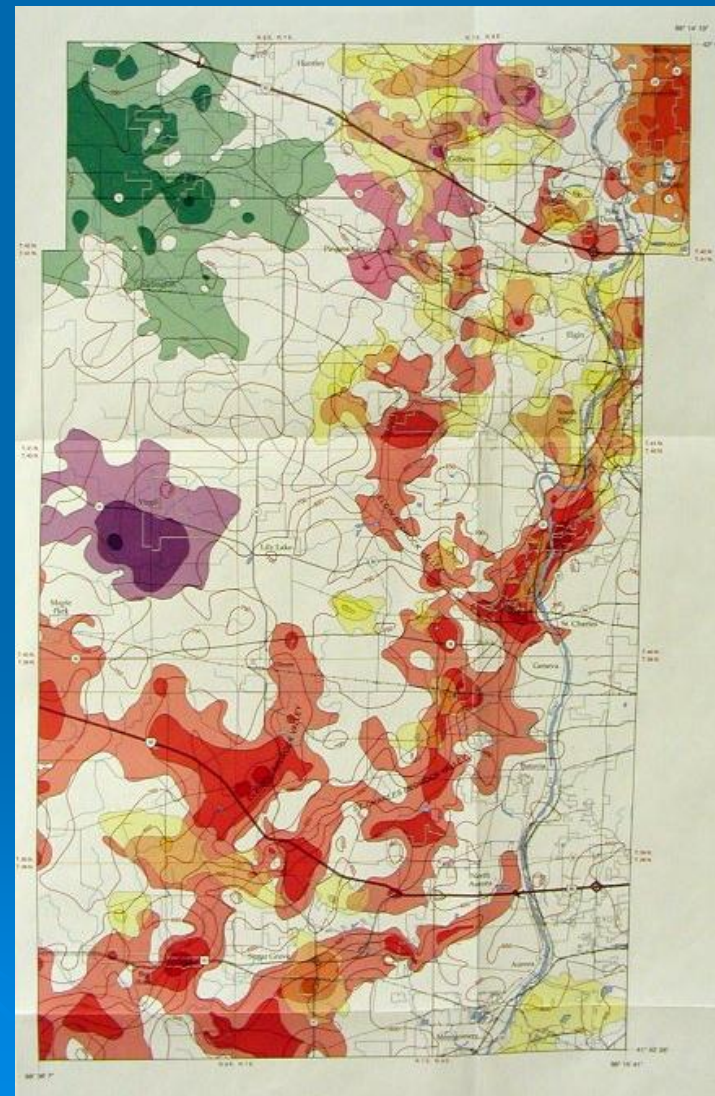
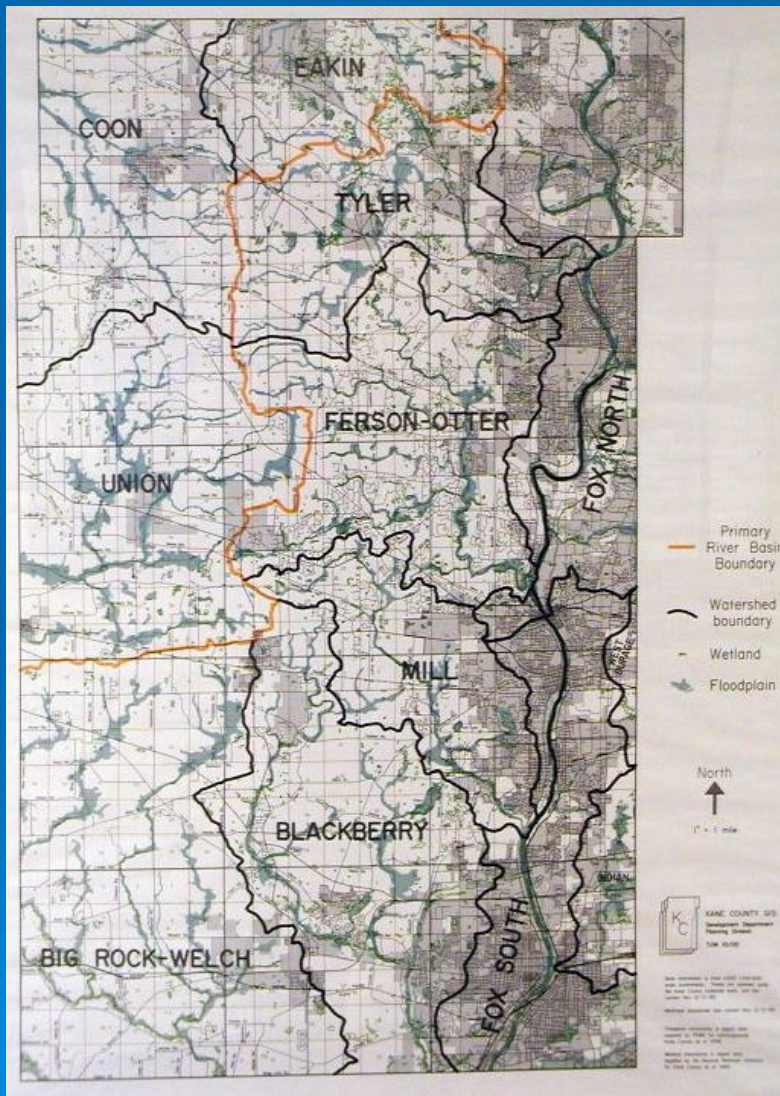


Capture Zones

Geneva Well #8



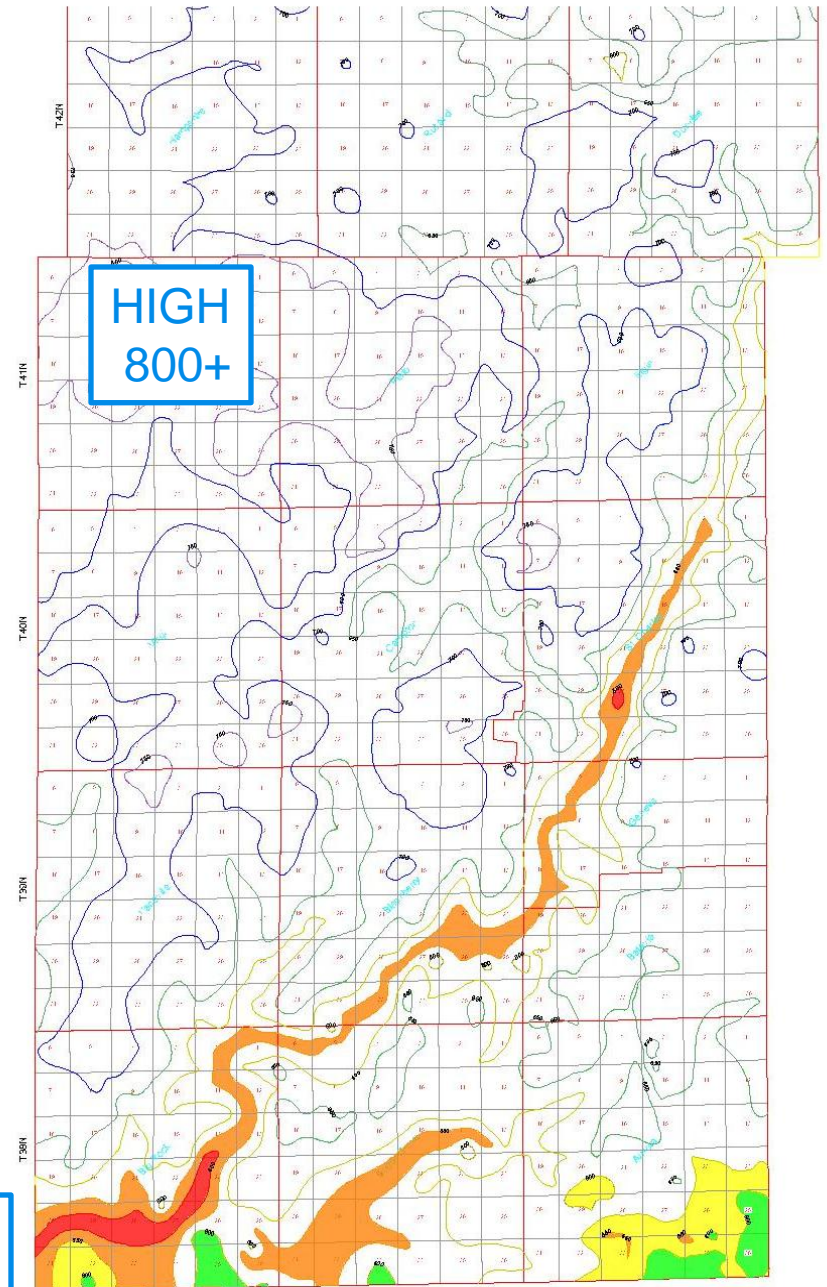
Surface Watersheds do not Coincide with Aquifers or Buried Bedrock Surface



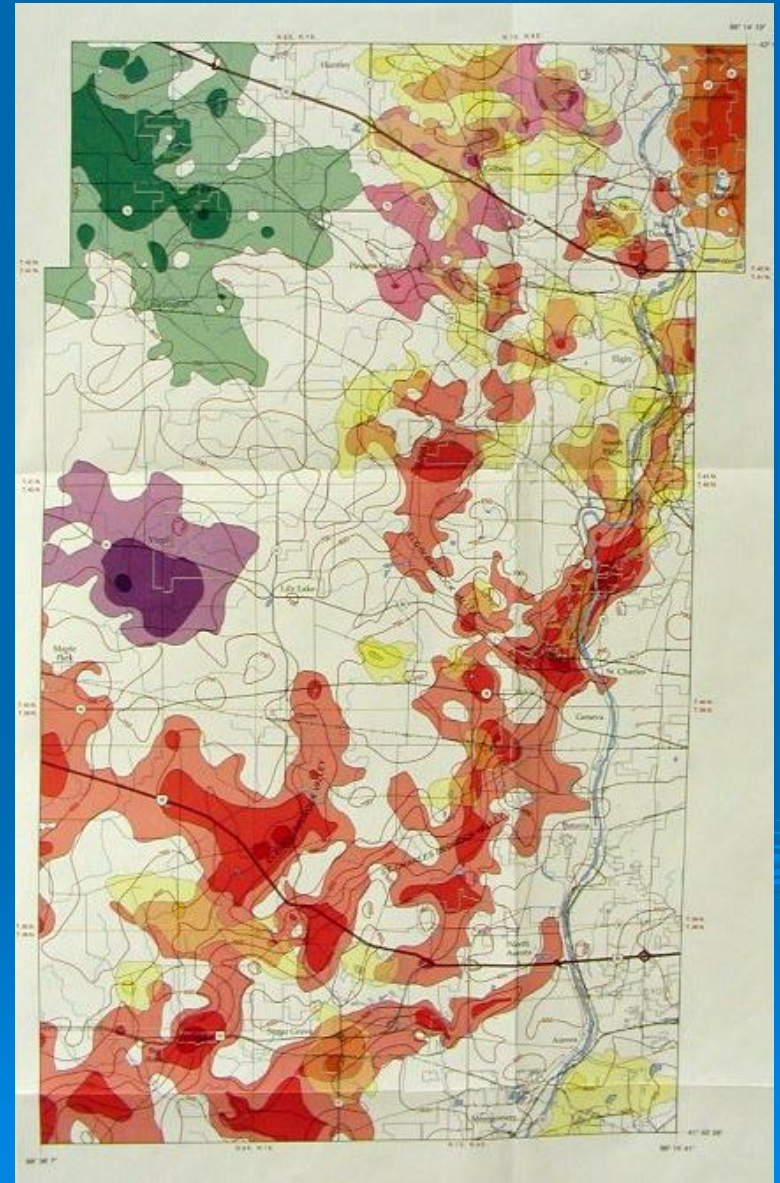
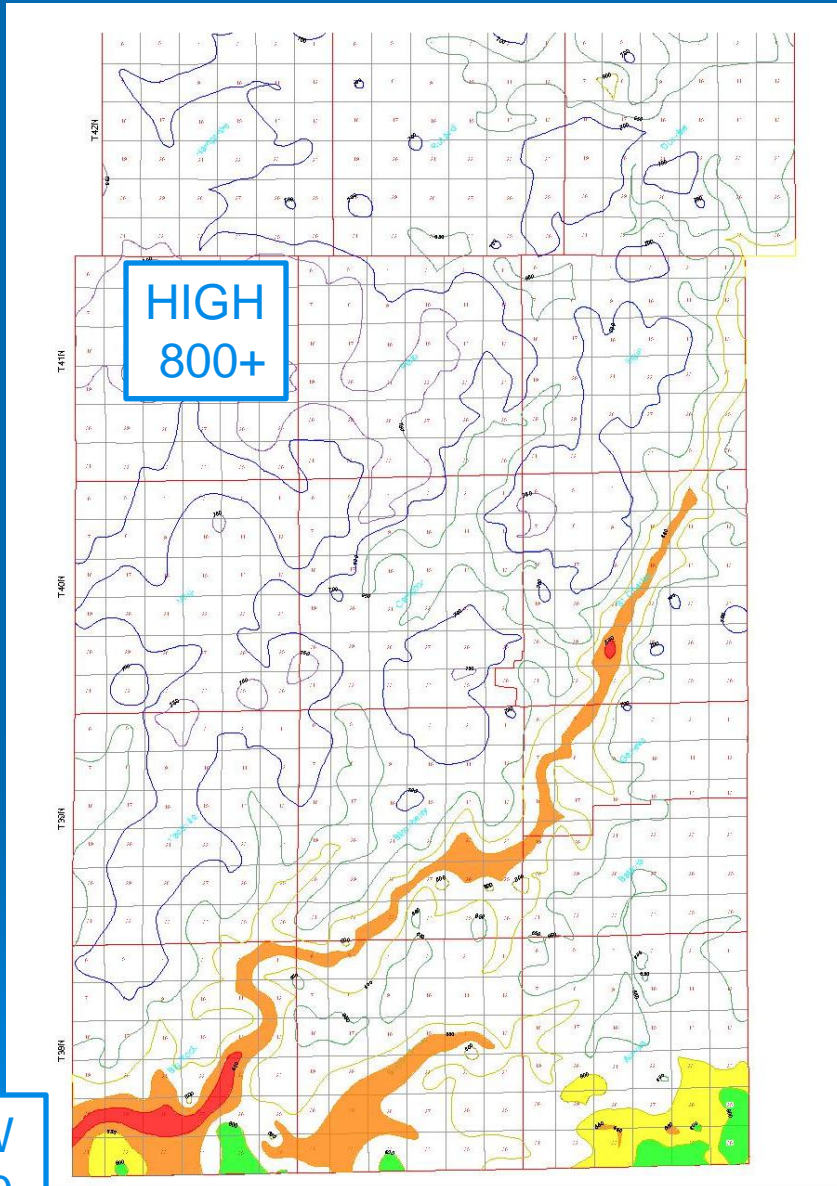
Buried Bedrock Surface Topo

RED >450'
ORANGE >500'
YELLOW >550'
GREEN >600'

LOW
<500



Major Shallow Aquifers

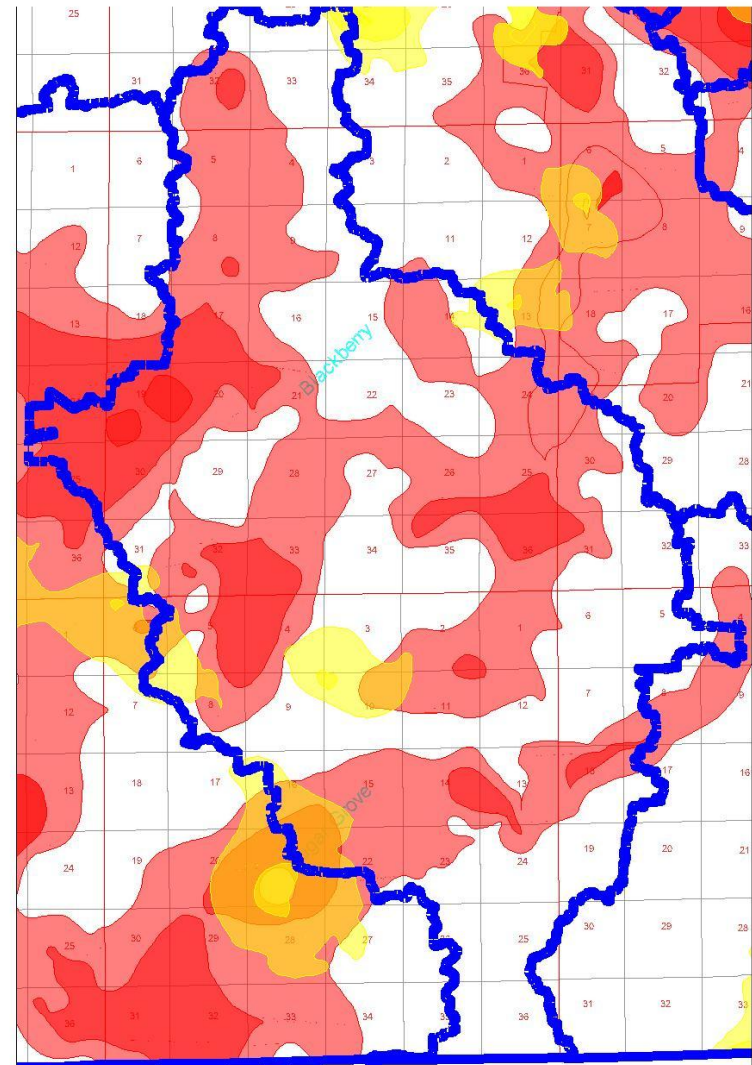


LOW
<500

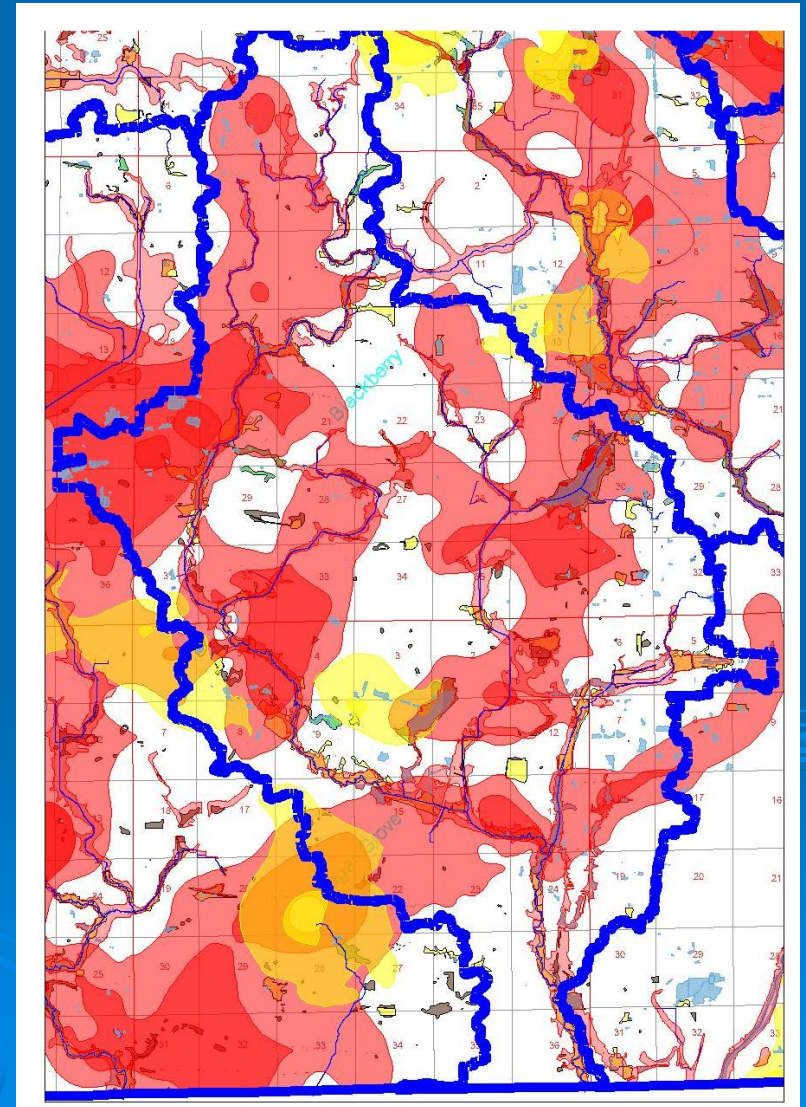
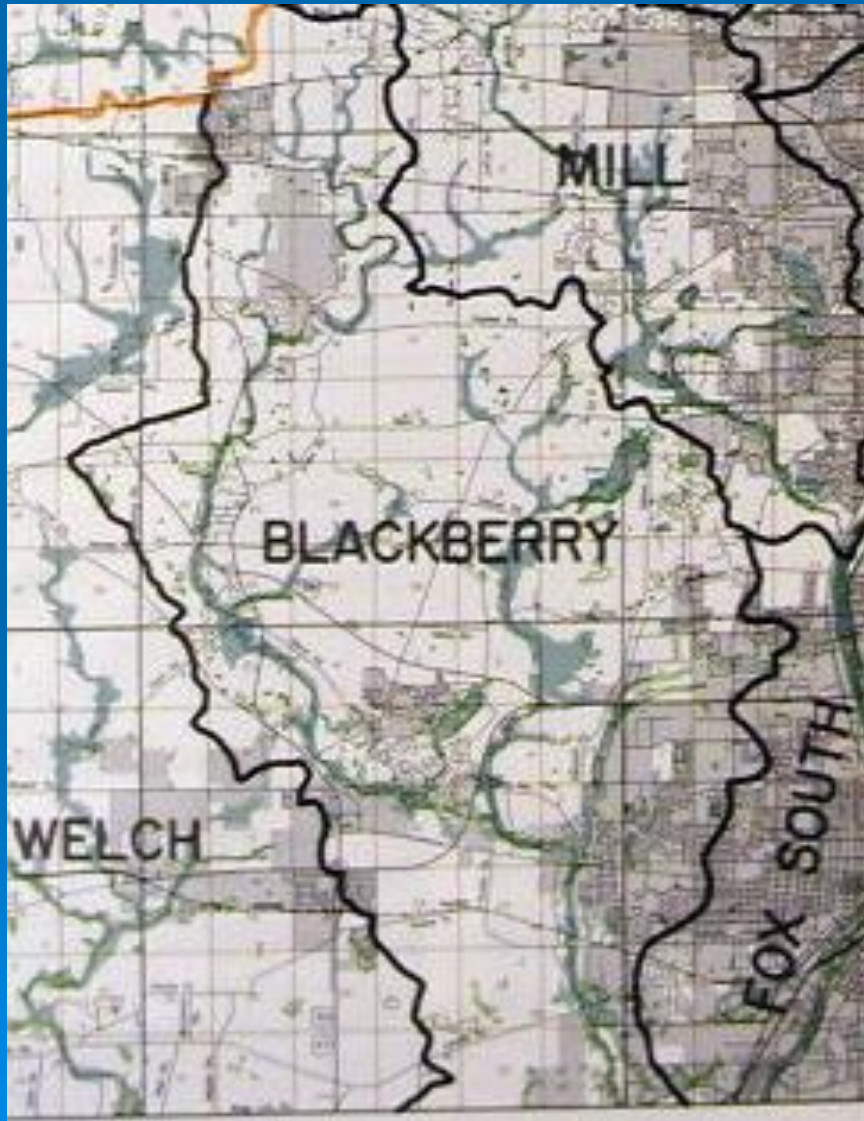
Blackberry Creek Watershed and Major Shallow Aquifers

Major Quaternary Aquifers

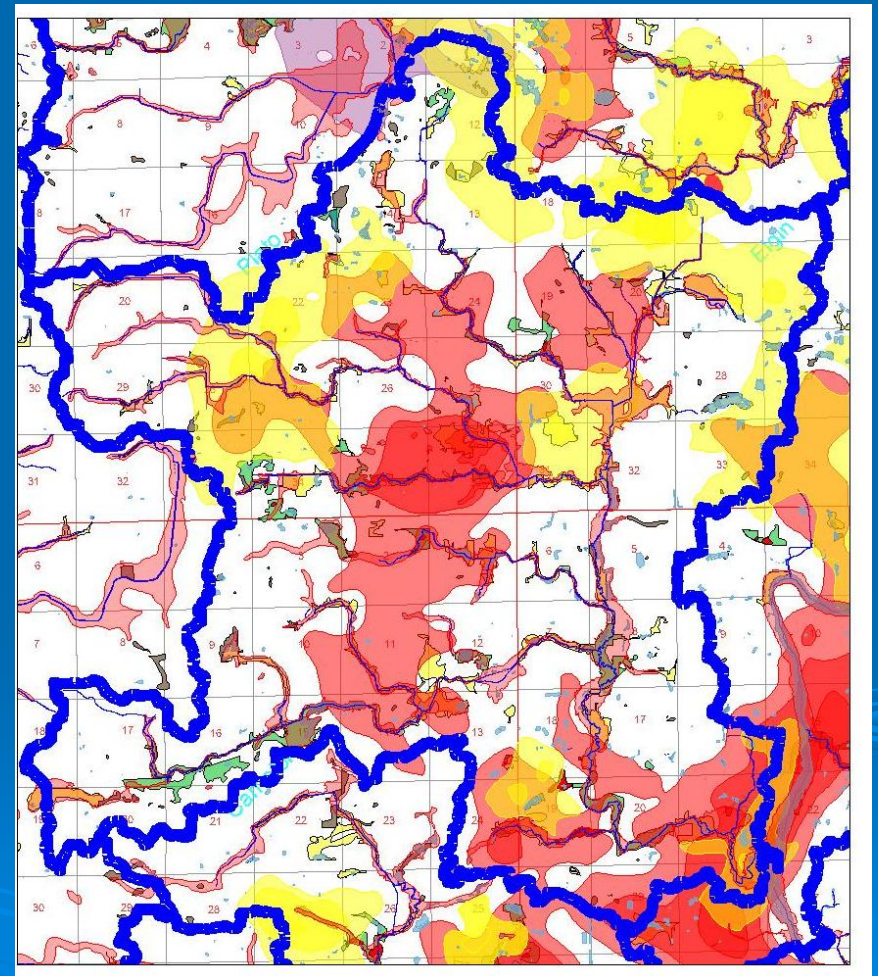
	Carpentersville > 100
	50 - 100
	20 - 50
	Gilberts -- 50-100
	20 - 50
	Hampshire > 100
	50 - 100
	20 - 50
	St. Charles > 100
	50 - 100
	20 - 50
	Unnamed > 100
	50 - 100
	20 - 50
	Virgil > 100
	50 - 100
	20 - 50



Surface Watersheds do not Coincide with Aquifers or Buried Bedrock Surface

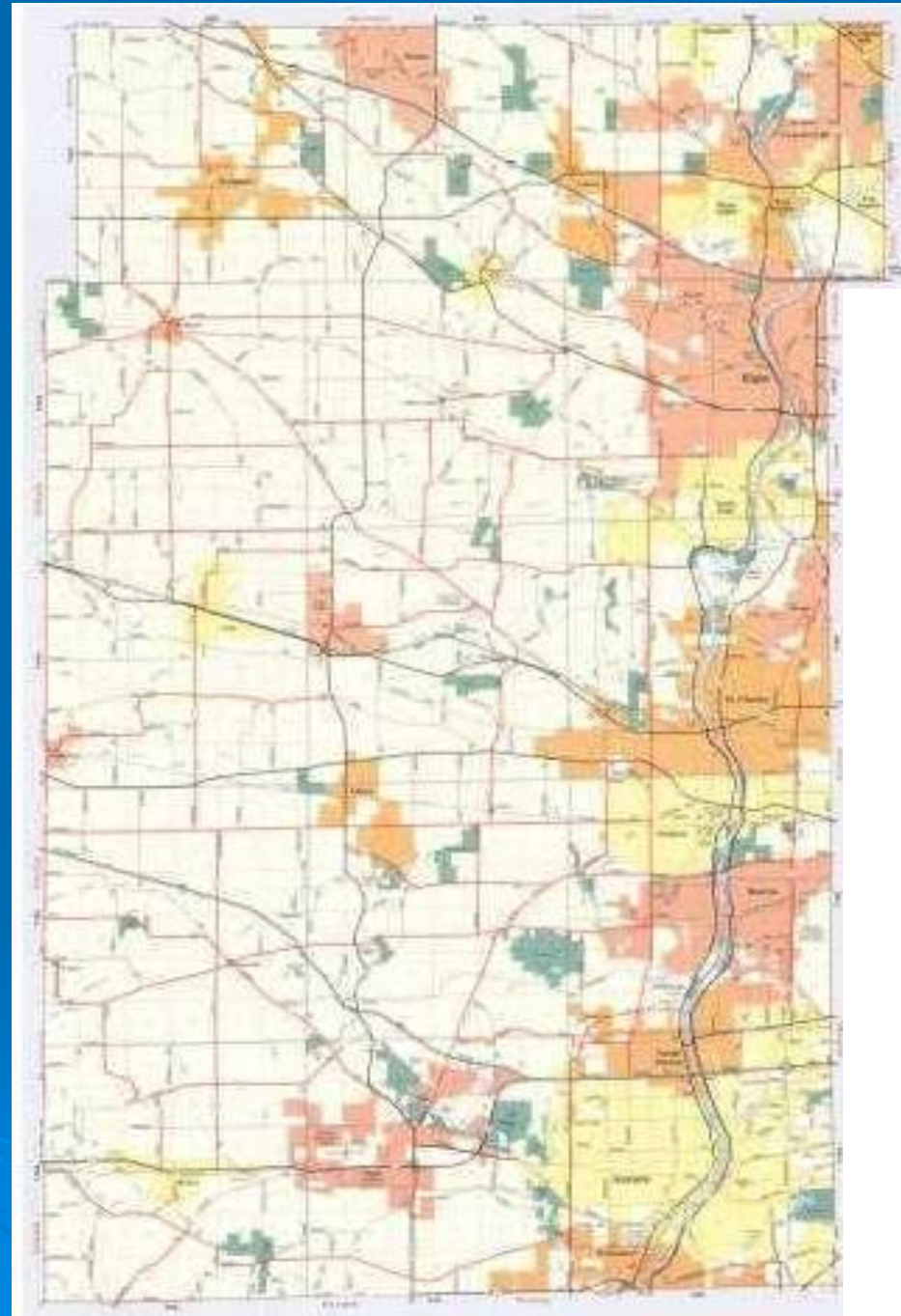


Surface Watersheds do not Coincide with Aquifers or Buried Bedrock Surface



Kane County Municipalities

30 Municipalities -
Surface
Watersheds do
not Coincide with
Municipal or
County
Boundaries



Northwest Water Planning Alliance

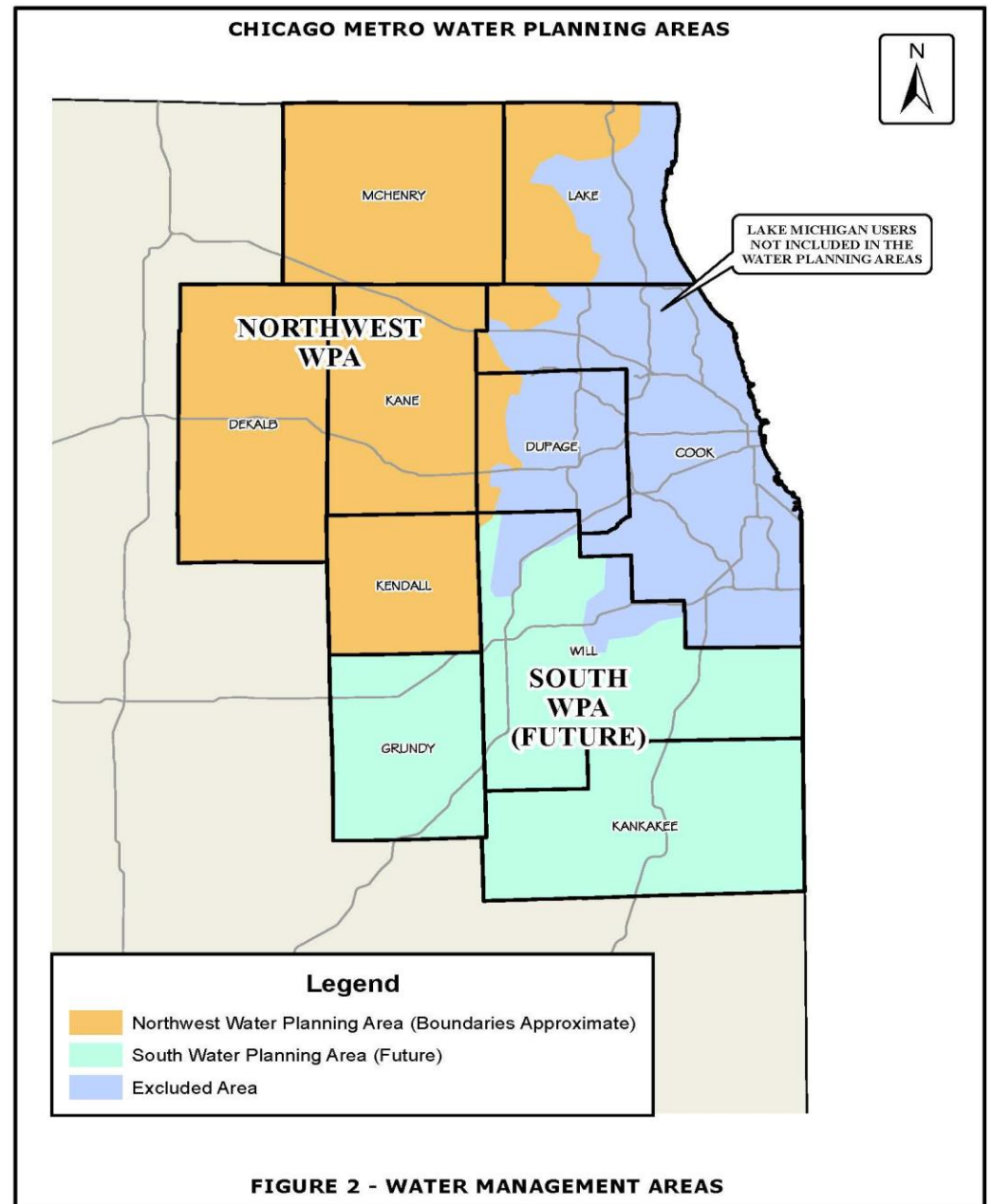
September 2010

5 Counties

Lake
McHenry
Kane
DeKalb
Kendall

5 Councils of

Government
with Municipalities



Implementing a Sustainable Water Supply for Kane County's Future

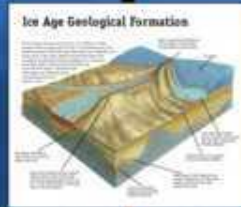
A WORKSHOP ON THE 2030 PLAN FOR KANE COUNTY ~ SEPTEMBER 20, 2007



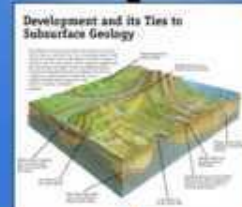
Hydrologic Cycle



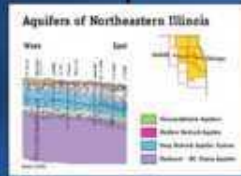
Identify Problems and Opportunities
Create a Planning Team
Formulate Alternative Plans
Ranking Alternative Plans
Evaluate Alternative Plans
Plan Implementation



Ice Age Geological Formation



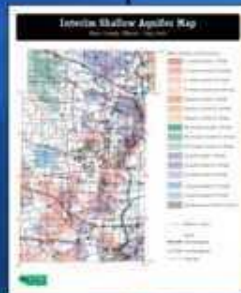
Development and its Ties to Subsurface Geology



Aquifers of Northeastern Illinois



Fox River Watershed

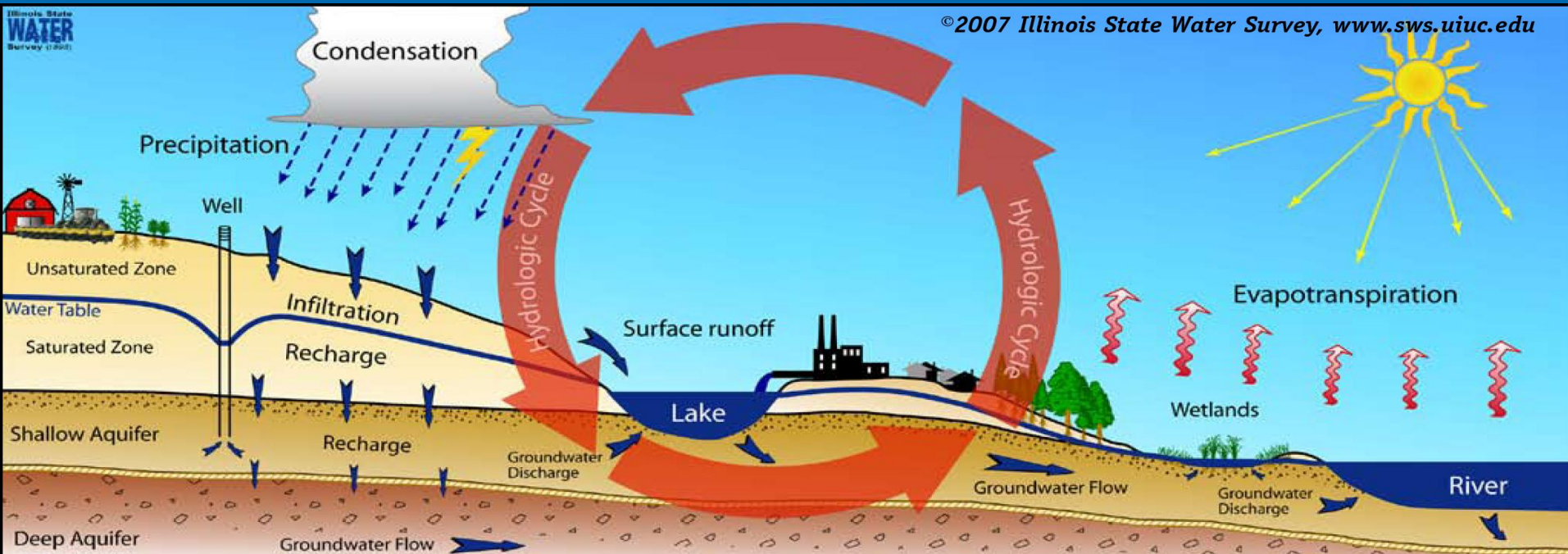


Iowaian Shallow Aquifer Map



Water Sources for Public Safety in Northeastern Illinois





➤ Thank You!

➤ Paul M. Schuch, P.E.

➤ Kane County Director Water Resources

➤ schuchpaul@co.kane.il.us

➤ www.co.kane.il.us