

Utilizing Water Use and Withdrawals Data from the Illinois Water Inventory Program (IWIP)

NWPA Technical Advisory Committee Meeting
Tuesday June 23rd 10:00 AM

Conor Healy
Assistant Scientist – Quantitative Hydrology
Illinois Water Inventory Program Coordinator
Illinois State Water Survey – Prairie Research Institute

Outline

1. Program History Overview
2. Data Collection Processes
3. Data Availability
4. Supported Projects and Services
5. Discussion

IWIP Overview – Program History

- Initiated in 1978 – voluntary program
- Water Use Act of 1983 - Amendments
 - 2010- Mandatory for Public Water Suppliers (PWS) and Self-Supplied Industry (SSI) water users
 - 2015- Mandatory for Irrigation water users

Unit	Withdrawal mgd
040400	17.0
040602	4216.4
051201	442.3
051402	612.7
070600	1.3
070801	18229.1
070900	2655.8
071100	656.8
071200	11351.4
071300	4454.5
071401	477.3
071402	2305.8
Total	45420.4

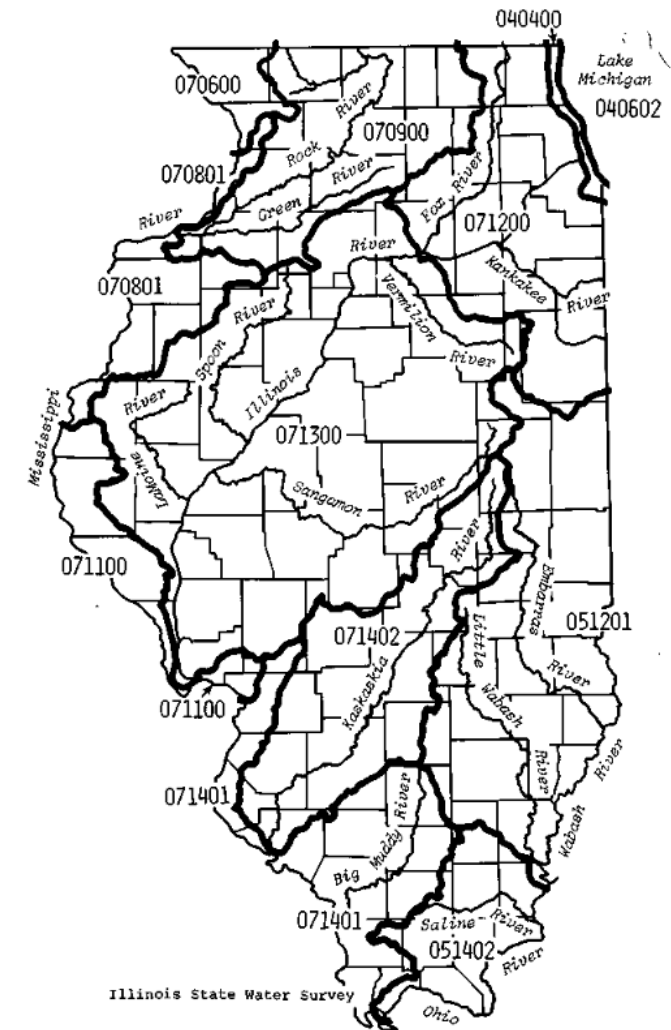


Figure 4. Total surface water withdrawals by hydrologic unit, 1978

Table 7. Summary of Total Water Withdrawals, 1978

Category	Groundwater	Surface water	Total
Public Systems	458.2	1,312.7	1,770.9
Self-supplied Industry	259.1	44,071.9	44,331.0
Rural	220.0*	*	220.0
Fish and Wildlife	8.4	35.8	44.2
Total	945.7	45,420.4	46,366.1

*See page 8



IWIP Overview – Program History

- Largely mail based collections until 2014
- Funded mainly through IDNR

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 DEPARTMENT OF NATURAL RESOURCES
 Illinois Water Inventory Program • Tel (217) 333-0239 • Fax (217) 244-0777

3110 S. Champaign Drive • Champaign, IL 61820-7495 • Tel (217) 333-2210 • Fax (217) 333-6540
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SWS

Please return form by Jan 15, 2000

03190900 FOREST PARK
 JOHN S WEBB, WATER SUPERINTENDENT
 7343 W 15TH ST
 FOREST PARK IL 60130

SIC CODE 4941
 Contact person and title
 Phone (708)366-4876

We have records of the following wells/intakes. Please correct inaccuracies and add missing information on this form. Enter your water level information on back, if available. If reported amounts are not in gallons, please indicate units of measurement.

TOTAL GALLONS PUMPED

Well or Intake	Status	Twp	Rge	Sec	Depth	Max Daily	Total Annual

Please note that any purchased amount needs to be reported on the bottom half of the form in column **Total Gallons Purchased**. This amount is needed to indicate the water use for your location and your future needs.
 If your facility is not equipped with meters to calculate total water pumpage, an estimated figure or other helpful information (such as staff population and visitors, acreage flooded, or time used at estimated pumping rate) is acceptable to help us calculate water usage at your facility.

	Total Annual Gallons Purchased	Total Annual Gallons Withdrawn
1. 1999 Total Pumpage	1 306 783 676	677 440 000
2. Supplier of PURCHASED GALLONS		
3. Do you sell water to another public water supply system?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
4. Estimate population directly served inside corporate limits (retail)	14 900	
	outside corporate limits	
5. Number of residential services:	2 750	Annual gallons: 408 800 000
6. Number of commercial services: (non-manufacturing)	550	Annual gallons: 268 640 000
7. Number of industrial services: (manufacturing)		Annual gallons:

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IWIP Overview – Data Collection

- Annual survey of high-capacity water withdrawals and use data

Public Water Systems



Provide water for human consumption to at least 15 service connections, or 25 people

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Self-Supplied Industrial/Commercial Facilities



Wells/intakes which *combined* are *rated* to pump 100,000 gallons per day (about 70 gallons per minute or .1 million gallons per day)

Agricultural Irrigation Systems



Focus on high-capacity center pivot irrigation users

IWIP Overview – Data Collection

Point level data

- Point source attributes
- Annual gallons withdrawn/pumped
- Water level information



Facility level data

- Water consumption/use breakdown
- Water purchase/sales information



IWIP Overview – Data Collection

- Online Reporting Tool Developed
 - Eliminates data entry/digitization process
 - Quicker data processing turn around – no longer have a lag in years available
 - More staff time available for analysis and service



Facility Name: ELMWOOD - 14390300

Pumpage Data

Please enter the raw gallons withdrawn from each well used in the last calendar year.

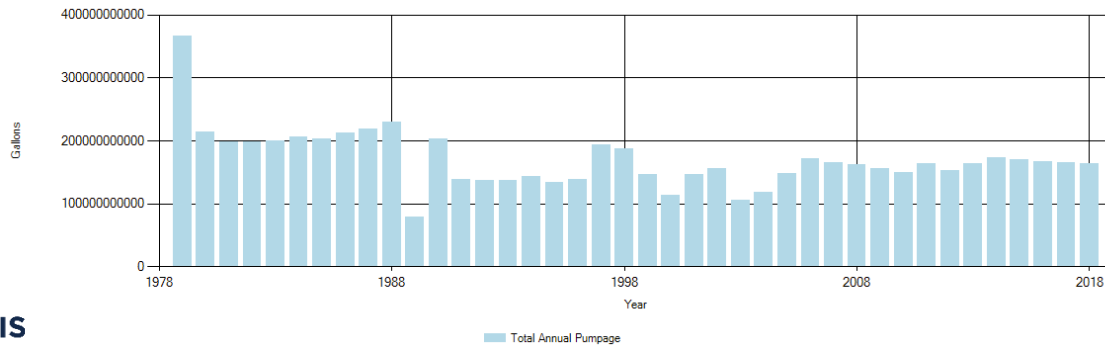
If any well data appears incorrect or needs updating (such as accurate lat/lon coordinates), please use the comment field or contact [NAME] at [PHONE NUMBER] or [EMAIL ADDRESS].

IEPA ID	Type	Number	Local Name	Status	Twn	Rng	Sec	Depth (ft)	Raw Gallons Withdrawn	Comment/Note
01122	Well	4		In-Use	09N	05E	08	1572	<input type="text"/>	<input type="text"/>
01793	Well	5		In-Use	09N	05E	07	1596	<input type="text"/>	<input type="text"/>
50351	Well	3		Emergency	09N	05E	07	1572	<input type="text"/>	<input type="text"/>
50350	Well	1		Sealed	09N	05E	08	1498	<input type="text"/>	<input type="text"/>

IWIP Overview – Data Collection

- Operator Review Tools Developed
 - Review historic reports
 - Provide map of ISWS listed wells/intakes
 - Goal: Improve reporting accuracy

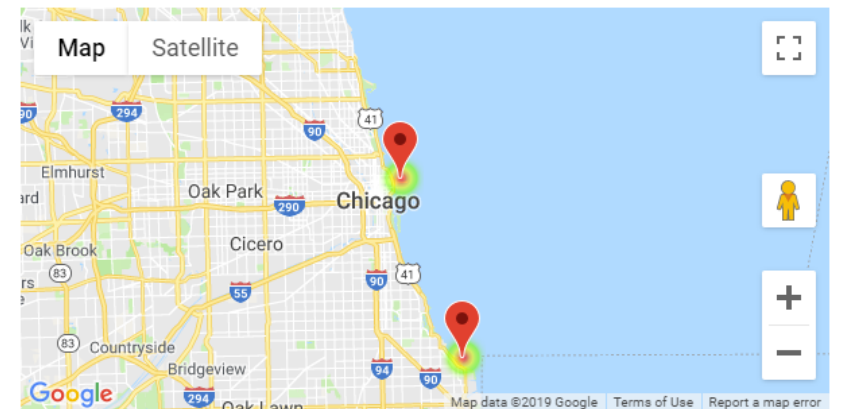
Annual Pumpage Summary
↑↓



IWIP Report Summary for CHICAGO

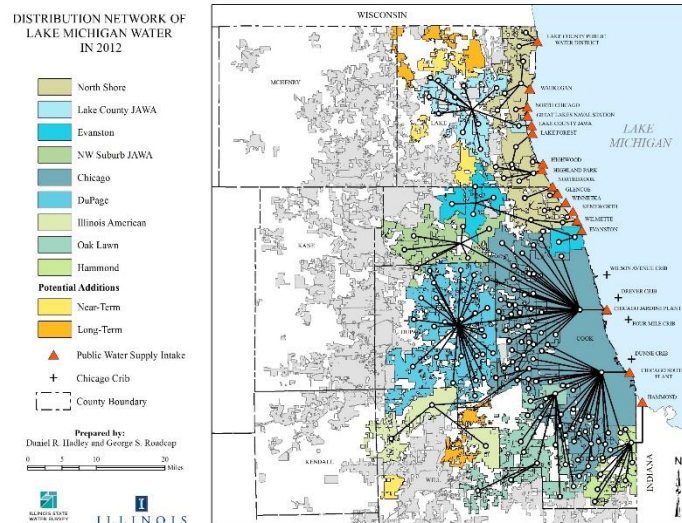
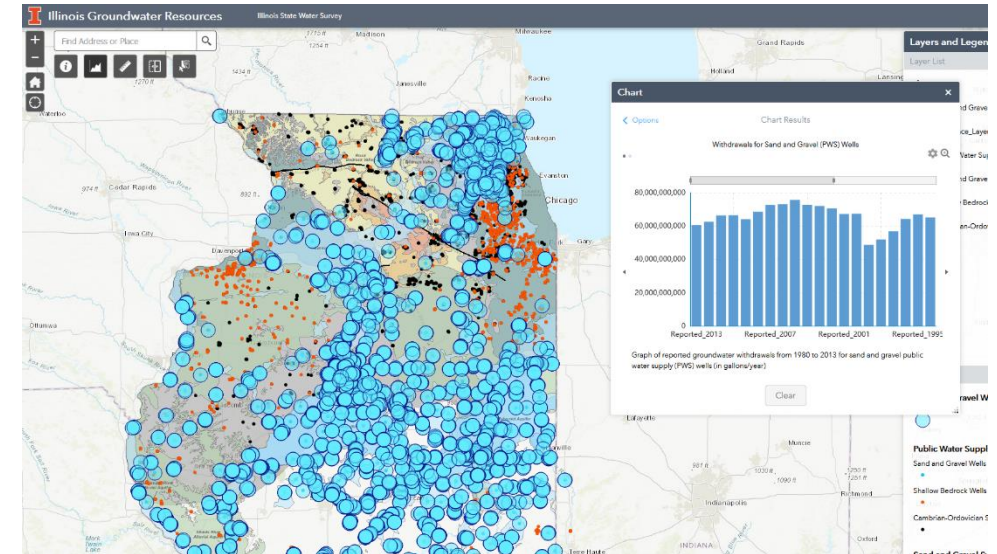
IWIP Well/Intake Summary

Well ID	IEPA Well Number	Name	Lat	Lon By	Depth (ft)	IWIP Depth (ft)
400224		2 MILE CRIB				
400225		LAKE VIEW CRIB				
400226	01305	DUNNE CRIB				
400228		HARRISON CRIB				
400229	01306	DEVER CRIB				
400230		4 MILE CRIB				
400231	00105	SHORE GATE-S PL	41.7580556	87.5430556		
400233	00104	SHORE GATE-JAR	41.8944444	87.6058333		
400234	01621	WILSON CRIB				
400386		68 ST CRIB				

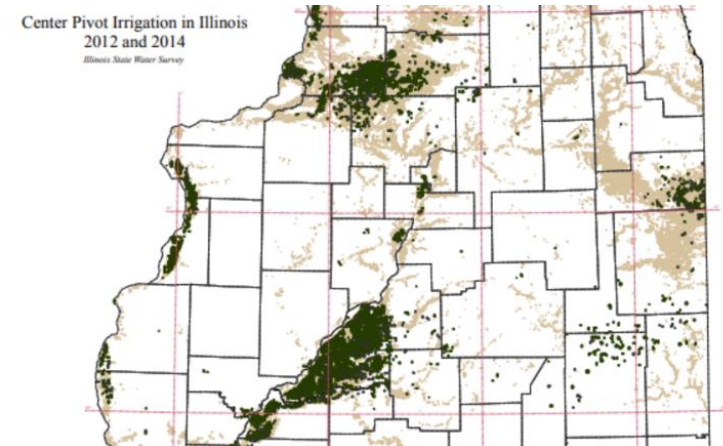


IWIP – Data Availability

- Web Mapping Tools
 - Historic well and intake record data
 - Public Water Supply point level information
 - Coming soon: private/self-supplied data aggregate map



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Data Availability – Well and Intake Records Map

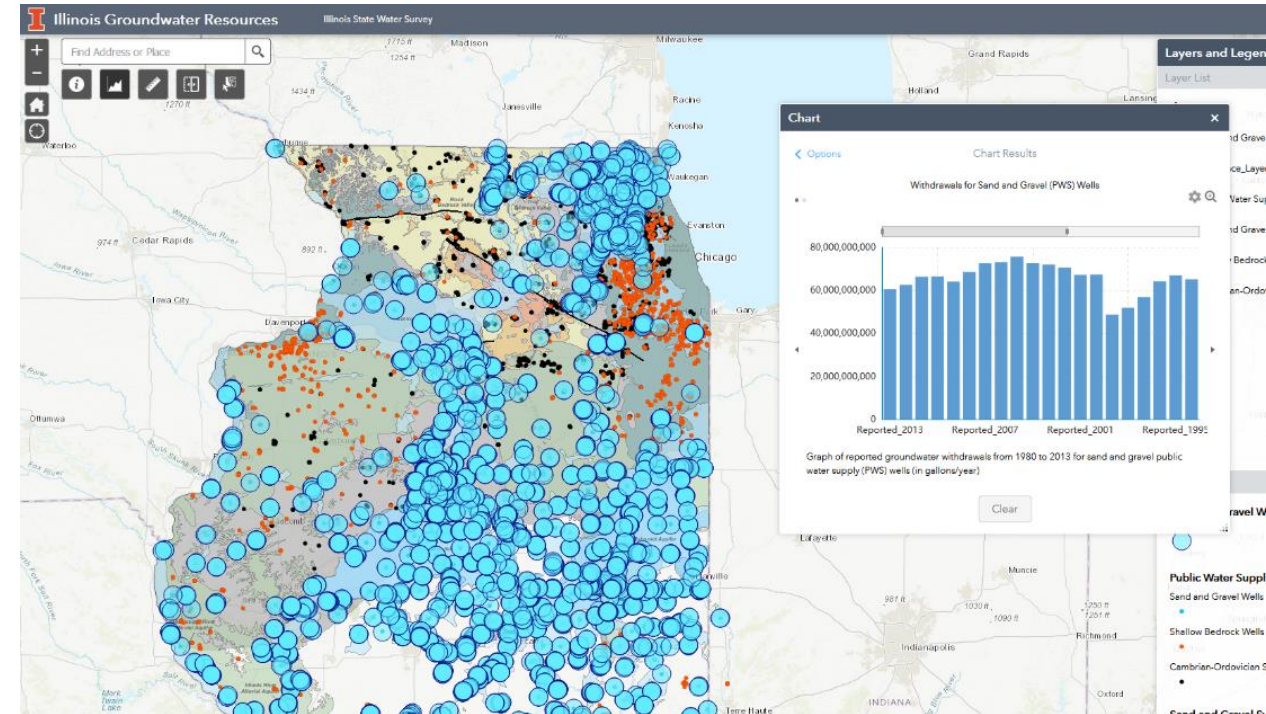
- Illinois Groundwater Resources Map

- Currently:

- Groundwater well location and *reported* point pumpage accurate to 2013
 - Groundwater source/aquifer information

- In development:

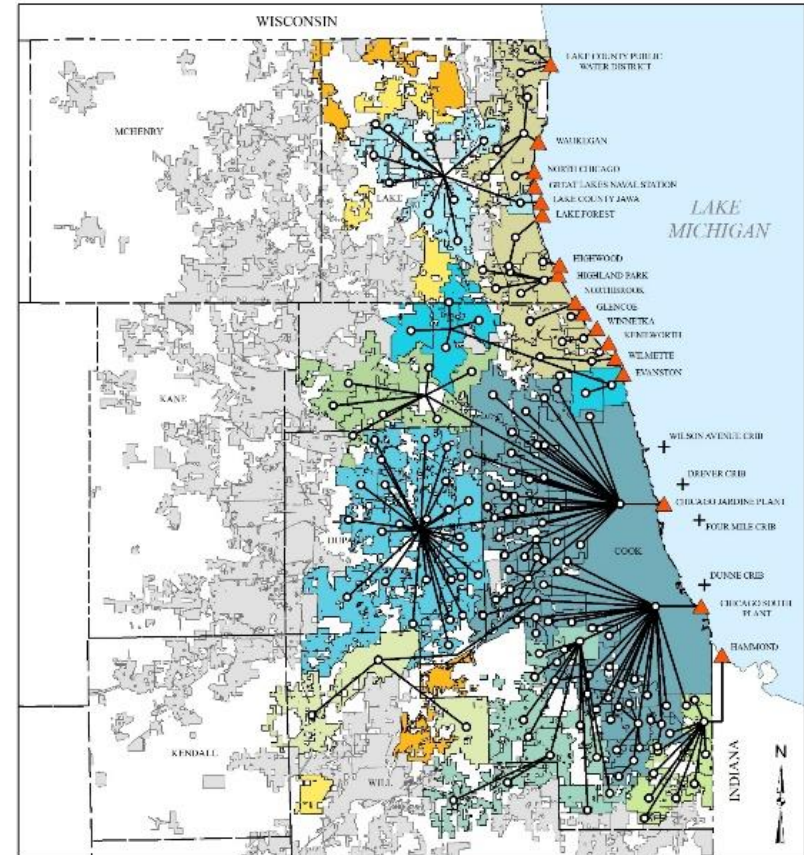
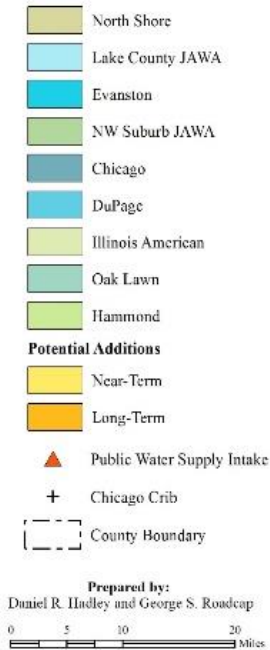
- Surface water intake location and point layer
 - Data update to most current dataset (2018) for both groundwater wells and surface water intakes



Data Availability – Facility Water Use Map

- Illinois Municipal Water Use Map
 - Currently:
 - Public Water Supply reported facility water use
 - Facility water use sources
 - Municipal water purchases and sales information
 - In development:
 - Data update to most current dataset (2018) for all facilities

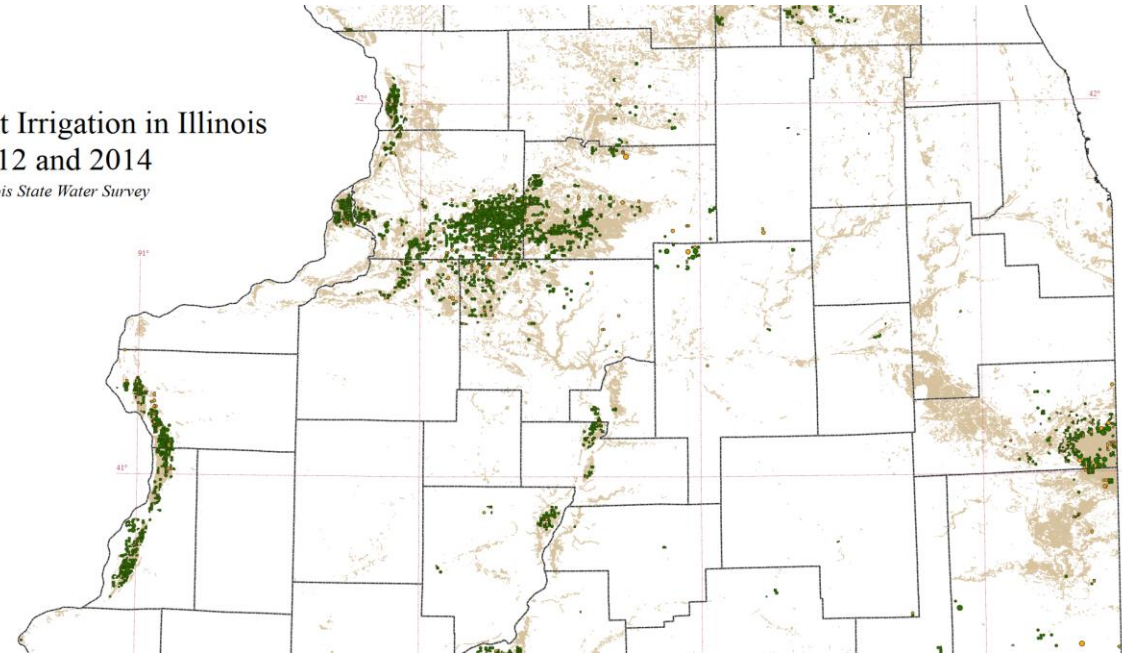
DISTRIBUTION NETWORK OF LAKE MICHIGAN WATER IN 2012



Data Availability – Center Pivot Irrigation Map

- Center Pivot Irrigation in Illinois Map
 - Currently:
 - Statewide digitized layer of center pivot irrigation setups in Illinois
 - Location and acreage information
 - 2012 and 2014 layers
 - Sourced from IWIP registration submissions, ISWS well records, and USDA flyover data
 - In development:
 - 2017 update layer in progress

Center Pivot Irrigation in Illinois
2012 and 2014
Illinois State Water Survey



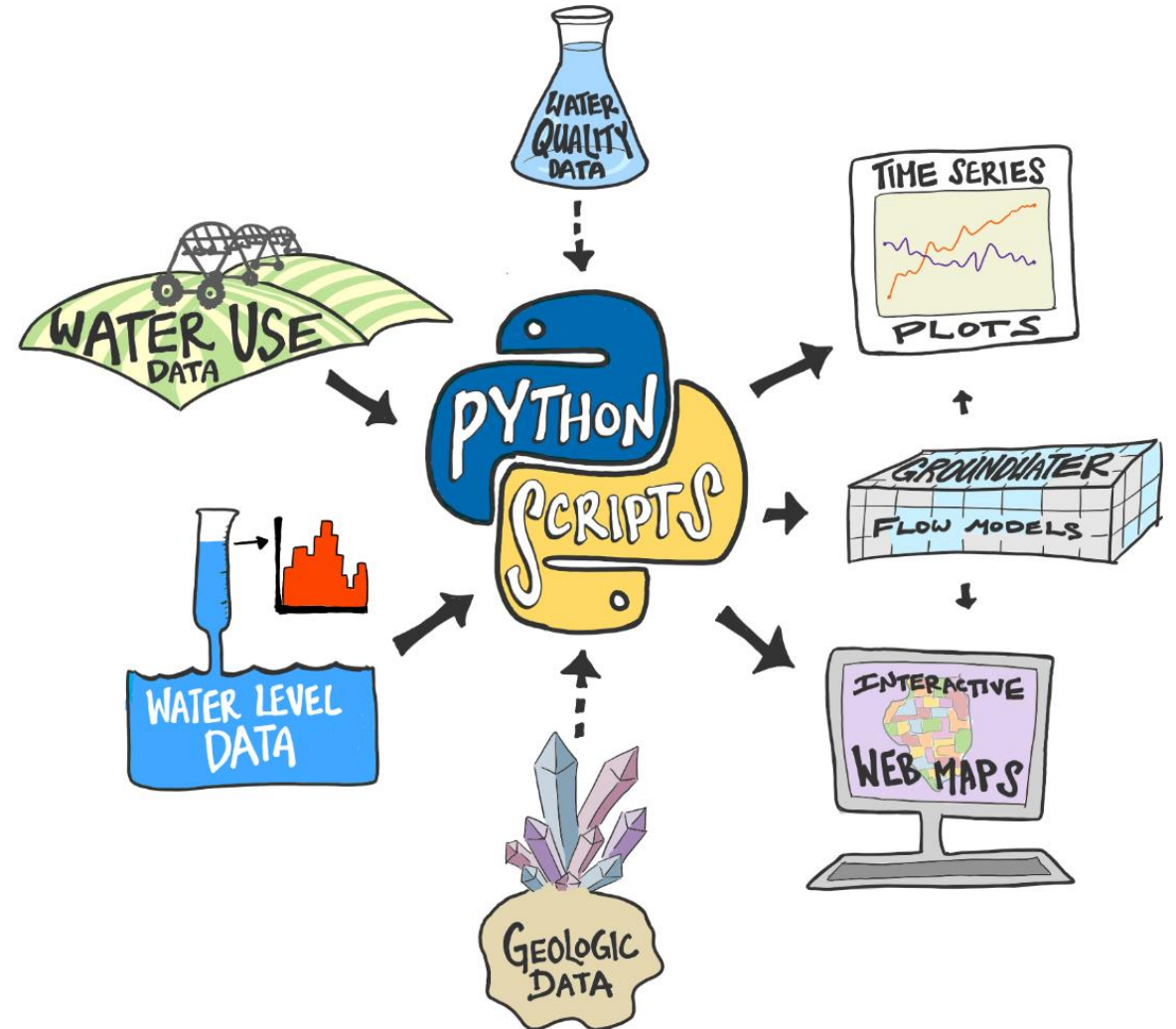
Data Availability – Custom Data Requests

- Guidelines

- Publicly available:

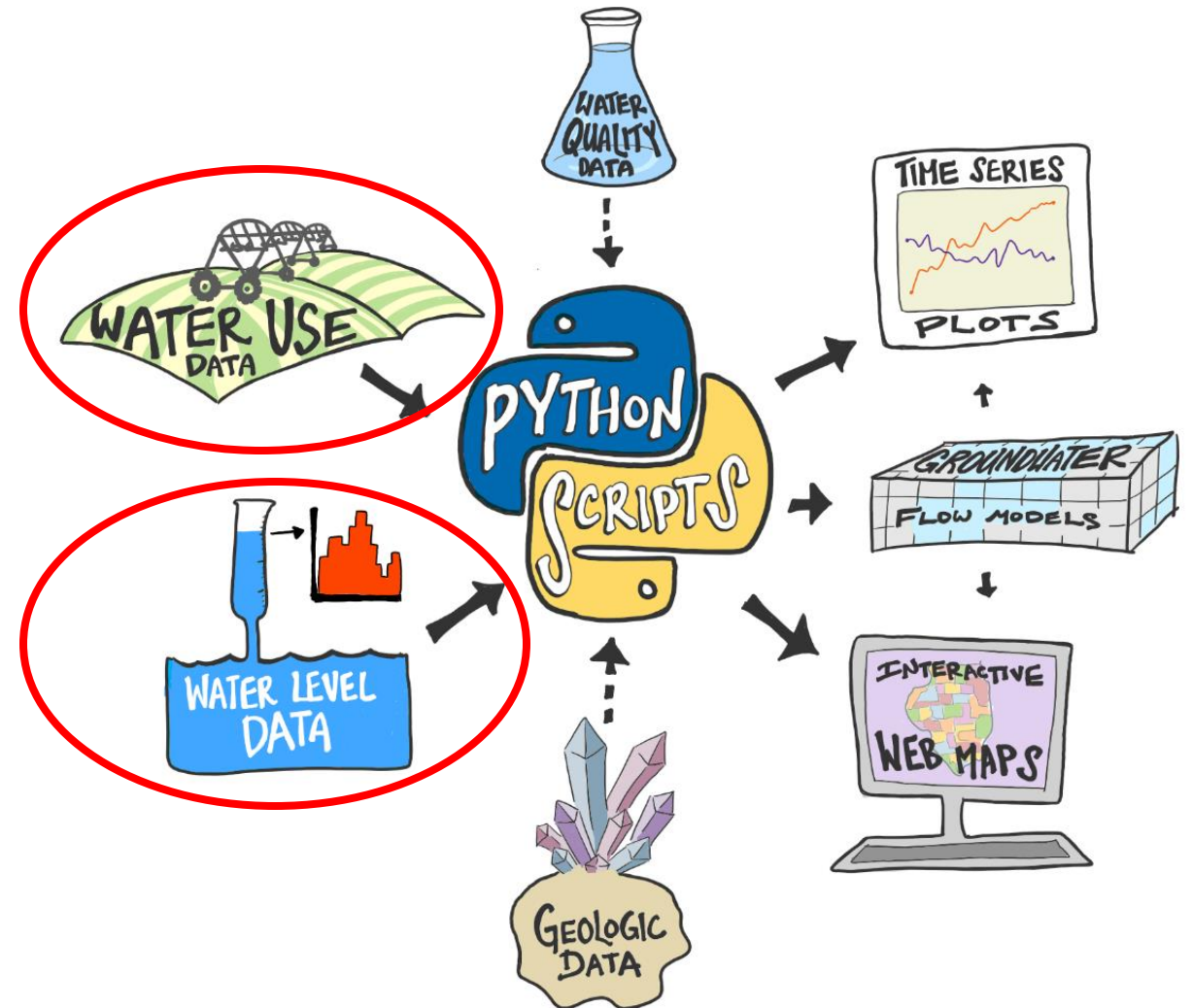
- Public Water Supply point level data
 - Pumpage and water level information
 - Well and intake location and record information
 - Aggregate private/self-supplied pumpage information
 - Data as reported

- Contact IWIP staff for further details



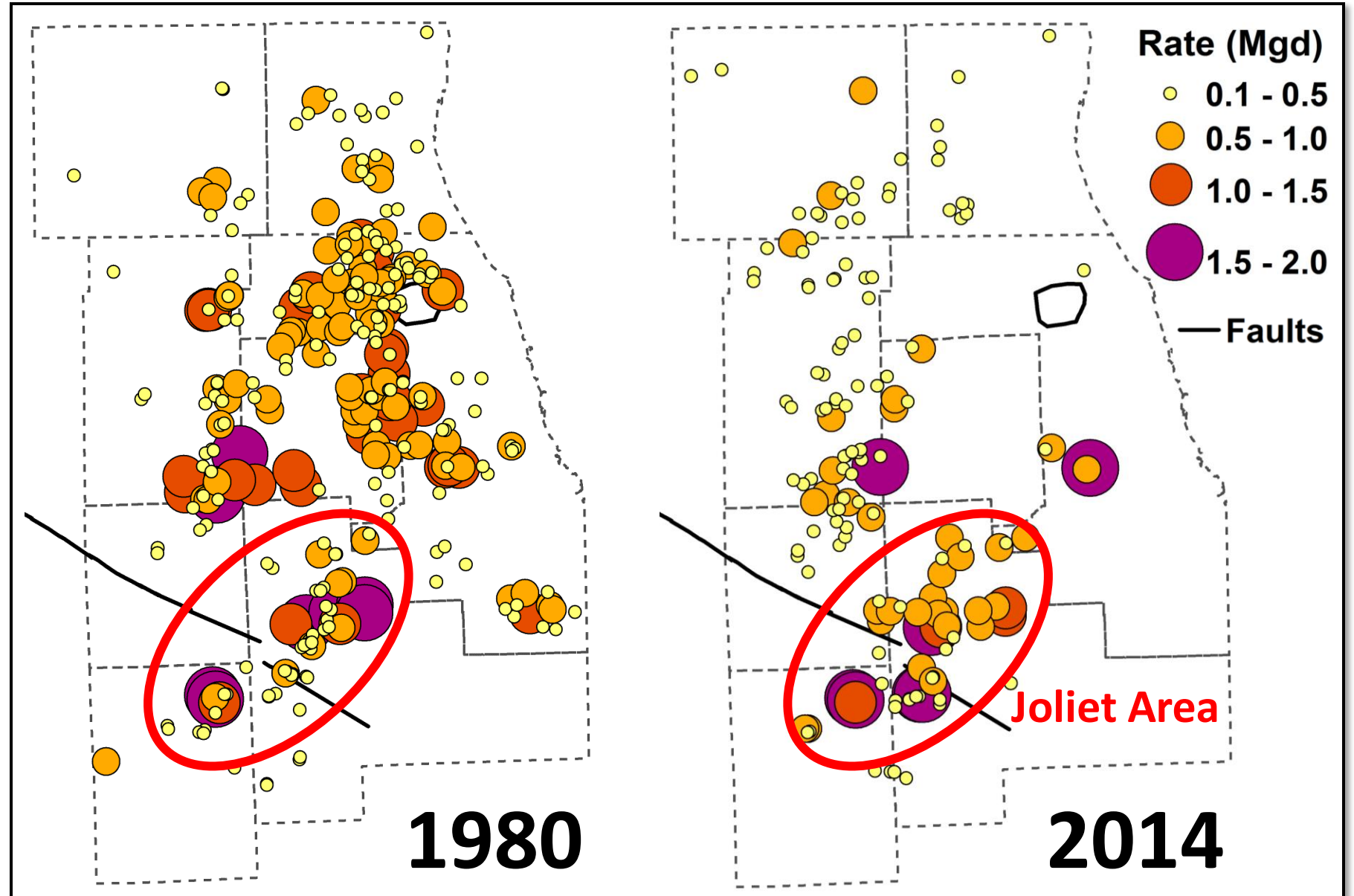
IWIP– Supported Projects

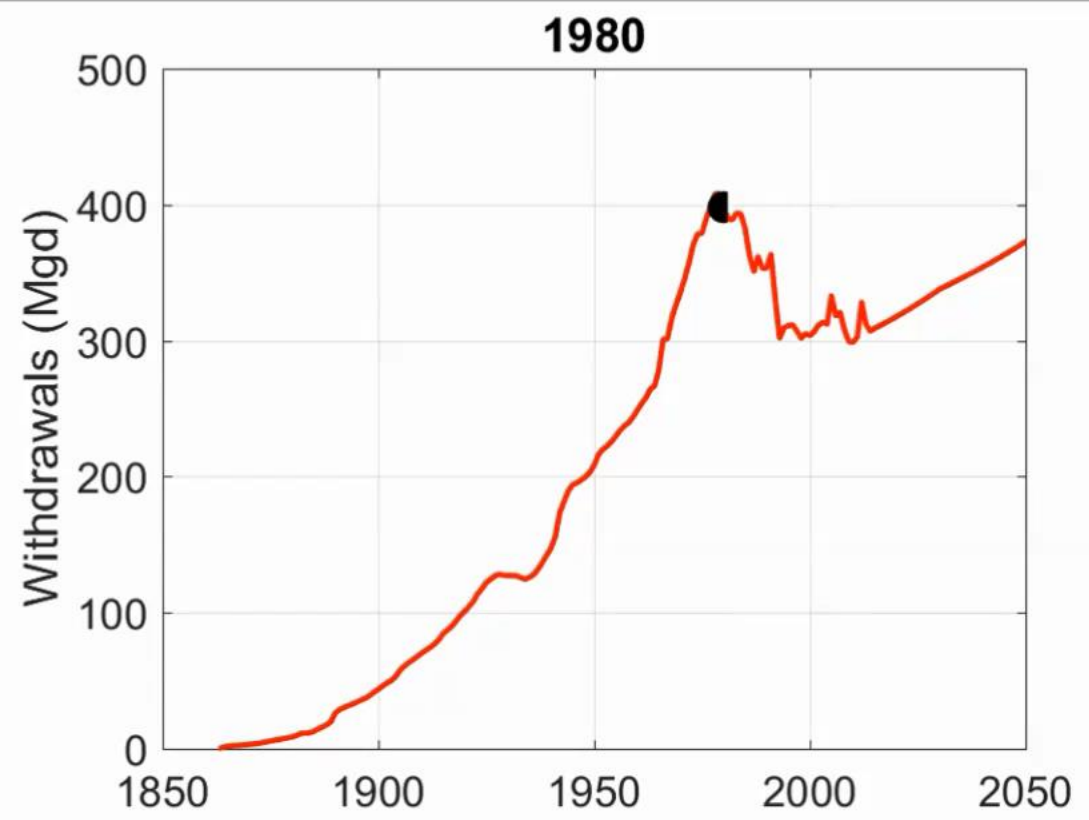
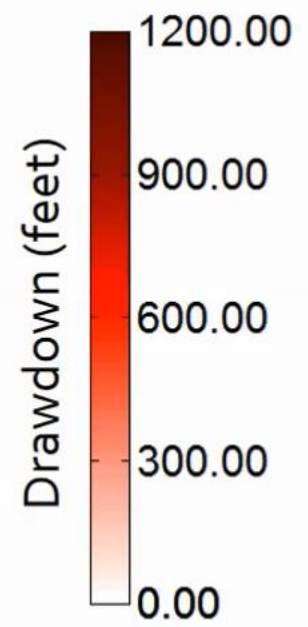
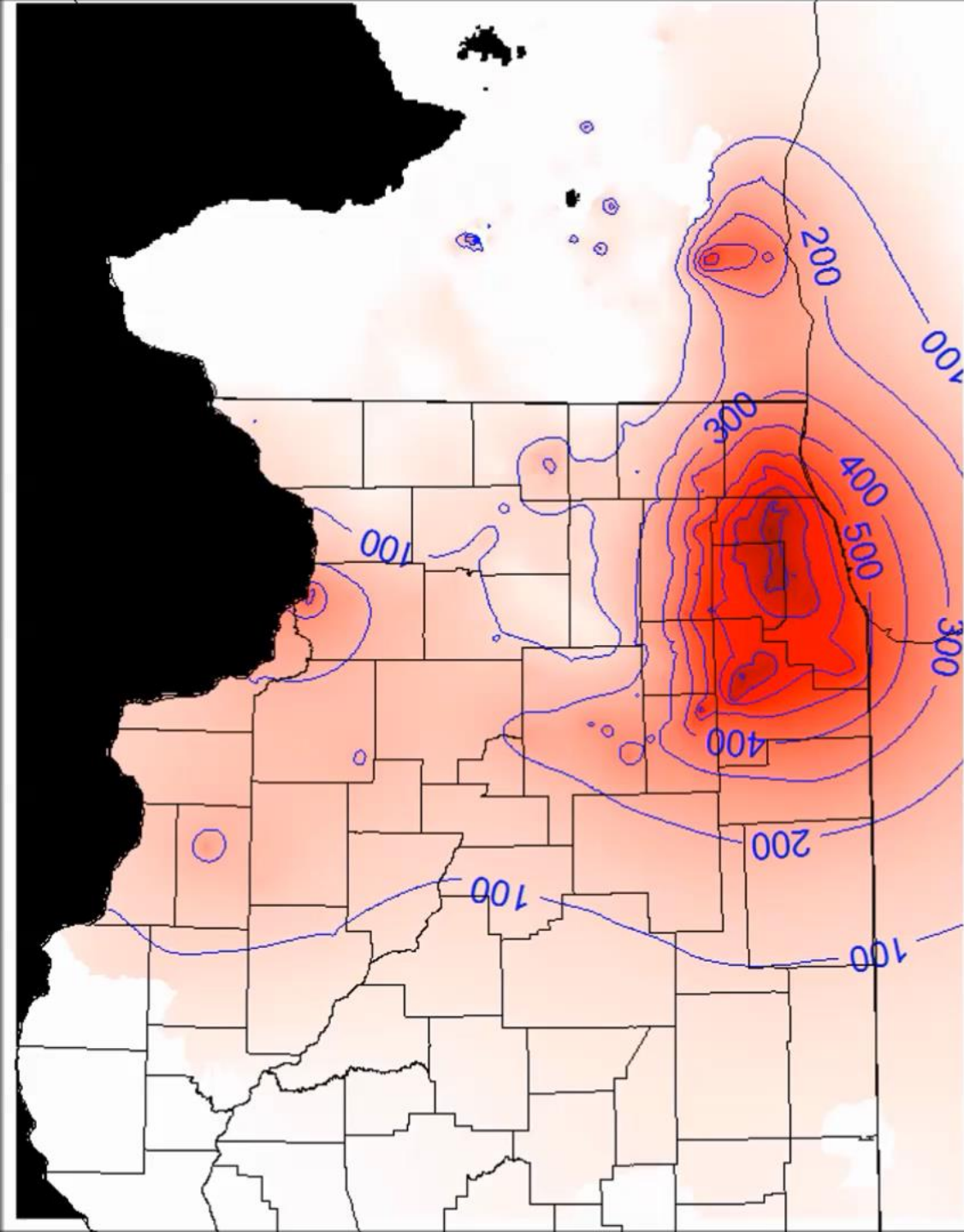
- Groundwater flow modeling
- Surface water hydrology studies
- Illinois State Water Supply Planning
- Regional aquifer studies
- Municipal projects
- Consultant projects
- And many more



Project Focus - Sandstone Aquifer Study

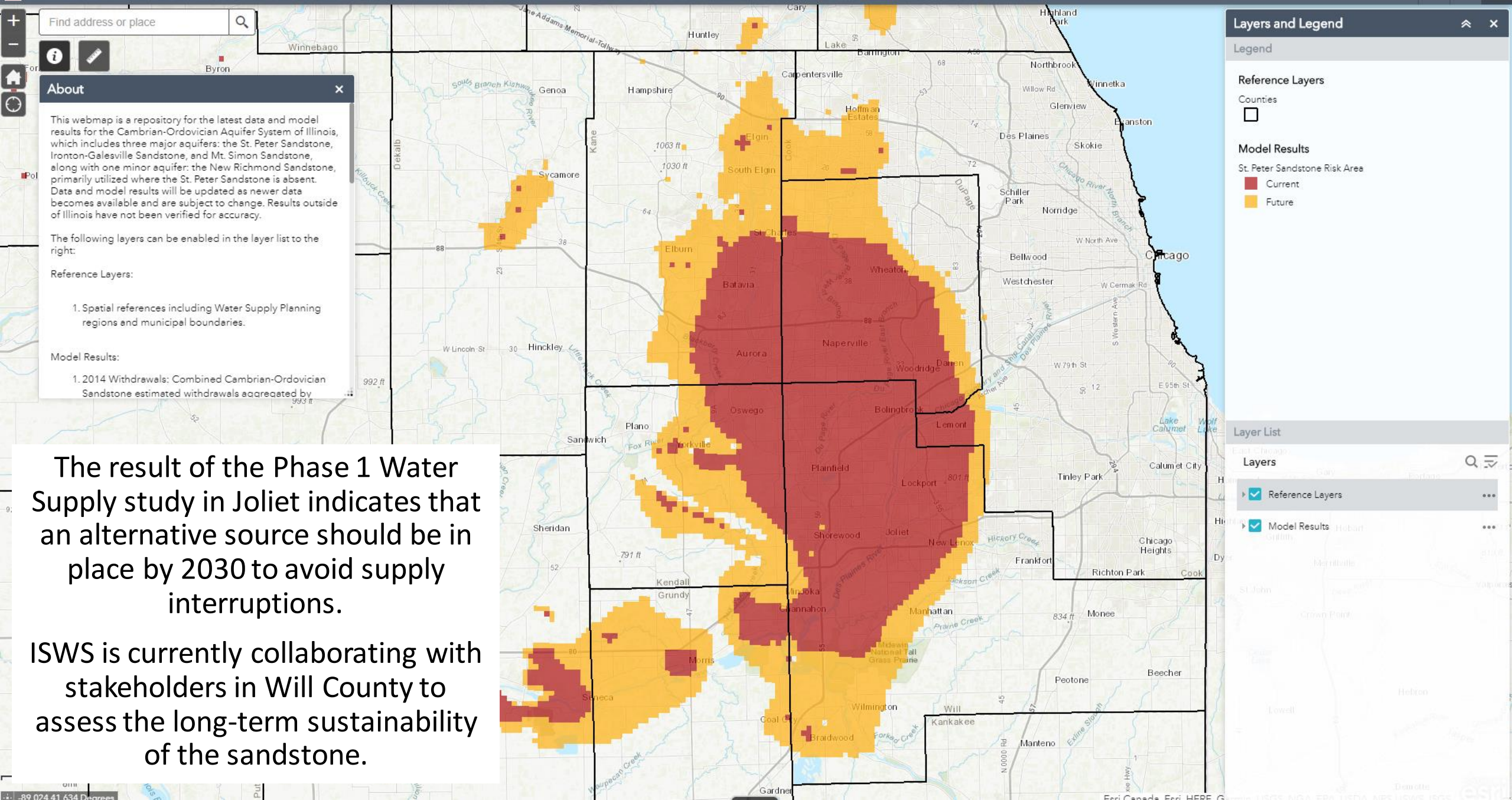
- Comparison of water use demands from the sandstone aquifer in NE Illinois
 - Synoptic measurement report 2014





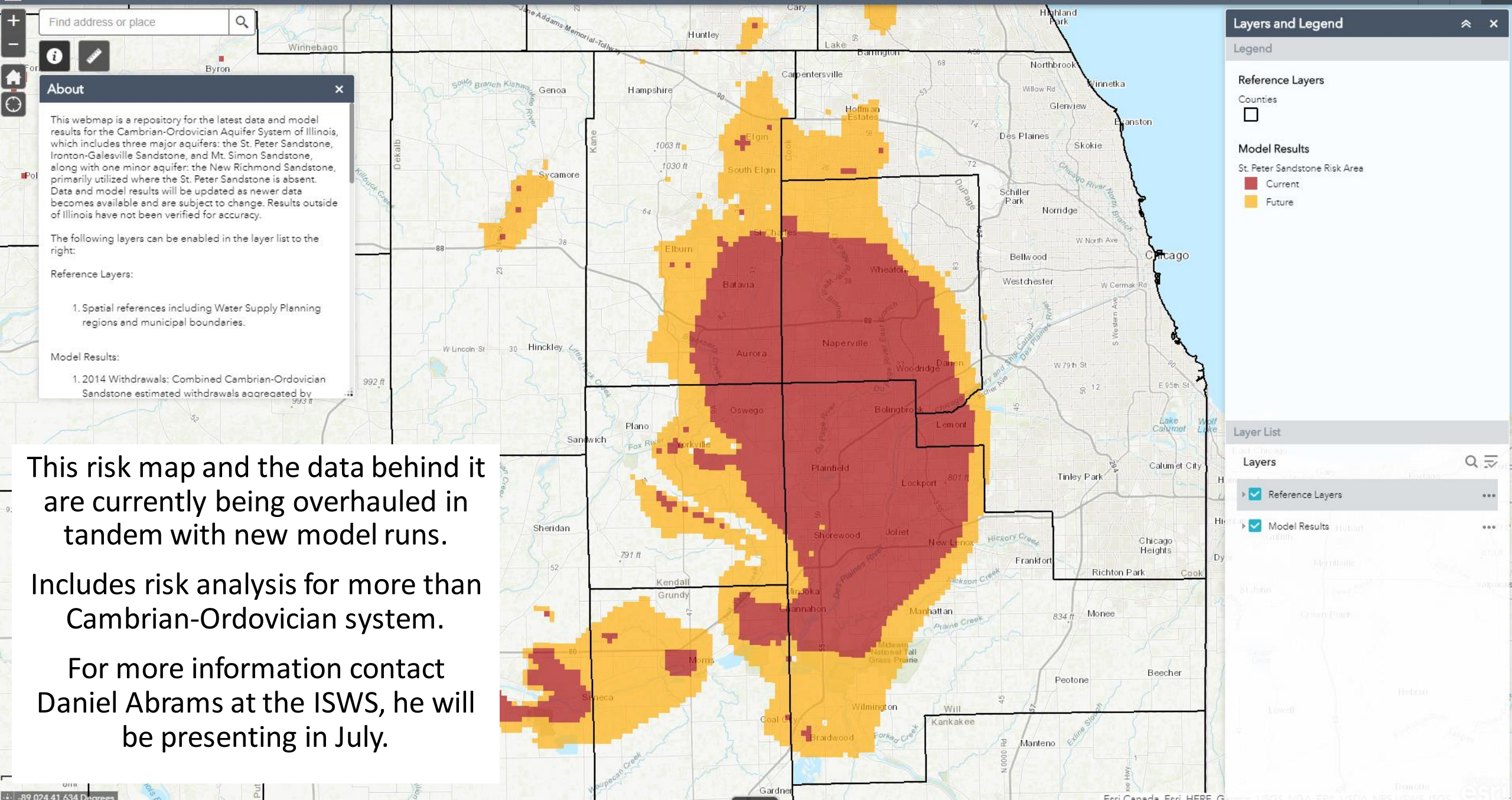
Drawdown in the Chicago region became severe, and many of Chicago's nearest suburbs switched to Lake Michigan water.





The result of the Phase 1 Water Supply study in Joliet indicates that an alternative source should be in place by 2030 to avoid supply interruptions.

ISWS is currently collaborating with stakeholders in Will County to assess the long-term sustainability of the sandstone.



Find address or place

About

This webmap is a repository for the latest data and model results for the Cambrian-Ordovician Aquifer System of Illinois, which includes three major aquifers: the St. Peter Sandstone, Ironton-Galesville Sandstone, and Mt. Simon Sandstone, along with one minor aquifer: the New Richmond Sandstone, primarily utilized where the St. Peter Sandstone is absent. Data and model results will be updated as newer data becomes available and are subject to change. Results outside of Illinois have not been verified for accuracy.

The following layers can be enabled in the layer list to the right:

Reference Layers:

1. Spatial references including Water Supply Planning regions and municipal boundaries.

Model Results:

1. 2014 Withdrawals: Combined Cambrian-Ordovician Sandstone estimated withdrawals aggregated by

Layers and Legend

Legend

Reference Layers

Counties

Model Results

St. Peter Sandstone Risk Area

- Current
- Future

Layer List

Layers

- Reference Layers
- Model Results

This risk map and the data behind it are currently being overhauled in tandem with new model runs.

Includes risk analysis for more than Cambrian-Ordovician system.

For more information contact Daniel Abrams at the ISWS, he will be presenting in July.

IWIP– Stakeholder Importance

- Stakeholders include data providers as well as data users
- Data products and scientific services are only as accurate as the data provided
- Data collection improves from stakeholder feedback
- Regional and municipal studies play an important role in developing projects statewide

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IWIP– Importance of Feedback

- Get in touch!
 - How can IWIP data collection improve?
 - What can IWIP provide you with?
 - How can water use and withdrawals data better work for you?
 - What products/services/projects can IWIP help support?

Contact Information

go.illinois.edu/IWIP

isws.illinois.edu

ISWS-IWIP@isws.illinois.edu

For Web Maps: <https://www.isws.illinois.edu/illinois-water-supply-planning/interactive-maps>

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