



Improving Illinois's Water Data Acquisition and Analyses

WIMS Workshop
September 18th 2019

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Illinois State Water Survey

OUTLINE

1. Program Overview
2. Developments under WUDR
3. Future Directions



IWIP Overview

– Program History

- Initiated in 1978
- Illinois State Water Survey needed a program to record annual point water withdrawals and water use information for high-capacity water users.
- Amendment to Water Use Act of 1983
 - 2010- Mandatory for Public Water Suppliers and Self-Supplied Industry water users
 - 2015- Mandatory for Irrigation water users



IWIP Overview

– Data categories

- IWIP collects annual point source data from three sectors
 - Public Water Supply
 - Self-Supplied Industrial-Commercial
 - Can be further broken down by well SIC codes
 - Includes power generation
 - Center Pivot Irrigation
 - Small amount of voluntary reporting pre-2012

Pre-award challenges



Funding

Soft money [grants/contracts]



Data acquisition and entry



Data management and utilization



Pre-award challenges – Data Acquisition

- Mailed annual questionnaires [Early March]
 - Historically all mailed by hand or email
- 2nd mailing [June]
- Phone call contact [Throughout the year]
 - Unresponsive facilities
 - Facilities who report questionable data
- Data entry/filed forms by hand [as received]



Please return form by 1/13/16

14390300 ELMWOOD

Contact Person and Title :

Phone (309) 7422351

e-mail: dot@elmnet.net

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

2014 - TOTAL GALLONS PUMPED - WELLS/INTAKES

IF YOUR SYSTEM DOES NOT CONTAIN ANY WELLS OR INTAKES, SKIP THIS SECTION OF THE FORM AND CONTINUE

Well or Intake	Status	TwN	Rng	Sec	Depth	Total Annual Gallons Withdrawn
1	Sealed	09N	05E	08.8D	1498	_____, _____, _____, _____
2	Sealed	09N	05E	07.5C	47	_____, _____, _____, _____
3	Emergency	09N	05E	07.6D	1572	_____, _____, _____, _____

Grand Total Finished Gallons for 2014:

_____, _____, _____, _____

2. Supplier(s) of Purchased Water:

3. Population directly served (retail) within your city limits

_____, _____, _____

Population directly served (retail) outside your city limits:

_____, _____, _____

4. Number of residential service connections for your utility:

_____, _____, _____

Residential gallons:

_____, _____, _____, _____

5. Number of commercial (non-manufacturing) service connections for your utility:

_____, _____, _____

Commercial gallons:

_____, _____, _____, _____

6. Number of industrial (manufacturing) service connections for your utility:

_____, _____, _____

Industrial gallons:

_____, _____, _____, _____

7. Do you sell water in bulk to another public water system or to individuals?:

Yes _____ No _____

Systems and gallons sold to each system:
(use additional pages if necessary)

System 1:

Amount Sold:

System 2:

Amount Sold:

System 3:

Amount Sold:



Challenges- Data Management

- Manual data entry into database
 - Multiple avenues for error
 - Database was not designed to accommodate all collected data
- Perpetual backlog



FACILITIES

PUMPAGE

PUMPAGE QUERY

MANAGE POINTS

Facility: CHICAGO - 03196000

SWS ID: 03196000

Contact: BURT REZKO, P.E.

Title: DEPUTY COMMISSIONER

Address: 1000 E. OHIO STREET, ROOM 306

City: CHICAGO State: IL Zip: 60611

 Pumpage

 P-Use

 I-Use

POINTS

PUMPAGE

P-USE

I-USE

NEW

DELETE P-USE

Last User: lbryant

Date / Time: 1/17/2012

Year: 2007

Purchase One:

Residential Services: 446200

Purchase Two:

Residential Quantity: 116570000000

Self Supplied: 319590000000

Self Supplied Finished: 314762160000

Supplier One: Supplier Two:

Sells Water: Y Y or N

Commercial Services: 44485

Population In: 2873503

Commercial Quantity: 116570000000

Population Out: 2534345

Industrial Services: 4795

Industrial Quantity: 6535000000

Sells To One: DIRECTLY SERVES 52 OTHER SYSTEMS

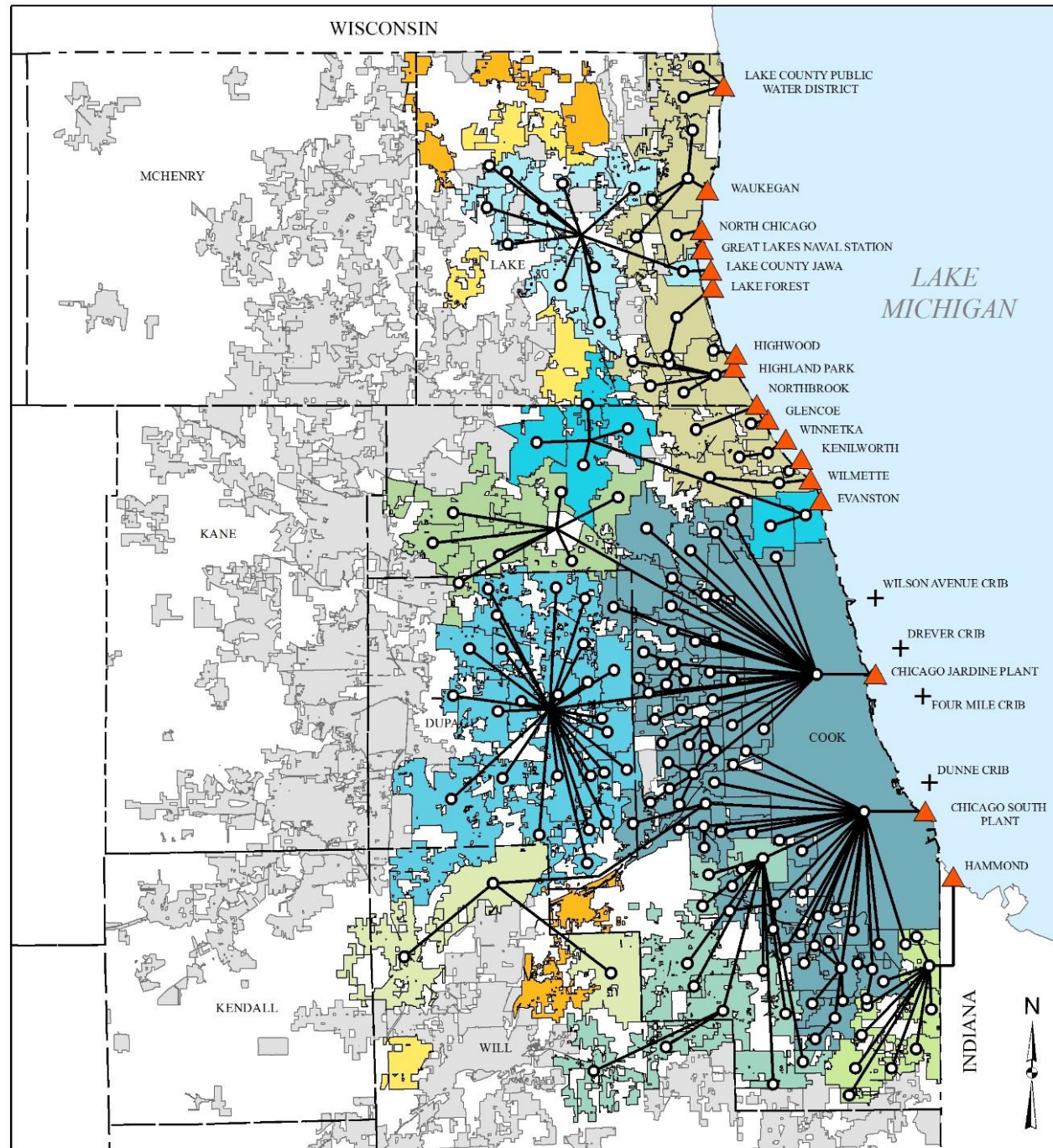
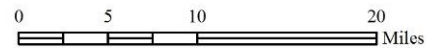
Previous Year:

		% Diff
Self Supplied:	311458000000	3
Purchase One:	<input type="text"/>	<input type="text"/>
Purchase Two:	<input type="text"/>	<input type="text"/>

DISTRIBUTION NETWORK OF LAKE MICHIGAN WATER IN 2012

- North Shore
- Lake County JAWA
- Evanston
- NW Suburb JAWA
- Chicago
- DuPage
- Illinois American
- Oak Lawn
- Hammond
- Potential Additions**
- Near-Term
- Long-Term
- Public Water Supply Intake
- Chicago Crib
- County Boundary

Prepared by:
Daniel R. Hadley and George S. Roadcap



Developments due to award



CONSISTENT FUNDING



MODERNIZED DATA
ACQUISITION AND ENTRY



IMPROVED DATA
UTILIZATION

Developments - Consistent Funding



Hire additional staff



Clear records
backlog

2013 – 2016
records
entered



Identify and address
missing/suspect data

Developments

- Data Acquisition and Entry



Online Reporting Tool



Establishment of irrigation collections



Update of golf course roster

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"/>

Next



Developments

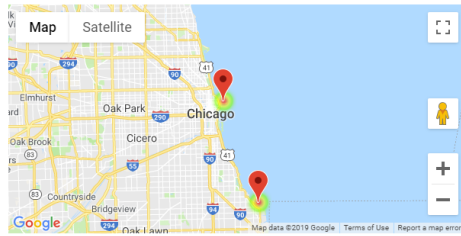
- Web Reporting

- Replace 80% of the paper questionnaires
- Eliminate manual data digitization
- Allow for quicker turn around, more data analysis, better data
 - Users can view previously reported data

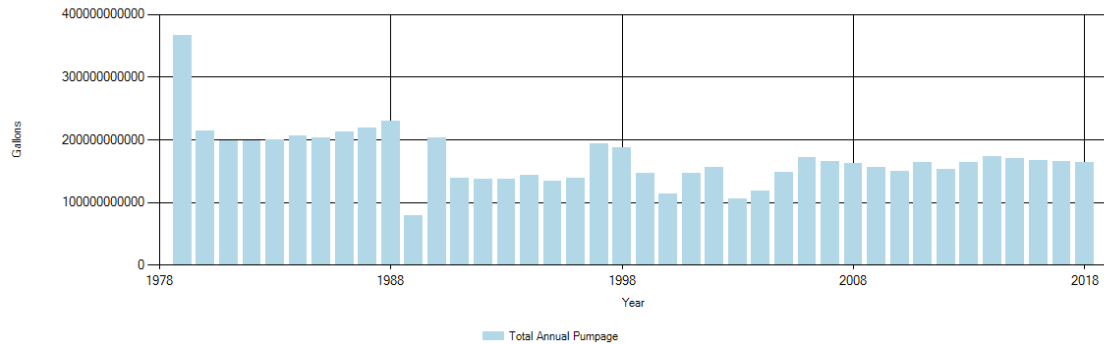
IWIP Report Summary for CHICAGO

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					



Annual Pumpage Summary



Sold To	Facility Name	Year	Gallons Sold
03190030	ALSIP	2018	1,978,543,000
03190120	BEDFORD PARK	2018	7,923,177,000
03190210	BERWYN	2018	1,842,064,000
03190240	BLUE ISLAND	2018	727,384,000
03190270	BRIDGEVIEW	2018	788,643,000
03197580	BROADVIEW/WESTCHESTER JOINT WATER AGENCY	2018	1,349,800,000
03195130	BROOKFIELD-N RIVERSIDE WATER COMM	2018	1,611,840,000
03190360	BURNHAM	2018	28,744,000
03190390	CALUMET CITY	2018	110,291,000
03190420	CALUMET PARK	2018	216,719,000
03195570	CENTRAL STICKNEY SANITARY DIST	2018	39,481,000
03190510	CICERO	2018	2,601,294,000
03190630	DES PLAINES	2018	633,093,000
03190690	DOLTON	2018	880,319,000
04395400	DUPAGE WATER COMMISSION	2018	27,034,820,000
03190780	ELMWOOD PARK	2018	790,894,000
03190840	EVERGREEN PARK	2018	586,677,000
03190900	FOREST PARK	2018	790,073,000
03190930	FOREST VIEW	2018	57,640,000
03190960	FRANKLIN PARK	2018	899,086,000
03195620	GARDEN HOMES SANITARY DISTRICT	2018	21,231,000
03195650	GLEN EDEN ESTS HOMEOWNERS ASSN	2018	0
03191110	HARVEY	2018	2,909,841,000
03191140	HARWOOD HEIGHTS	2018	288,168,000
03195770	HILLSIDE-BERKELEY WATER COMM	2018	581,536,000

Developments

- Data Acquisition and Entry

- Establishment of irrigation collections
 - Outreach to individual irrigators and county officials to account for all wells
 - Registration of wells
 - Establishment of aggregate reporting structure and estimation methods
 - Collected flow meter data in the lab and field
 - Updating center pivot coverage map
- Update of golf course roster

Developments - Improved Data Utilization



Updated database

Capturing reported data in a useful structure

Municipal purchases/sales more efficiently quantified



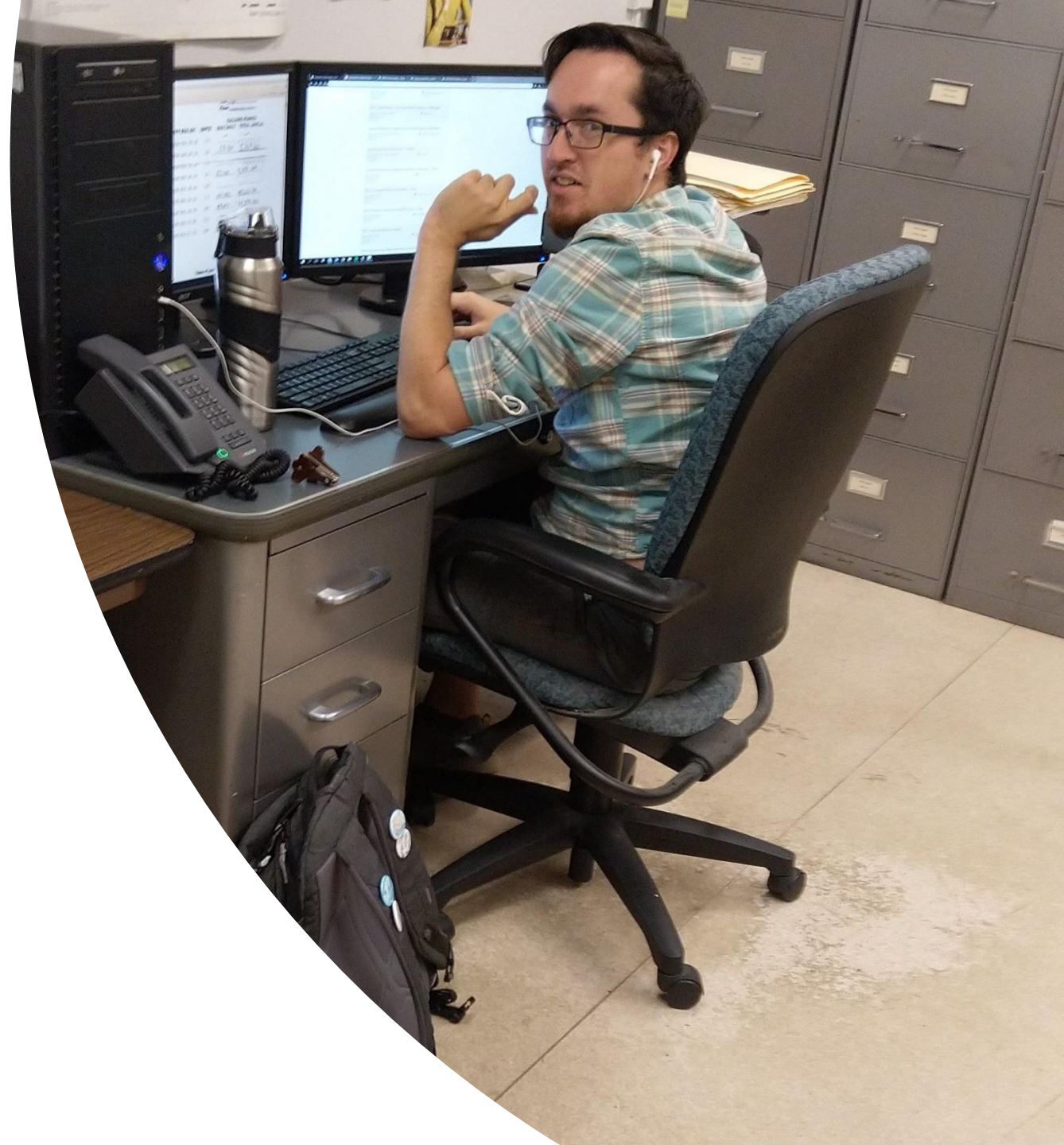
Freed up staff time



Expanded scope of program

Tried collecting monthly power generation facility use and returns

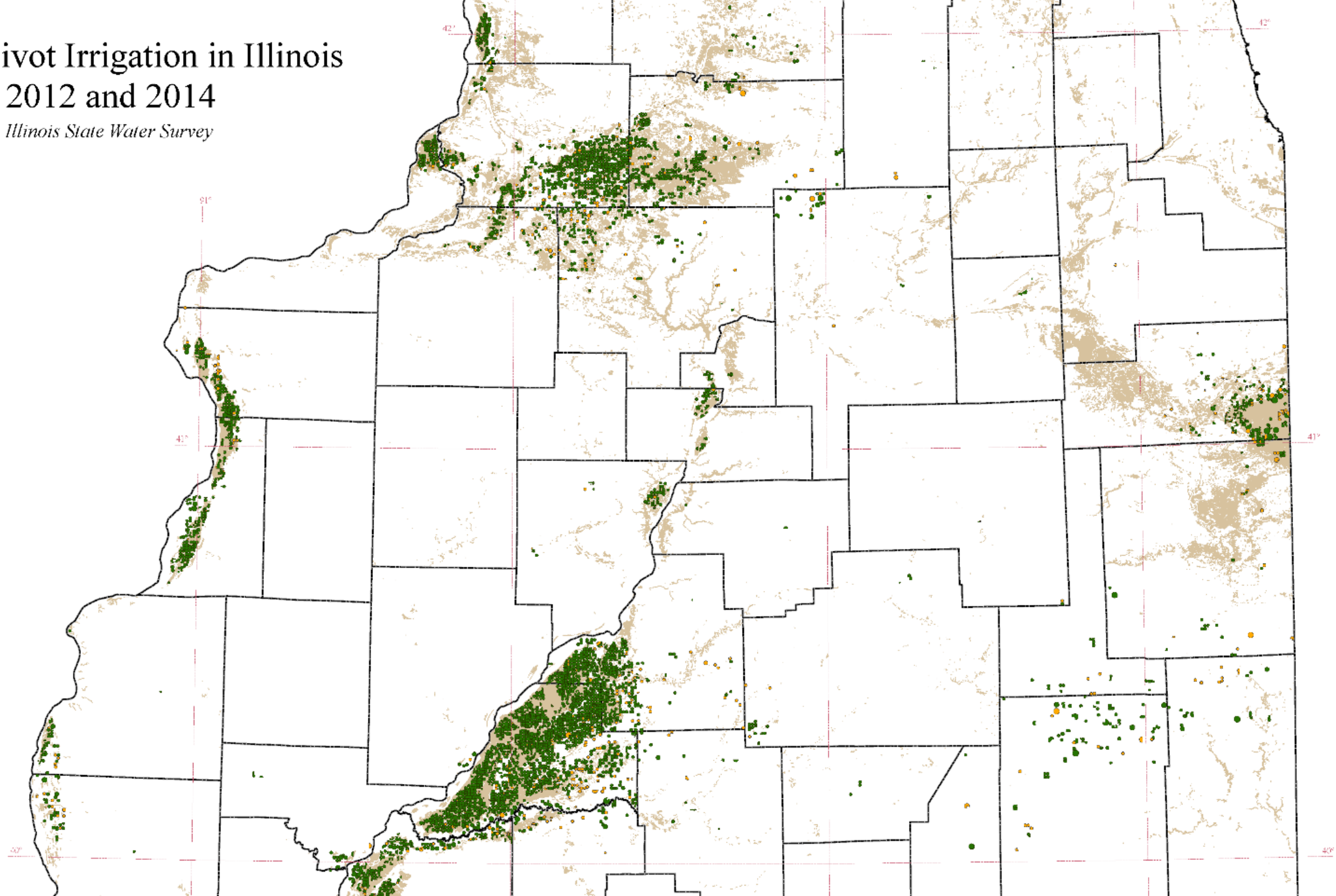
- Good initial response, need to rework template and time of year data is requested



Center Pivot Irrigation in Illinois

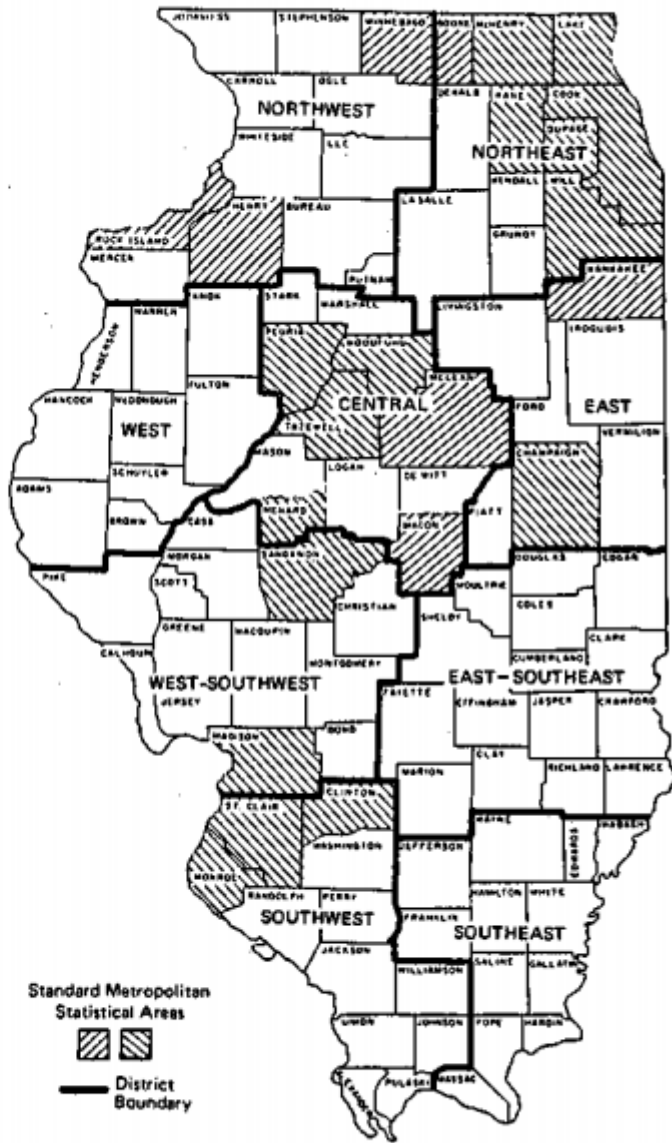
2012 and 2014

Illinois State Water Survey





Average Domestic Use in Illinois Per County 2014-2016



District	Withdrawal
Northwest	99.7 gpcd *
Northeast	83.0
West	72.0
Central	74.2
East	72.1
West-Southwest	73.2
East-Southeast	68.4
Southwest	75.8
Southeast	79.2

* gallons per capita per day




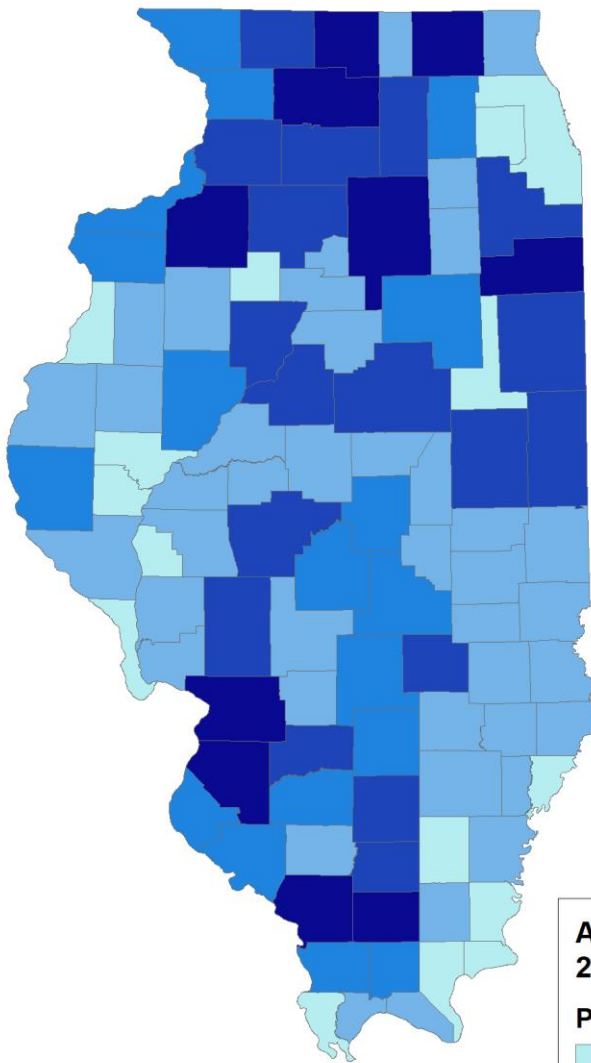





Standard Metropolitan
Statistical Areas
 
 District
Boundary


Figure 2. District rural domestic per capita water use, 1986



Avg. Domestic Use
2014-16 (MGD)

Per County

-  < 0.5
-  0.5 - 1.0
-  1.0 - 1.5
-  1.5 - 2.0
-  > 2.0

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

Future directions

- Making data readily available for public consumption
- Further exploring monthly withdrawals
- Working with State Representatives to refine language of Water Use Act of 1983
- Utilize data for research





Questions?