Critical Data: The IL Water Inventory Program and Water Supply Planning In Illinois

Steve Wilson
Illinois State Water Survey
Water Supply Planning

- Determine availability of water resources
- Identify potential problems before they happen
- Using information about the hydrology, geology, and water use to develop an understanding of current & future water needs

“Is there enough water of sufficient quality for future use?”
The Point Of IWIP

- Allow for accurate determination of water withdrawals from every water source (GW & SW)
- Characterize use by use, source, and location
- Provide the data scientists and planners need to evaluate withdrawals by aquifer, location, and proximity to other sources of withdrawal
- Provide historical data that can help predict how future changes in water use will impact water resources and the sustainability of a community
Integrated Water Information Portal (IWIP) Data

- Integrates well/intake database by facility to provide a unique form for reporting
- Pumped and finished withdrawals by well/intake
- Characterized by use (PWS, Ind/Com, Irrigation)
- Amount purchased or sold
- Connections – number and type
- Water levels (sometimes)
Lake Michigan allocations start

Walton's 1964 estimated deep aquifer yield ~ 65 mgd
Water Use & Water Levels

Groundwater Elevation at Petro North (1953-Present)

Groundwater Pumpage (MGD)

ILINOIS STATE WATER SURVEY PRAIRIE RESEARCH INSTITUTE
Bedrock Aquifers
Geology Influences Water Resources and Water Use
- Any person or land occupier that is responsible for a point of withdrawal classified as a high capacity well, high capacity intake, or public water supply shall participate in IWIP.

- Agricultural irrigation is exempt until 2015.

- Shall use ISWS approved estimation methods for irrigation withdrawal reporting
2012 Center Pivot Irrigation in Mason County, Illinois

Illinois State Water Survey

This map displays the center pivot irrigation systems in use in Mason County, Illinois during the 2012 growing season. Mason County has the most irrigated acres in the state, mostly due to the low rainfall in the county. The map also shows a significant proportion of these acres is used for corn production. The center pivot irrigation systems are used to water the crops, providing a consistent and efficient source of water.

Legend
- **Course Pivot Irrigated Field**
- **U.S. Highway**
- **Township Boundary**
- **State Highway**
- **Municipality**
- **County Highway**
- **Water body**

Source:
- USDA (NASS) Census of Agriculture 2012
- Illinois State Water Survey

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Prepared by:
- ISWS Map Series 2014-01

University of Illinois
Prairie Research Institute

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IWIP Tasks

- **Revision of IWIP Procedures & Forms**
  - eMOR/NWPA and electronic reporting for PWS’s
  - Develop an online system for Industrial/Commercial and Irrigation reporting

- **Continue efforts with the Northwest Water Planning Alliance (NWPA)**
  - Collect water use data electronically from PWS’s
  - Upload archived datasets from NWPA facilities

- **Development of Irrigation Reporting System**
  - Develop website for reporting and use estimation
  - Get the word out (IFB, IDOA, Coop Ext)
<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Population</th>
<th>Total Water Supplied from Shallow Wells</th>
<th>Total Water Supplied from Deep Wells</th>
<th>Total Water Supplied from River Intakes</th>
<th>Total Water Supplied from Other Sources</th>
<th>Total Water Supplied from All Sources</th>
<th>Average Day Demand</th>
<th>Max. Day Demand</th>
<th>Precip Amount</th>
<th>Per Capita Water Consumption</th>
<th>Max. River Flow</th>
<th>Avg. River Flow</th>
<th>Min. River Flow</th>
<th>Number of Water Main Breaks</th>
<th>Number of Water Main Breaks per 100 Miles of Water Main</th>
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</thead>
<tbody>
<tr>
<td>2014</td>
<td>January</td>
<td>199,672</td>
<td>71,321</td>
<td>189,423</td>
<td>202,830</td>
<td>0.000</td>
<td>543,574</td>
<td>16.68</td>
<td>19.72</td>
<td>1.50</td>
<td>87.82</td>
<td>1.870</td>
<td>1.192</td>
<td>515</td>
<td>31</td>
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<td>February</td>
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<td>18.38</td>
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<td>88.63</td>
<td>3.070</td>
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<td>548,970</td>
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<td>18.72</td>
<td>8.06</td>
<td>91.65</td>
<td>4.650</td>
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<td>0.1</td>
</tr>
</tbody>
</table>

| Change Date Range | FROM | Year | 2014 | Month | 01 Jan | TO | Year | 2014 | Month | 12 Dec |

Add New Month | Year | 2014 | Month | 01 Jan |
| **AURORA**  
<table>
<thead>
<tr>
<th><strong>2014 - September</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population Served</strong></td>
</tr>
<tr>
<td><strong>Total Water Supplied from Shallow Wells (million gallons)</strong></td>
</tr>
<tr>
<td><strong>Total Water Supplied from Deep Wells (million gallons)</strong></td>
</tr>
<tr>
<td><strong>Total Water Supplied from River Intake(s) (million gallons)</strong></td>
</tr>
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<td><strong>Total Water Supplied from Other Sources (million gallons)</strong></td>
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<td><strong>Total Water Supplied from All Sources (million gallons)</strong></td>
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<td><strong>Average Day Demand (million gallons/day)</strong></td>
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<tr>
<td><strong>Max. Day Demand (million gallons/day)</strong></td>
</tr>
<tr>
<td><strong>Precipitation Amount (inches)</strong></td>
</tr>
<tr>
<td><strong>Per Capita Water Consumption (gallons per capita/day)</strong></td>
</tr>
<tr>
<td><strong>Max. River Flow (CFS)</strong></td>
</tr>
<tr>
<td><strong>Avg. River Flow (CFS)</strong></td>
</tr>
<tr>
<td><strong>Min. River Flow (CFS)</strong></td>
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<td><strong>Number of Water Main Breaks</strong></td>
</tr>
<tr>
<td><strong>Number of Water Main Breaks per 100 Miles of Water Main</strong></td>
</tr>
<tr>
<td><strong>Any Water Restrictions Currently in Place (red/yellow/green)</strong></td>
</tr>
</tbody>
</table>

**SAVE  CANCEL/RETURN TO LIST  PRINT**
IWIP Is In Transition

- Water Use Act requirements will more than double the number of IWIP withdrawal points
- Electronic reporting does more than save costs, it reduces transcription errors, allows for quick evaluation of data, automates our business process
- We are working to have electronic reporting ready by 2015 when irrigation reporting starts

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Questions?