Water Supply Planning in Northeastern Illinois: A Perspective

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Acknowledgments

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CMAP

* Regional Planning Agency (Public Act 095-0677)
CMAP = Areawide Water Quality Planning Agency

- Areawide Water Quality Management Plan
  - Designed to be comprehensive
  - Purpose: eliminate water pollution!
  - Approach: watershed planning

Water Sources for Public Supply in Northeastern Illinois

Sources of water for northeastern Illinois, by population served, 2000

- 77% Lake Michigan
- 19% Groundwater
- 4% Inland surface water sources

Sources of water for northeastern Illinois, by relative withdrawals, 2005

- 69% Lake Michigan
- 17% Groundwater
- 14% Inland rivers

Source: Chicago Metropolitan Agency for Planning; Dziegielewski and Chowdhury, 2008
2005 Water Use by Sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Plants (Combined)</td>
<td>74%</td>
</tr>
<tr>
<td>Public Supply</td>
<td>21%</td>
</tr>
<tr>
<td>Irrigation and Agriculture</td>
<td>4%</td>
</tr>
<tr>
<td>Self-supplied Domestic</td>
<td>2%</td>
</tr>
<tr>
<td>Self-supplied I &amp; C</td>
<td>11%</td>
</tr>
</tbody>
</table>

Source: B. Dziegielewski and F.J. Chowdhury, 2008
11-County Population

- 2005 – 8.74 million
- 2050 – 12.11 million

~ 38% growth
Scenario water withdrawals: 2005 - 2050,
in million gallons per day

Current trend scenario  Less resource intensive scenario  More resource intensive scenario

Source: B. Dziegielewski and F.J. Chowdhury, 2008, Southern Illinois University Carbondale
Impacts on Water Sources

1) Fox River (Kankakee River *unstudied*)
2) Groundwater
   - Deep-Bedrock Aquifer(s)
   - Shallow-Bedrock Aquifer(s)
3) Lake Michigan
Fox River Surface Water Accounting Tool

2050 Baseline Scenario with only Elgin and Aurora withdrawals

10-Year Low Flow, mgd

- 2050 growth scenario
- Present-day condition
- Unaltered flow

(ISWS, 2010)
NE IL Simulated Groundwater Withdrawals: 1964-2050

Estimated Growth in Scenario Demand
(Dziegielewski and Chowdhury, 2008)

LRI = 44%
BL = 84%
MRI = 135%

(ISWS, 2010)
Simulated Withdrawals: Deep-Bedrock Aquifers

(ISWS, 2010)
### Illinois Diversion in 2050 - MRI

<table>
<thead>
<tr>
<th>Diversion Component</th>
<th>Lake MI Water (MGD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Pumpage</td>
<td>1,397</td>
</tr>
<tr>
<td>Stormwater Runoff</td>
<td>546</td>
</tr>
<tr>
<td>Discretionary</td>
<td>66</td>
</tr>
<tr>
<td>Lockage</td>
<td>58</td>
</tr>
<tr>
<td>Leakage</td>
<td>24</td>
</tr>
<tr>
<td>Navigation Makeup</td>
<td>23</td>
</tr>
<tr>
<td><strong>TOTAL DIVERSION</strong></td>
<td><strong>2,114</strong></td>
</tr>
</tbody>
</table>
Water 2050

Demand Management
* water-use conservation
* full-cost of service pricing

Integrating Land Use with Water Supply Planning
Thank you!

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