

Updating the Groundwater Drought Vulnerability Analysis

From the State of Illinois Drought Prepared and Response Plan (2011)

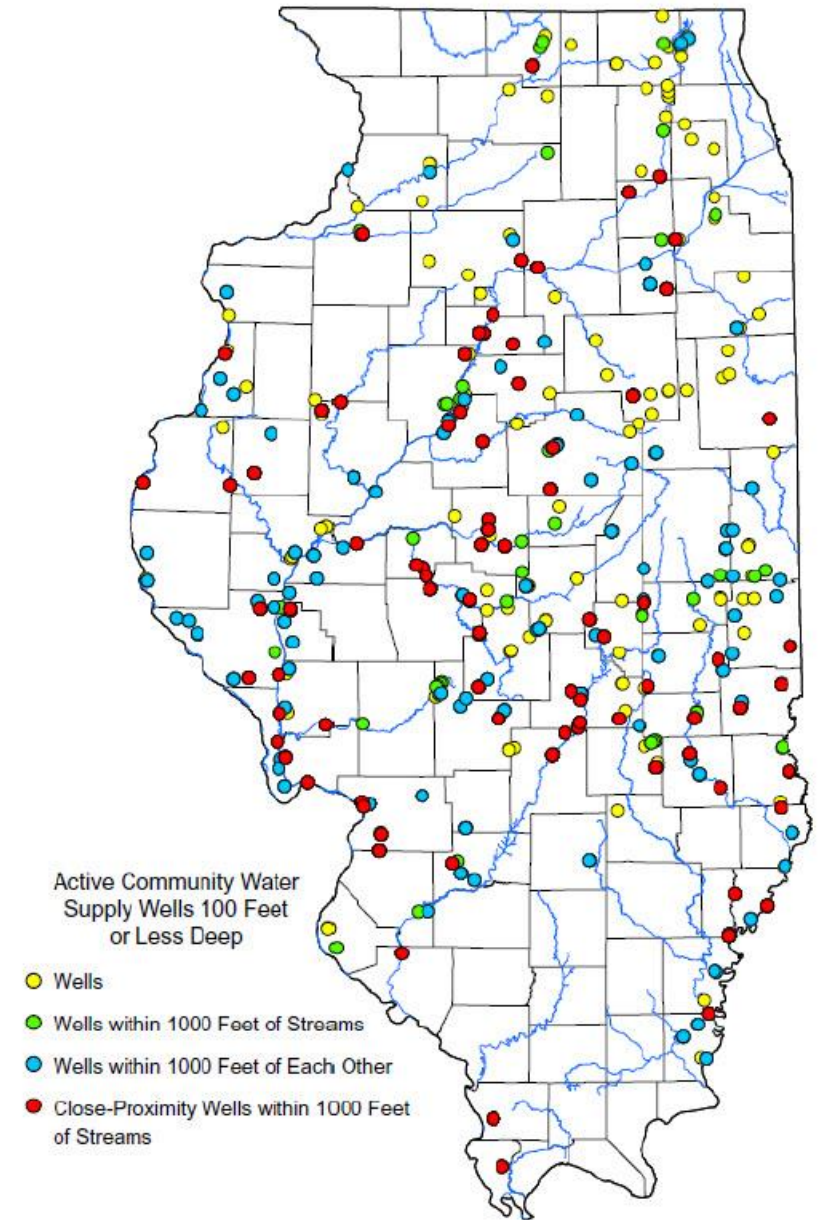
NWPA Technical Advisory Committee

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Background

State of Illinois Drought Preparedness and Response Plan, 2011

- Assessed drought vulnerability of surface and groundwater systems
- Focused on groundwater source and well depth and location, not specific facility constraints.
- Identifies community water supply wells at higher risk of drought based on Illinois State Water Survey (ISWS) methodology



Goal and Objectives

Run an analysis that...

- Identifies communities in Chicago region whose drinking water systems are more susceptible to drought conditions if/when they occur
- Highlights communities in greatest need for drought planning and water conservation measures.

ISWS Methodology

Multi-criteria analysis of Community Water Supply wells

Factors used to measure vulnerability	Thresholds Used	Reasoning
Shallow well depth	Wells with a depth of 100 feet or less	<ul style="list-style-type: none">• Wells most likely to be affected by a lack of recharge resulting in lowered groundwater levels.• Shallow wells tend to have less available drawdown within which they can operate.
Well proximity to surface waters	Wells within a buffer of 1000 feet to a nearby stream	<ul style="list-style-type: none">• Wells that receive potential recharge through streambed infiltration could be affected by low streamflow during a drought or, conversely, could severely impact low stream flows during drought.
Well density	Shallow wells within 1,000 feet of one another	<ul style="list-style-type: none">• High well density, or shallow community wells within 1,000 feet of one another, can increase the effects of mutual well interference, decreasing the productivity of the wells.

Updated Methodology

- Use NWPA TAC as an advisory committee to guide analysis
- Build upon existing ISWS methodology
 - Update with current well information
 - Summarize vulnerability at community level (rather than at CWS well)
 - Review factors, thresholds, and vulnerability categories
 - Proximity to agriculture/agricultural irrigation, habitat
 - Consider future projected water use

CMAP Deliverables

Map of region and downloaded data files that identify municipalities that are more susceptible to drought conditions.

Compilation of strategies and links to further resources that encourage water conservation and drought planning

Discussion

Given the goal of encouraging water conservation and drought planning...

- Will this analysis build greater awareness about drought?
- Are there additional factors we should consider?
- Would it be helpful to see vulnerability on a spectrum?

Next Steps

TAC meeting:

- Review existing and new factors and thresholds
- Consider ways of reflecting uncertainty

Data collection and analysis

TAC meeting:

- Share results and refine
- Finalize results

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