

Updating the Groundwater Drought Vulnerability Analysis

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

NWPA Technical Advisory Committee

January 25, 2022

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 of drought planning and water conservation measures

Approach

Build upon ISWS's well assessment in the *State of Illinois 2011 Drought Preparedness and Response Plan*

- Update with current well information
- Review/revise/add additional drought vulnerability factors and thresholds
- Summarize vulnerability at community level (rather than by CWS well)

Drought vulnerability factors

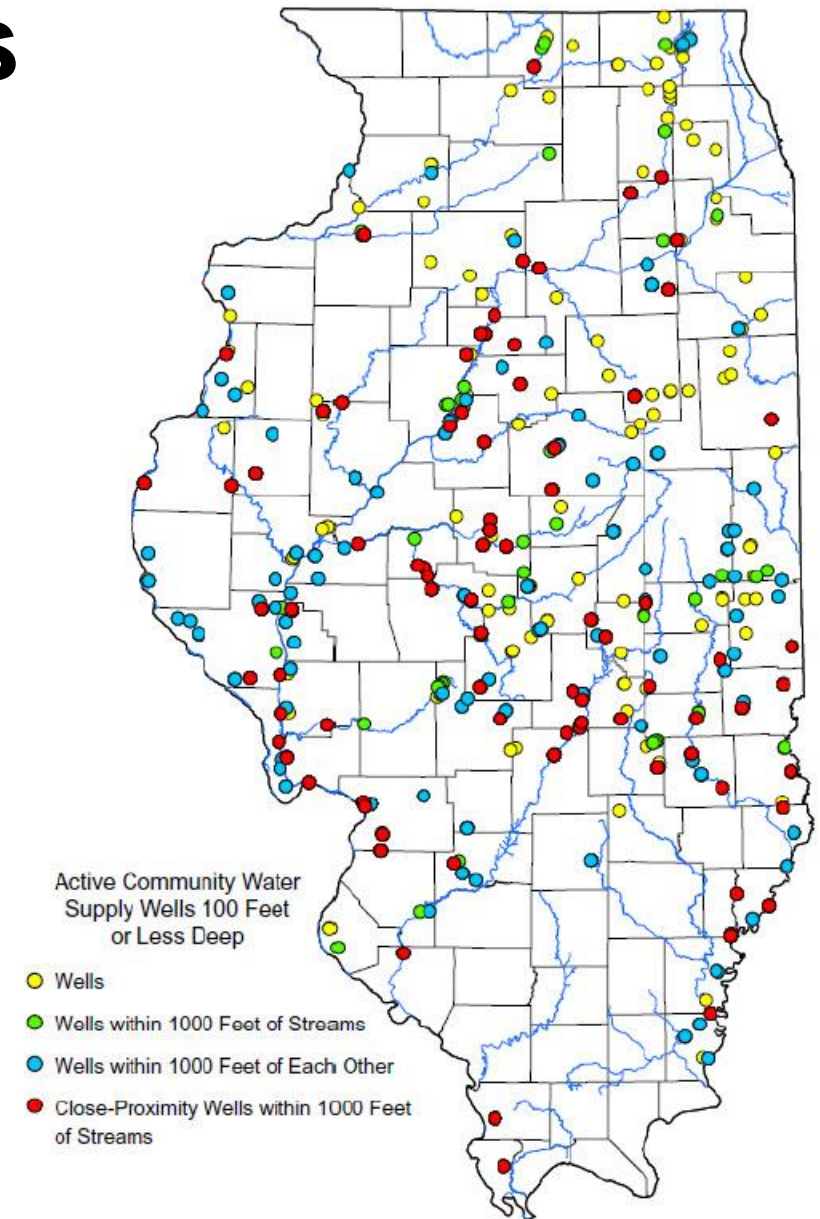
Vulnerability factors under consideration

Factor categories	Factor	Threshold
Well characteristics*	Shallow well depth	Wells with a depth of 100 feet or less
	Well proximity to surface waters	Wells within 1,000 feet of a nearby stream
		Wells within 1,000 feet of a 'biologically significant stream'
	Well density	Shallow wells within 1,000 feet of one another
Water use	Forecasted CWS shallow water use	At least 25% of CWS withdrawals are from shallow aquifers
	Partial reliance on sandstone in risk areas	At least 25% of CWS withdrawals are from shallow aquifers AND at least one sandstone well in an ISWS sandstone risk area
	Other non-CWS forecasted shallow water use	Forecasted demand of non-CWS shallow water use is greater than forecasted CWS shallow water use

* Factors and thresholds used in 2011 ISWS well assessment excluding BSS threshold

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



Water use factors

Factors	Thresholds	Reasoning
Forecasted CWS shallow water use	At least 25% of CWS withdrawals are from shallow aquifers	It may be challenging for communities that rely on shallow well withdrawals to quickly shift to other source(s) in the event drought conditions constrain shallow aquifers.
Partial reliance on sandstone in risk areas	At least 25% of CWS withdrawals are from shallow aquifers AND at least one sandstone well in an ISWS sandstone risk area	If a community is already using/has access to a viable shallow aquifer source(s), increasing shallow well use may be an alternative for those that also rely on sandstone withdrawals within or near a desaturation risk area
Other non-CWS forecasted shallow water use	Forecasted demand of non-CWS shallow water use is greater than forecasted CWS shallow water use	Communities may have a better understanding of its shallow aquifer source if it knew whether, and to what extent, nearby non-muni CWS will be relying on the same source.

Questions for TAC

Is the **25% of a community's withdrawals come from shallow aquifers** a good volumetric threshold for evaluating water use factors?

Is it helpful to have a factor that accounts for other shallow withdrawals within the community?

Should we consider other methods or data for scaling vulnerability to the community level?

Next Steps

Finalize factors and thresholds

Data collection and analysis

TAC meeting:

- Share results and refine
- Finalize results



Kelsey Pudlock

312.386.8631

kpudlock@cmaphillinois.gov