

BE PREPARED: DROUGHT CAN BE FAR MORE SEVERE

Regional Water Supply Planning Committee of East-Central Illinois July 1, 2012 Newsletter

At the start of July, it is a good time to put the current drought in perspective and be prepared for what could occur.

The current drought situation in East-Central Illinois is due to three main factors: i) below normal precipitation in the second half of 2011; ii) below normal precipitation so far in 2012; and iii) high temperatures that increase moisture loss from water bodies, soils and crops (very warm temperatures have the effect of adding 2-3 inches to the precipitation deficit).

Normal (1981-2010 long-term average) annual precipitation in East-Central Illinois is about 39 inches. For the 12 months from July 2011 to June 2012 precipitation across the region averaged about 32 inches, which is about 7 inches below normal, or only 82 % of normal. In June, precipitation averaged more than 50 percent below normal.

We know quite a lot about droughts that have occurred in the past and one of the best ways of preparing for the future is to recognize that whatever has occurred in the past can recur in the future. The following are some key characteristics of droughts:

- Regional average precipitation hides considerable variability at the local scale and one part of the region can be wetter or drier than others: in western parts of East-Central Illinois, the precipitation deficit over the past 12 months is more than 12 inches.
- Precipitation shortages as percentage deficits from normal precipitation are largest for the shorter periods of time, i.e. weeks to months. Crops typically respond quickly to monthly or seasonal droughts.
- Precipitation shortages as actual deficits (inches) from normal precipitation can increase with time, i.e. 12 to 36 months. It is the longer severe droughts that have the biggest impact in reducing surface and groundwater supplies.
- The more extreme the drought, the lower the probability of occurrence.

The following data produced from analysis of Illinois' climate records illustrate these points:

12 months drought

1 in 25 year occurrence (4% chance of occurring)
22 inches precipitation = 17 inch deficit
= 56% of normal

1 in 100 year occurrence (1% chance of occurring)
18 inches precipitation = 21 inch deficit
= 46% of normal

24 months drought

1 in 25 year occurrence (4% chance of occurring)
54 inches precipitation = 24 inch deficit
= 69% of normal

1 in 100 year occurrence (1% chance of occurring)
45 inches precipitation = 33 inch deficit
= 58% of normal

In any 12 or 24 month period there is a chance that drought could be worse than that which we are currently experiencing. Given the fact that we already are in a drought and have a 7 inch precipitation deficit, the chances of a 17 inch precipitation deficit by the end of a 12-month period probably are somewhat greater than the 1-4% indicated above. And there is a small chance of a 24-33 inch precipitation deficit over a two-year period, also probably somewhat greater than the 1-4 percent indicated above.

The worst droughts in Illinois occurred some 60 to 80 years ago in the 1950s and 1930s. The highest temperatures recorded in Illinois also occurred in the 1930s. As most people alive today have not experience these droughts and the demand for water has increased considerably over time, the Regional Water Supply Planning Committee (RWSPC) recommends that everybody be prepared for a more severe and longer drought than we are experiencing currently. Climate forecasting is not that advanced that we can predict with confidence what is likely to occur months ahead, but from the climate record we know that severe droughts are likely to recur. Even if the drought does not become more severe this year, by preparing for a severe drought at this time you will be prepared when a more severe drought does occur.

The best way for dealing with a drought is have a carefully-crafted plan prepared, so that you can implement the plan as the drought unfolds. The worst way of dealing with a drought is to not have a plan prepared and to scramble when the drought is hitting hard. Both approaches cost money, but it is usually less costly to evaluate options and be well prepared up front rather than make hasty decisions at a time of stress.

Shallow wells and surface water supplies generally are the most vulnerable to drought. The Mahomet Aquifer often is described as being more drought proof. People tend to use more water than normal during a drought and the water bills for those dependent on public water supplies generally are higher. The main reasons for using less water during a drought are to reduce the risk of water shortages, increase water-use efficiency and save money.

Small community and private water supply managers and operators are advised to be aware of and compile material regarding i) the state drought response plan, ii) state regulations, iii) an idea of historical droughts in the area, iv) system behavior during previous droughts and v) an assessment of current and near-future water supply and demand. The compiled information can be used to evaluate 1) how much water will be needed over the next few years, should the drought become more severe, 2) how much water can be supplied from current sources, 3) what the water shortage (if any) could be, and 4) how to eliminate a possible water shortage by reducing water use and/or tapping alternative supplies. More information can be obtained from the information sources listed below.

Members of the public can conserve water by such actions as taking shorter showers, turning off the tap when brushing your teeth, only running a full dishwasher, washing your car less often and carefully managing water use in your yard.

INFORMATION SOURCES:

Illinois State Climatologist, <http://www.isws.illinois.edu/atmos/statecli/>.

Illinois State Water Survey, 2012. *Illinois in Drought*, Drought Update June 21, 2012, <http://www.isws.illinois.edu/hilites/drought/archive/2012/docs/DroughtUpdate20120621.pdf>.

National Drought Mitigation Center, <http://drought.unl.edu/> , including *Drought-Ready Communities: A Guide to Community Drought Preparedness*, http://drought.unl.edu/portals/0/docs/DRC_Guide.pdf.

Rural Community Assistance Partnership, *10 Ways to Prepare for a Drought-Related Water Shortage*, <http://www.rcap.org/node/695>.

State Water Plan Task Force, 2011. *State of Illinois Drought Preparedness and Response Plan*, http://www.isws.illinois.edu/hilites/drought/archive/2011/docs/St_Ill_Drought_Plan_2011.pdf.

University of Illinois Extension, *57 Ways to Conserve Water in and Around the Home*, http://www.thisland.illinois.edu/57ways/57ways_57.html.

Winstanley, D. et al., 2006. *Drought Planning for Small Community Water Systems*, Illinois State Water Survey Contract Report ISWS 2006-01, Champaign, IL, <http://www.isws.illinois.edu/pubdoc/CR/ISWSCR2006-01.pdf>.

Winstanley, D. et al., 2006. *The Water Cycle and Water Budgets in Illinois: A Framework for Drought and Water-Supply Planning*, Illinois State Water Survey Report I/EM 2006-02, Champaign, IL, <http://www.isws.illinois.edu/pubdoc/IEM/ISWSIEM2006-02.pdf>. Considerations in evaluating drought and water supplies are provided on pages 60-61.

MEMBERS OF THE RWSPC DROUGHT SUB-COMMITTEE:

Will Smith: lst3600@aol.com

Steve Wegman: steven.wegman@amwater.com

Frank Dunmire: dunmire@ilrwa.org

Derek Winstanley: dwinstanley84@gmail.com