

City of Bloomington Water Department

Drought Report

McLean County remains in the “severe drought” condition, according to the U.S. Drought Monitor <http://droughtmonitor.unl.edu/>, a national organization that includes local, state and federal experts and government agencies. It is important to note that a drought designation does not necessarily mean there is a water supply shortage. Drought designations are based on conditions that affect agricultural activities, fire hazards, stream flows, soil moisture, and other indicators/activities, in addition to the potential for, or actual occurrence of water supply shortages.

The precipitation in late June, early July and mid-August restored some ground moisture but there was little runoff to add to the volume in the City’s water supply reservoirs, the Lake Bloomington and Evergreen Lake reservoirs. The precipitation events this summer did bring a brief declines in temperature, and temporarily reduced water demand.

The City of Bloomington’s water plant capacity is theoretically about 20 MGD. During this year’s drought, pumpage has peaked at over 18 million gallons per day (“MGD”). During an average central Illinois summer, summertime pumpage would be in the range of 12-14 MGD. The annual average daily pumpage (the amount of water pumped) for 2011 was 11.4 MGD, so there has been a significant increase in demand with this drought.

Water Supply Overview

The current water supply is about where it would be expected to be for a summer like this. The reservoirs were full in the spring and have been relied upon for their storage during the late spring/summer.

In mid-August, the water level in the Evergreen Lake reservoir was about 5½ feet below the spillway crest and was about 2 ½ feet below the spillway crest at the Lake Bloomington reservoir for a total of about 8 feet below the spillway crests. As a comparison to the reservoir levels at this time in 1988 the year of the last major drought in central Illinois, (equalized for the additional five feet of reservoir volume added in the mid 1990’s), the combined deficit in the reservoirs was over 18 feet below the spillway levels.

The Evergreen Lake reservoir is being used exclusively at this time for water quality reasons, and the level has dropped about ½ foot per week for the last several weeks.

At the current levels in the reservoirs, there is over a full year of combined storage capacity left in the reservoirs assuming no additional inflow of water from precipitation or runoff over that year and an annual average daily pumpage of 11.4 MGD. (Note: The calculated reserve in the two reservoirs is based upon the gross volume of the reservoirs as determined by a 1999 engineering study. The study calculated the volume figure at various elevations of water level in the reservoirs. Additionally, the average daily pumpage figure is based upon the 2011 annual average daily pumpage (11.4 MGD), the most recent complete year of data. 2011 was also the highest actual annual average the City has ever recorded.

The Mackinaw River Pumping Pool can be used to pump water into the Evergreen Lake reservoir when the combined deficit in the reservoirs is 8 feet below the spillway crests and the flow in the Mackinaw River is above 20 cubic feet per second (cfs) or about 26 MGD. The station can theoretically pump between 15 and 20 MGD into the Evergreen Lake reservoir with the pump station in full operation.

There is no abnormal water loss from water main breaks or other leaks. The City’s leak detection consultant made a broad surveillance survey as a precaution during early July. Water Department employees are also on the lookout for leaks, hydrant tampering or water use on new, but unoccupied (and perhaps unmetered) homes.

Actions taken since the last major drought in 1988

The City of Bloomington has undertaken a variety of activities over the past 20+ years to ensure that a severe drought similar to the 1988 drought could be weathered in a much more controlled fashion. The City has a water emergency response ordinance that spells out specific actions to be taken at times when the City's reservoirs, treatment plant or water distribution system are impacted by some form of water emergency. In the case of a drought, when the reservoirs begin to decline beyond the annual fluctuations that are normal for reservoirs like the City's, specific actions are taken first, in a voluntary manner and then progressing to more mandatory actions. The entire process is designed to preserve the water resources for essential water use until the emergency passes.

The surface water supply in Bloomington, when completely full as it was in the spring of 2012, has been designed to provide over 18 month's worth of water supply assuming no additional input to the reservoirs during that year, which is a much more severe case than what has been experienced in historical droughts.

The City has made significant investments in securing additional water resource capabilities in terms of supply and planning. The City has drilled a network of monitoring wells in the area of the McLean/Tazewell County line and has monitored these wells for over 20 years to develop a thorough understanding of the reaction of the Mahomet Aquifer to various weather conditions. This information is compiled by the State Water Survey for use by all current and future users of the Mahomet Aquifer. The McLean/Tazewell County line area is where the City intends to develop a high capacity well-field at the time that development is necessary.

The City has also increased the capacity of its reservoirs over time with the last iteration coming in the mid-90's with the addition of 37% more capacity or approximately 1.230 billion gallons of supply in the Evergreen Lake Reservoir by raising the spillway by 5 feet. The City also constructed the Mackinaw River pumping station in 1992 to draw water from the Mackinaw River to supplement the reservoir system when conditions allow for this pumping.

More recently, the City has completed a comprehensive water supply study in 2010. The Interim Water Supply Study is posted on the City's website www.cityblm.org. The study indicated several items that the City has undertaken at this time. The most significant is the exploration for and development of an interim groundwater supply in an area in southwest Bloomington. This site, approximately one mile southwest of Fox Creek grade school, has had test holes drilled and the City is working this year to purchase property for the development of approximately 5 million gallons of groundwater supply to supplement the City's surface water resources.

Additionally, the City believes strongly in not just adding supply to its capabilities but also being a driver to preserve its current water resources and have those resources be as sustainable as possible. The Interim Water Supply Study had the recommendation of the consideration of water conservation rates. A water rate study, including conservation rates, has been included in this year's Water Department budget. The Interim Water Supply Study also recommended the development of a water conservation plan which likewise was included in the Water Department's current budget.

Currently, recommendations to the public have been made, outlining steps that they can take to conserve water on a voluntary basis, if they are inclined to do so. This has already made a tremendous impact on daily water demand since the announcement in early August. The City has also taken steps to reduce its water consumption on a proactive basis (before the drought emergency response ordinance has met the voluntary restriction criterion) by reducing the hours in its non-recirculating spray parks and by halting its fire hydrant inspection program amongst other actions.

A request for proposals on the next phase (Phase II) of the Water Supply Plan is currently being developed and should be advertised within the next few months. In addition to the water conservation plan, Phase II will also

include the selection of a well design and the initial design for the Southwest groundwater treatment plant and water transmission lines.

The Water Department has also been conducting an aggressive program of water distribution system leak detection which has been extremely effective in identifying non-surfacing leaks from the water distribution system. For the last six years, approximately 25% of the total mileage of water mains (or about 75 miles of water main) in the City's water distribution network has been surveyed each year and all leaks are promptly repaired, therefore ensuring that the vast majority of the water pumped from the reservoirs that is treated and sent to the City, in fact, makes its to its intended customers.

The City has also been upgrading its water meters over the last five years in an overall effort to ensure that water is accurately measured at the customer's premises and each customer fairly pays for what they actually use. This program not only includes changing water meters of the same style, assuming that the meter was correctly sized and evaluated when it was originally installed, but the Meter Services Division has comprehensively analyzed meters to determine if the current usage patterns warrant a different style of meter to more accurately measure usage. Numerous meters, particularly those on commercial customers with widely varying water usage, have been changed to a water meter more suited for that type of usage pattern.

Lastly, over the last 20 years, the City has maintained an extremely active and successful watershed program which has worked directly with producers in the watersheds to reduce the sediment load into its reservoirs and improve overall water quality by reducing particular contaminant levels such as nitrate and phosphorus. The City has funded a full-time soil conservationist over that period and has been the recipient of over \$500,000 in grant dollars from the Sand County Foundation and the IEPA. Last year, a streambank protection project on the main feeder stream to the Evergreen Lake Reservoir, Six Mile Creek, was initiated and was eventually completed this spring. As recently as this summer, the City received a 60% (City)/40% (IEPA) grant from IEPA for shoreline protection in the Evergreen Lake reservoir. These activities as well as numerous others have been completed or are ongoing with the overall goal of improving water quality and preserving the local water resources.

The City of Bloomington has been working diligently through the years to optimize the local water resources for any condition, as well as to plan and implement various activities to ensure that the local water supply for the majority of McLean County residents is plentiful, safe and sustainable.

Comparison with Previous Drought Years

During the last major central Illinois drought in 1988, the monthly pumpage was 11.6, 14.2, 13.3 and 10.5 MGD in May, June, July and August respectively. A more short-lived drought in 2005 resulted in May, June, July and August average pumpage of 12.4, 17.3, 14.9 and 13.5 MGD respectively. The 2012 average May pumpage was 12.4 MGD, June was 14.6 MGD, July was 15.4 MGD and August was 12.7 MGD.

Sources of Increased Water Demand

Most of the water demand increase has resulted from irrigation and recreational use of water including spray parks and golf courses.

The bulk water system at the Division Street administrative office is seeing greatly increased use by rural customers with cisterns, farmers who need water for livestock and contractors installing fiber optic conduit all over the city. Customers using the bulk water station bring their own large tanks and purchase water at a higher rate than that charged to retail customers.

The distribution pump stations at Fort Jesse Road near the Bridgestone/Firestone plant, the Division Street station at Division Street and Adelaide Street, the Enterprise pump station serving the west side of Bloomington and the South Main Street pump station near the National Guard Amory are all functioning as intended to move water to different areas of the City as needed.

Looking to the Future

The decision to develop a new well field near Tazewell County will depend upon many factors, including negotiations with rural landowners in the area, cooperation with local water authorities, the need for the City to expand, and the overall costs. The costs of such a project are very nebulous at this time, but could conceivably run from \$35 to 50 million for the well field, treatment plant and transmission pipeline into the City.

The State of Illinois Drought Task Force has been activated to monitor the drought situation and provide assistance if needed.

At this time, we are in a moderate drought situation and voluntary water use reductions are being requested.

Craig M. Cummings, Director, City of Bloomington Water Department