
Water Supply Planning for Northeast Illinois

Potential Impacts on the Deep Bedrock Aquifer System

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Head, Center for Groundwater Science
Illinois State Water Survey*



*RWSPG Meeting
October 28, 2008*

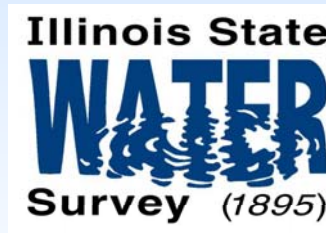


Special thanks to:

Don Keefer, Dave Larson,
Jason Thomason, and others
Illinois State Geological Survey

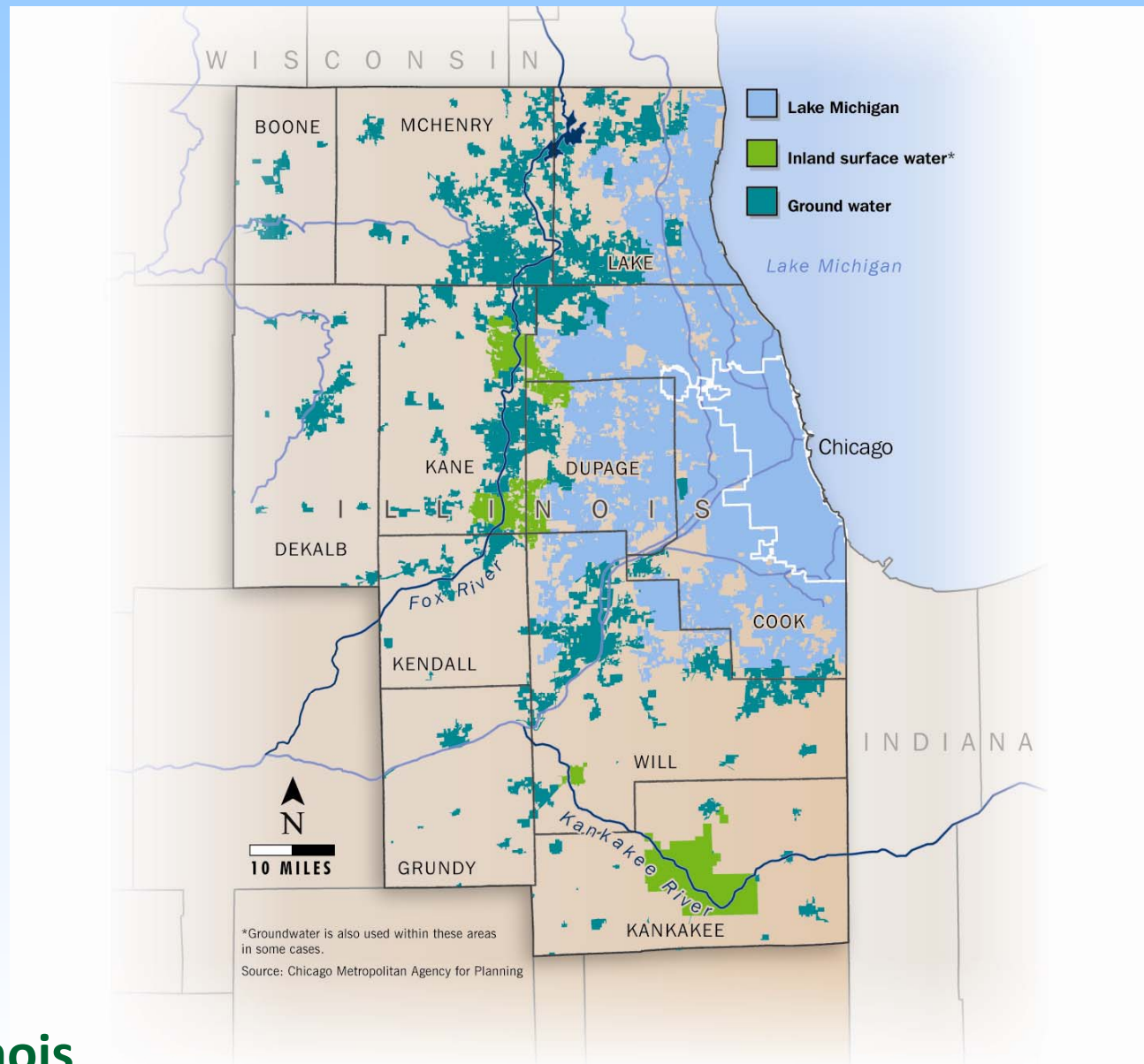


Scott Meyer, Yu-Feng Lin, Ed Glatfelter,
Derek Winstanley, and others
Illinois State Water Survey



and Bill Walton (ISWS Groundwater Section Head 1958 – 1964)

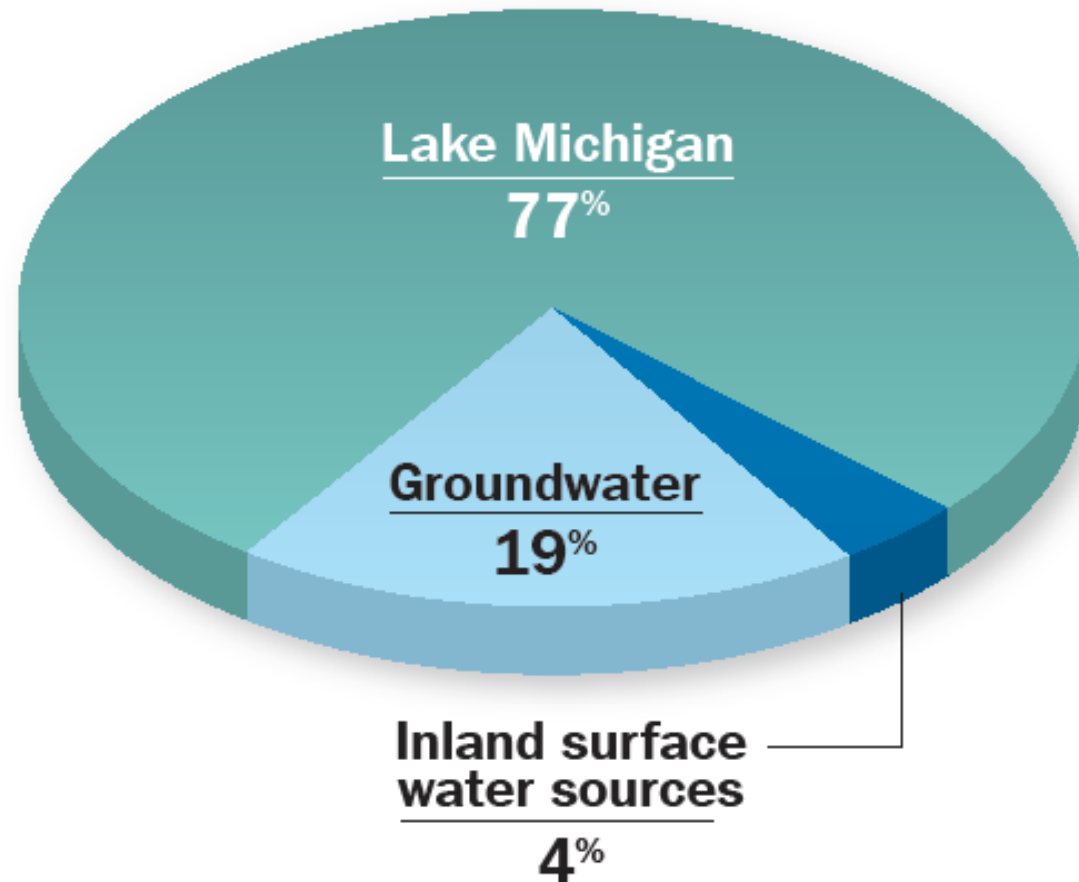
Northeast Illinois Water Sources



Graphic credit: CMAP

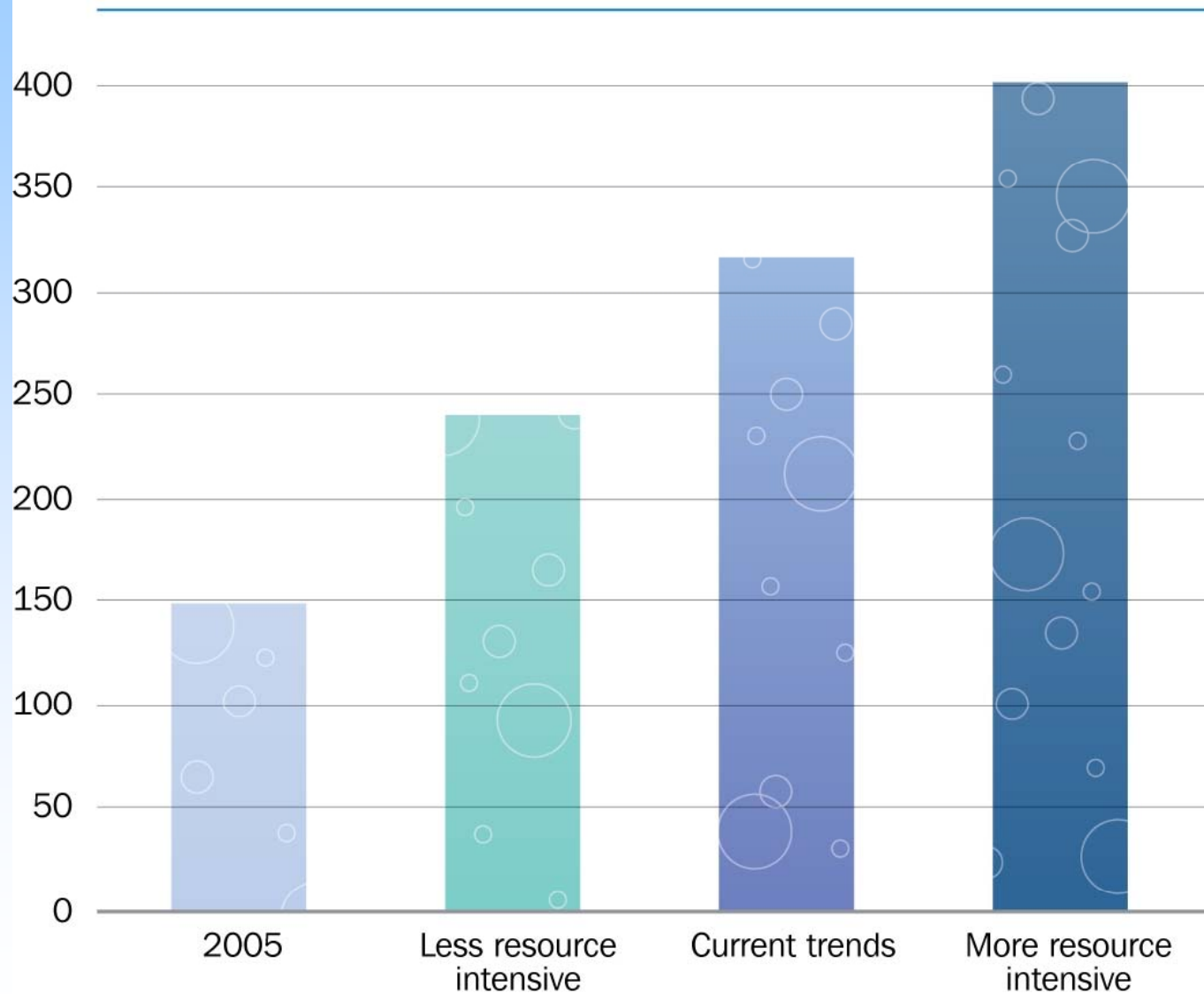
Sources of Drinking Water for Northeastern Illinois

11-county region population, 2000



Source: TBD

Public Supply, Groundwater Withdrawals: 2005 vs. 2050 Scenarios, in millions of gallons per day

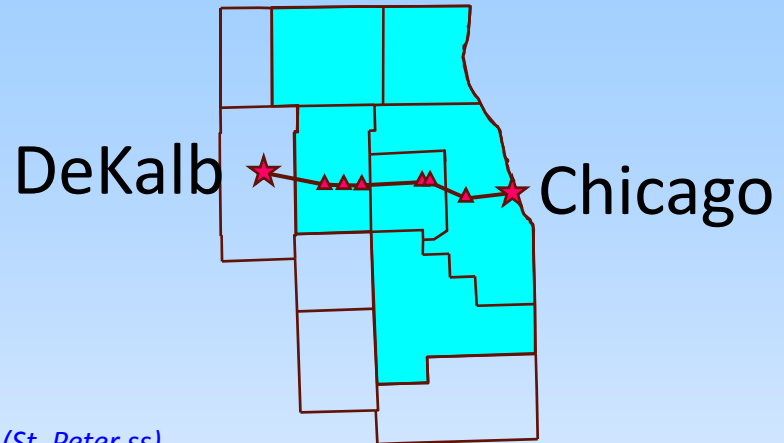
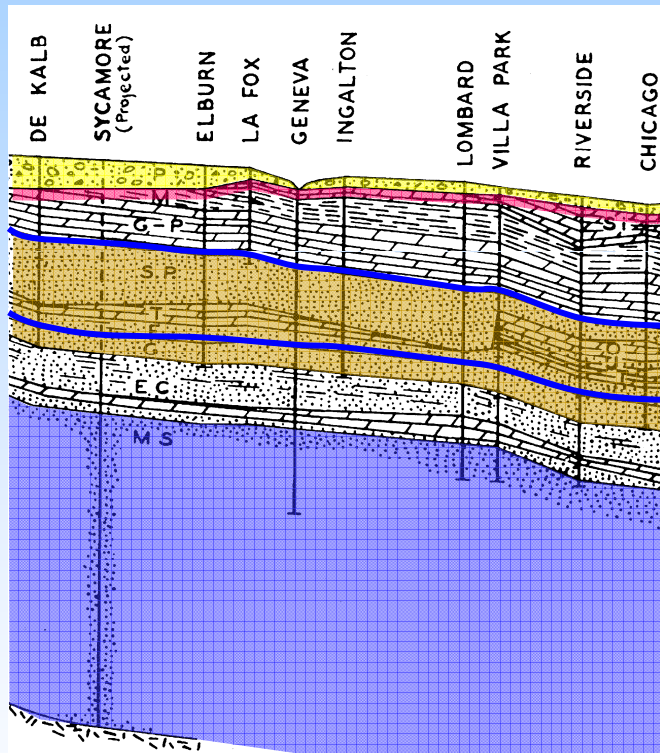


Source: Dziegielewski and Chowdhury, 2008

Aquifers of Northeastern Illinois

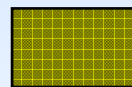
West

East



Top of Ancell (St. Peter ss)

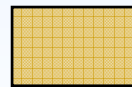
Top of Ironton-Galesville



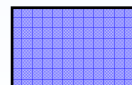
Unconsolidated Aquifer System



Shallow Bedrock Aquifer



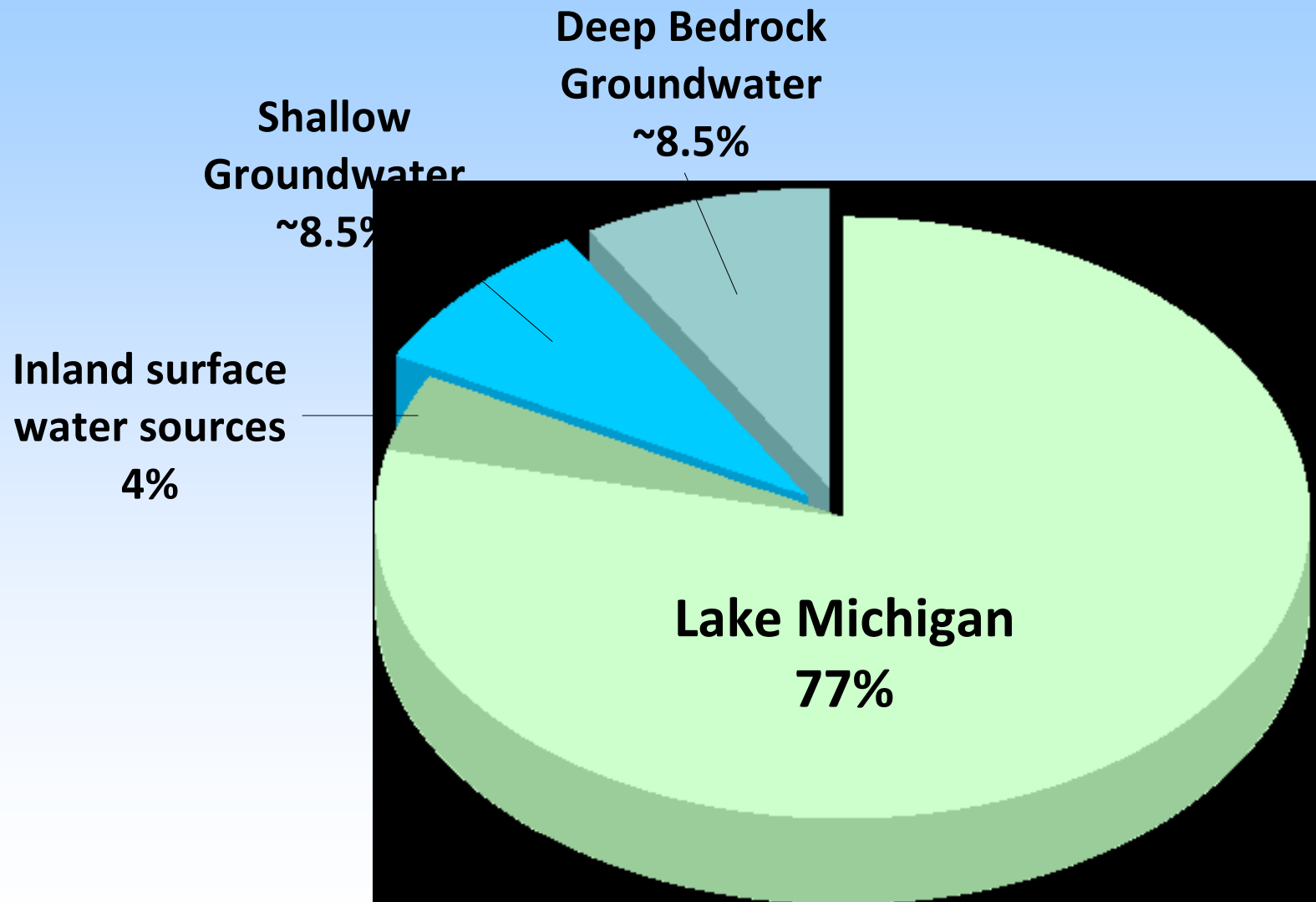
Deep Bedrock Aquifer System
(Ancell and Ironton-Galesville sandstones)



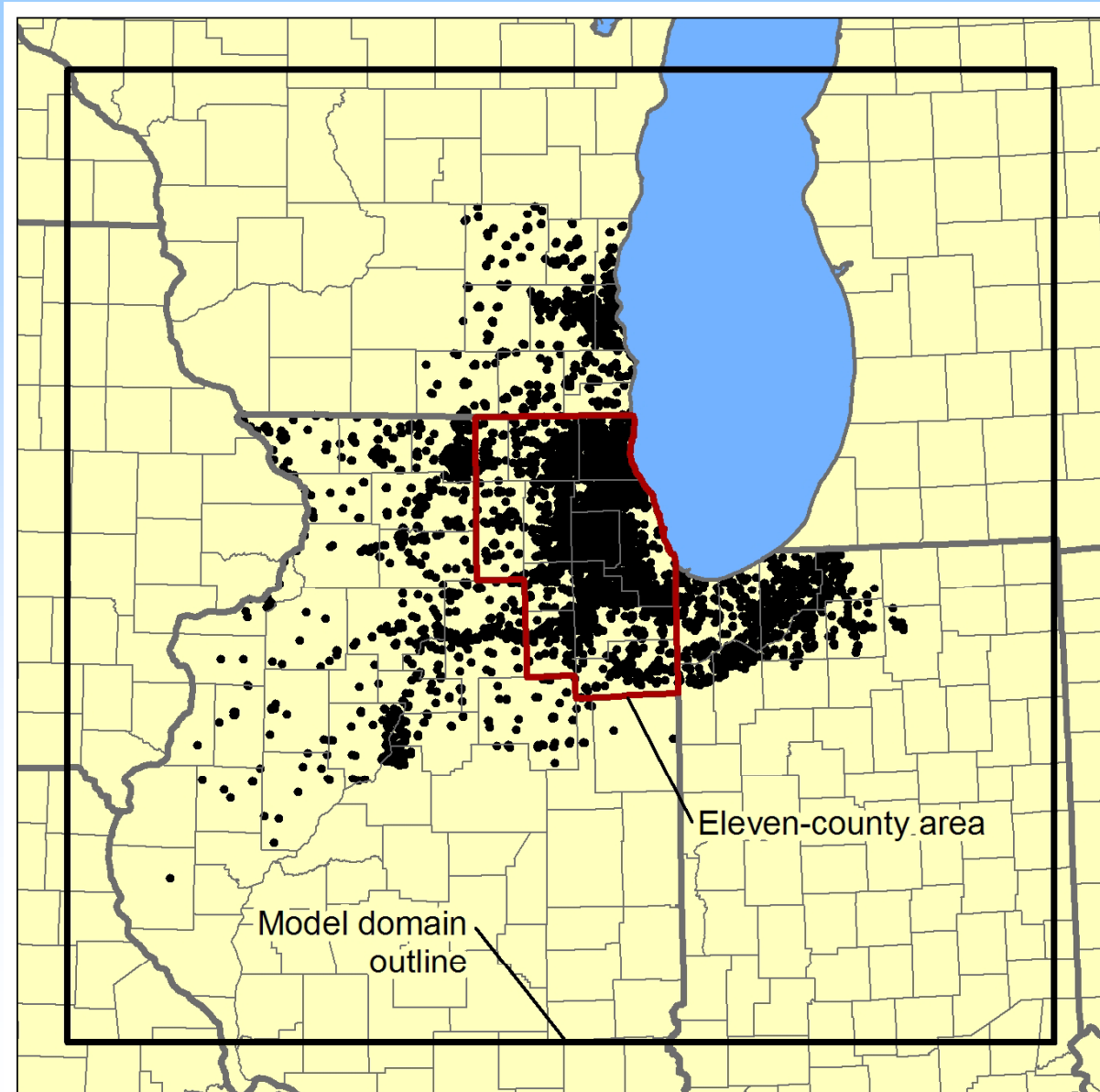
Elmhurst-Mt. Simon Aq. (saline?)

Cross-Section Modified from Bretz (1939)

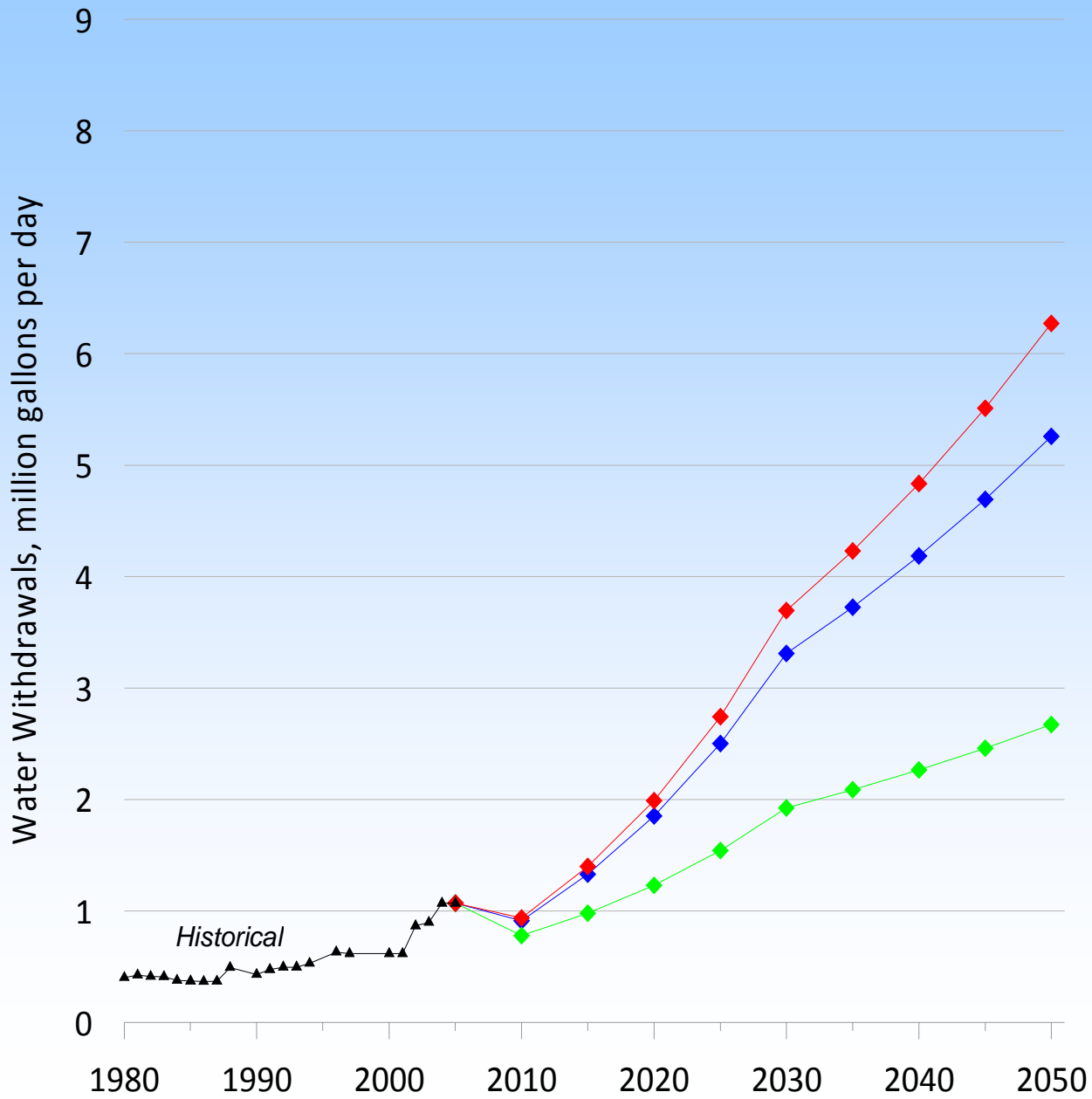
11-County Northeast Illinois Water Sources



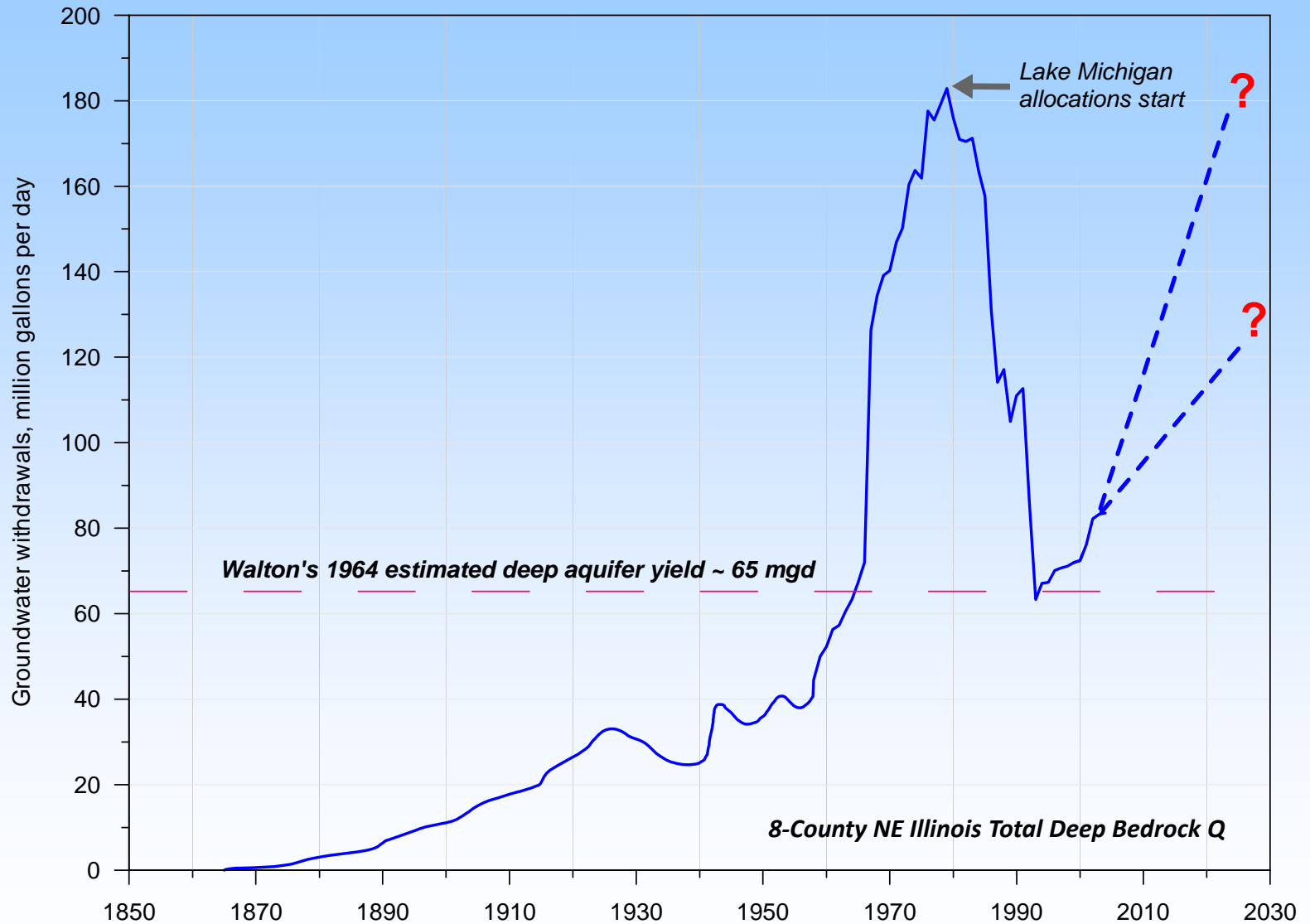
Regional Model Domain for NE Illinois and Modeled Wells



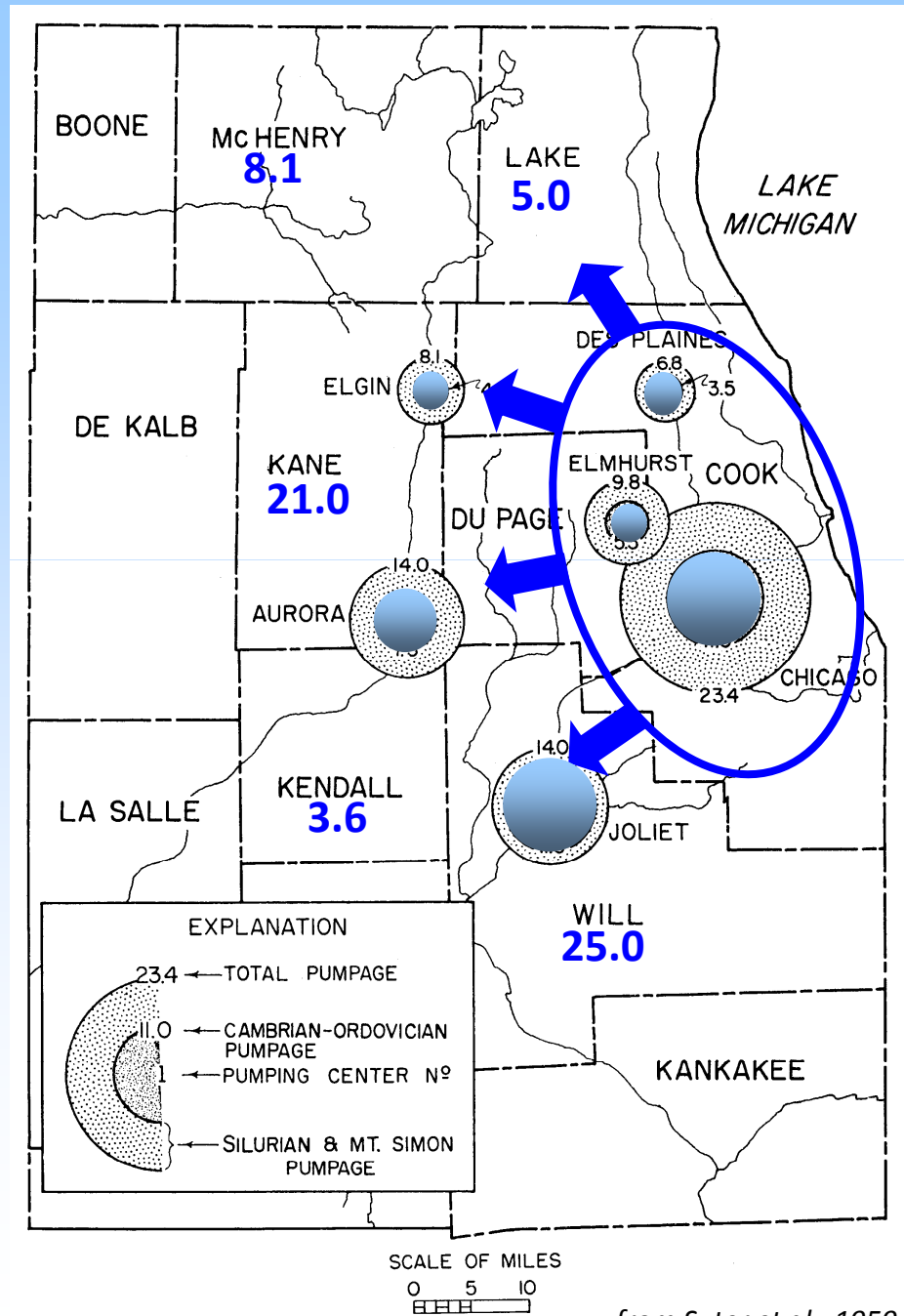
Yorkville Community Water Supply



What is the future of the deep bedrock aquifers in NE Illinois?



Distribution of Shallow and Deep Bedrock Groundwater Withdrawals in 1958

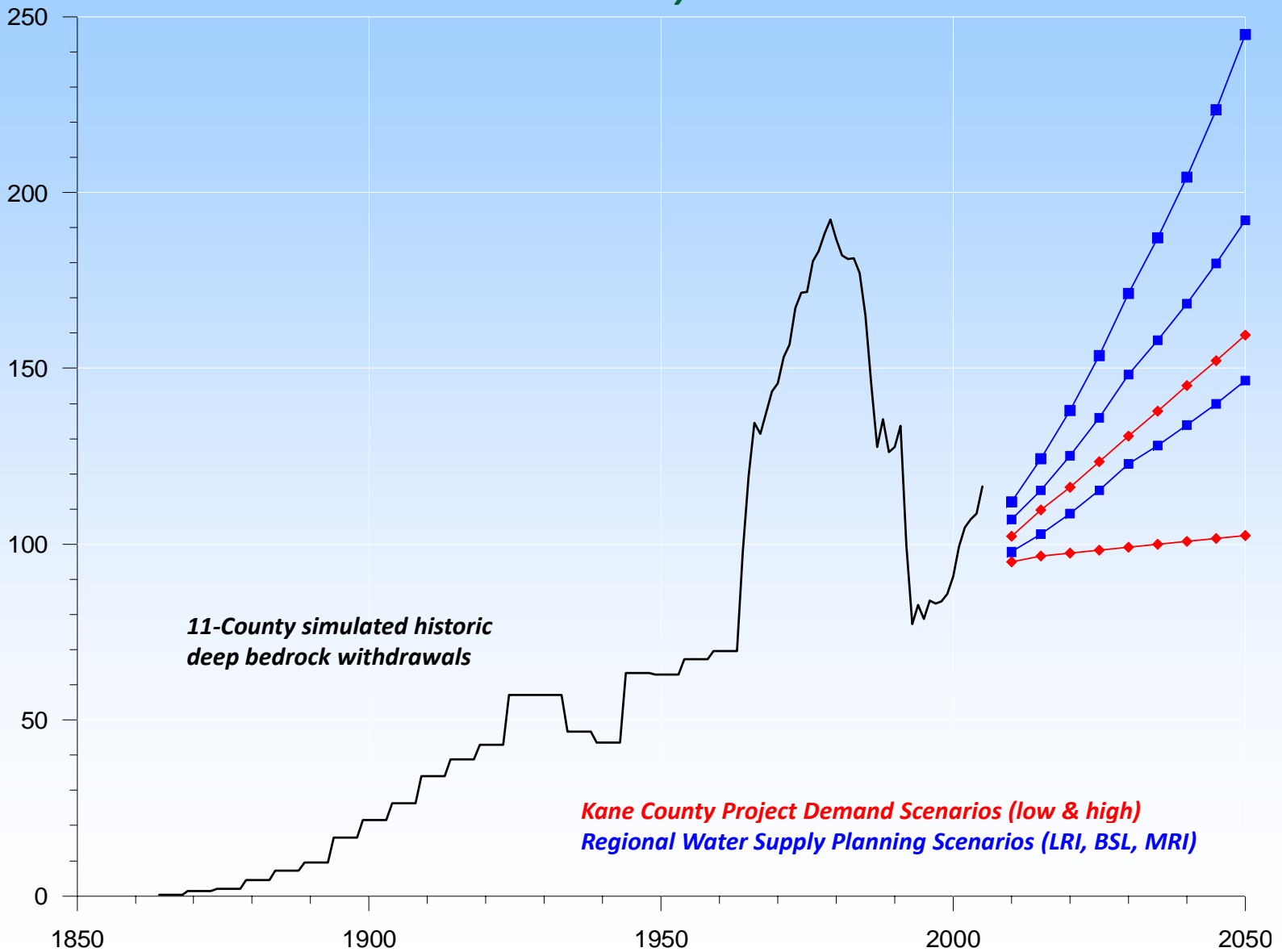


~43 mgd from deep bedrock in 1958

~84 mgd from deep bedrock in 2004

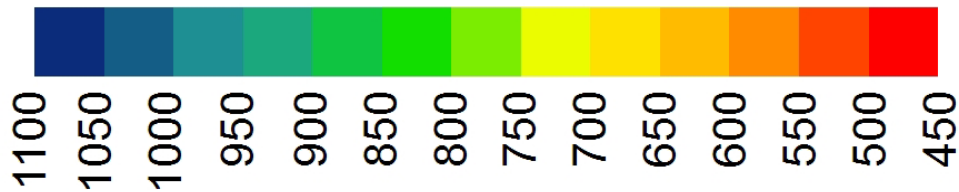
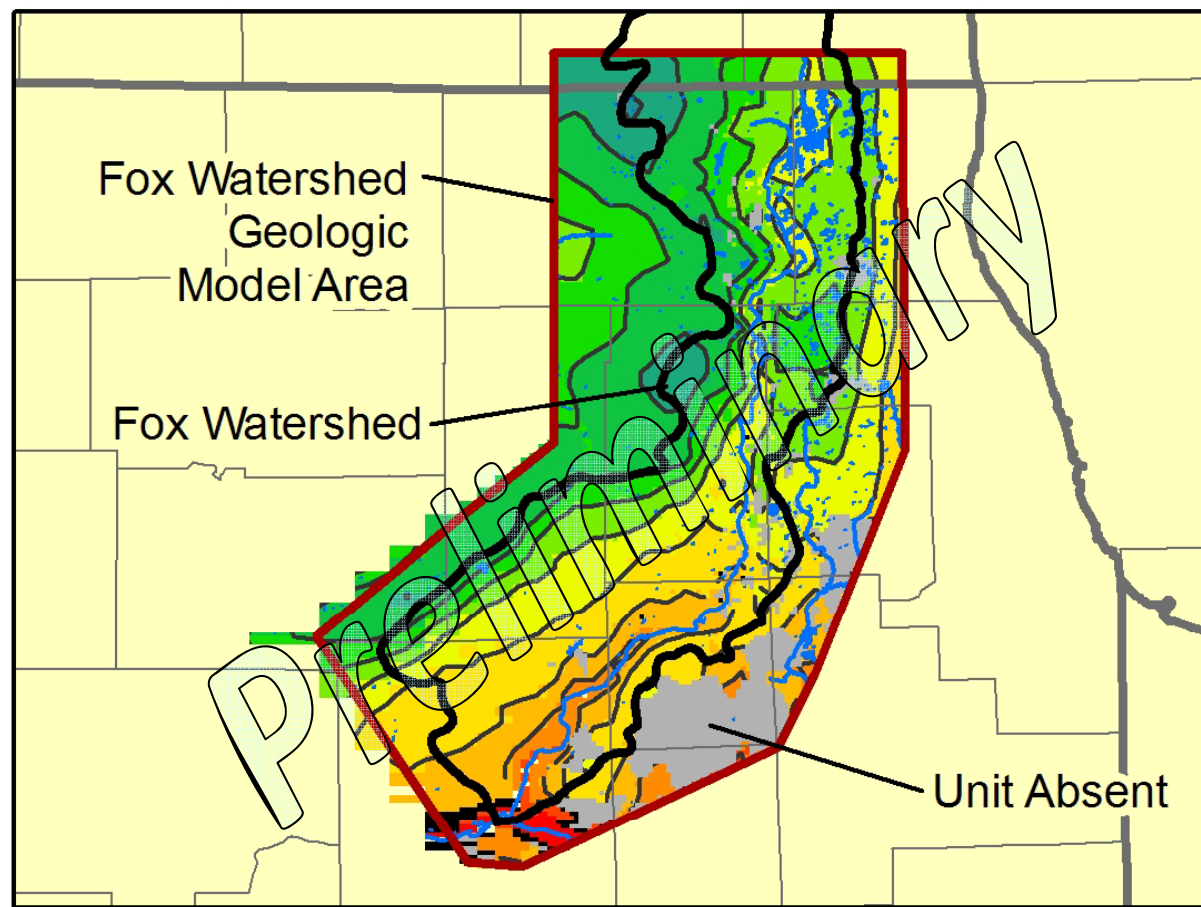
from Suter et al., 1959

Comparison of Deep Bedrock Withdrawals Kane County Project vs. Regional Water Supply Planning Project *11-County Totals*



Simulated Head Surface: Lower Quaternary Unit at End of 2050

Baseline Scenario

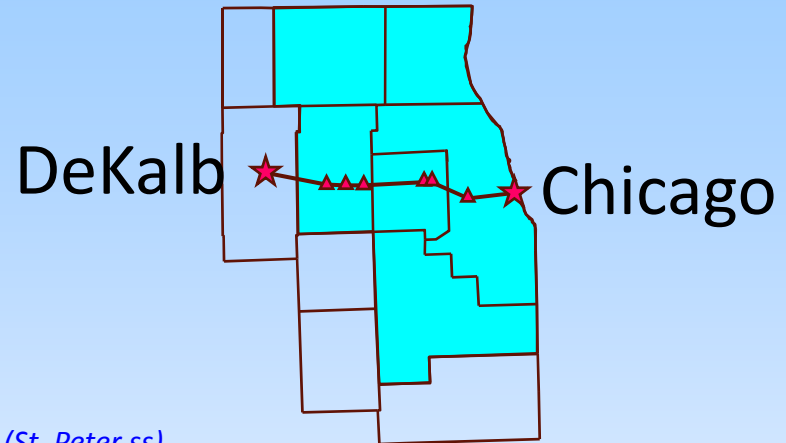
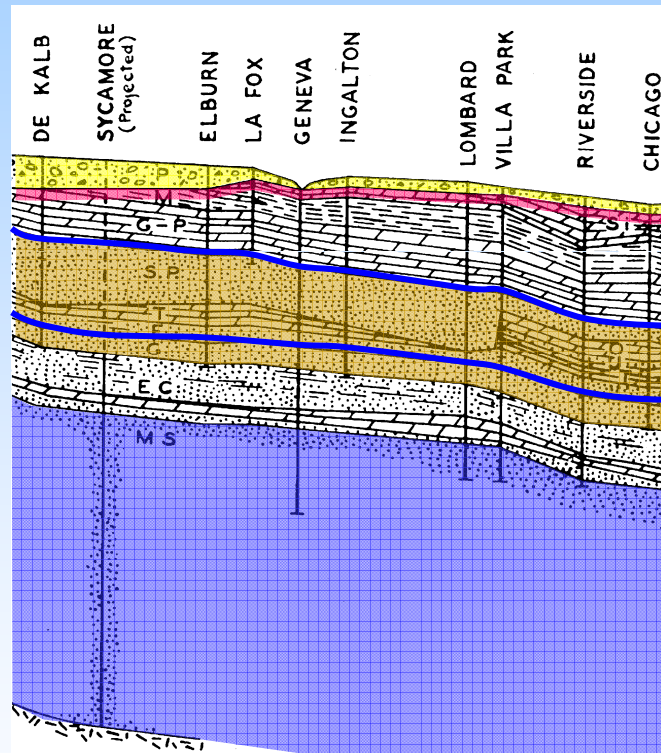


ft above MSL

Aquifers of Northeastern Illinois

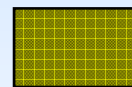
West

East

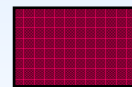


Top of Ancell (St. Peter ss)

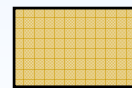
Top of Ironton-Galesville



Unconsolidated Aquifer System



Shallow Bedrock Aquifer



Deep Bedrock Aquifer System
(Ancell and Ironton-Galesville sandstones)

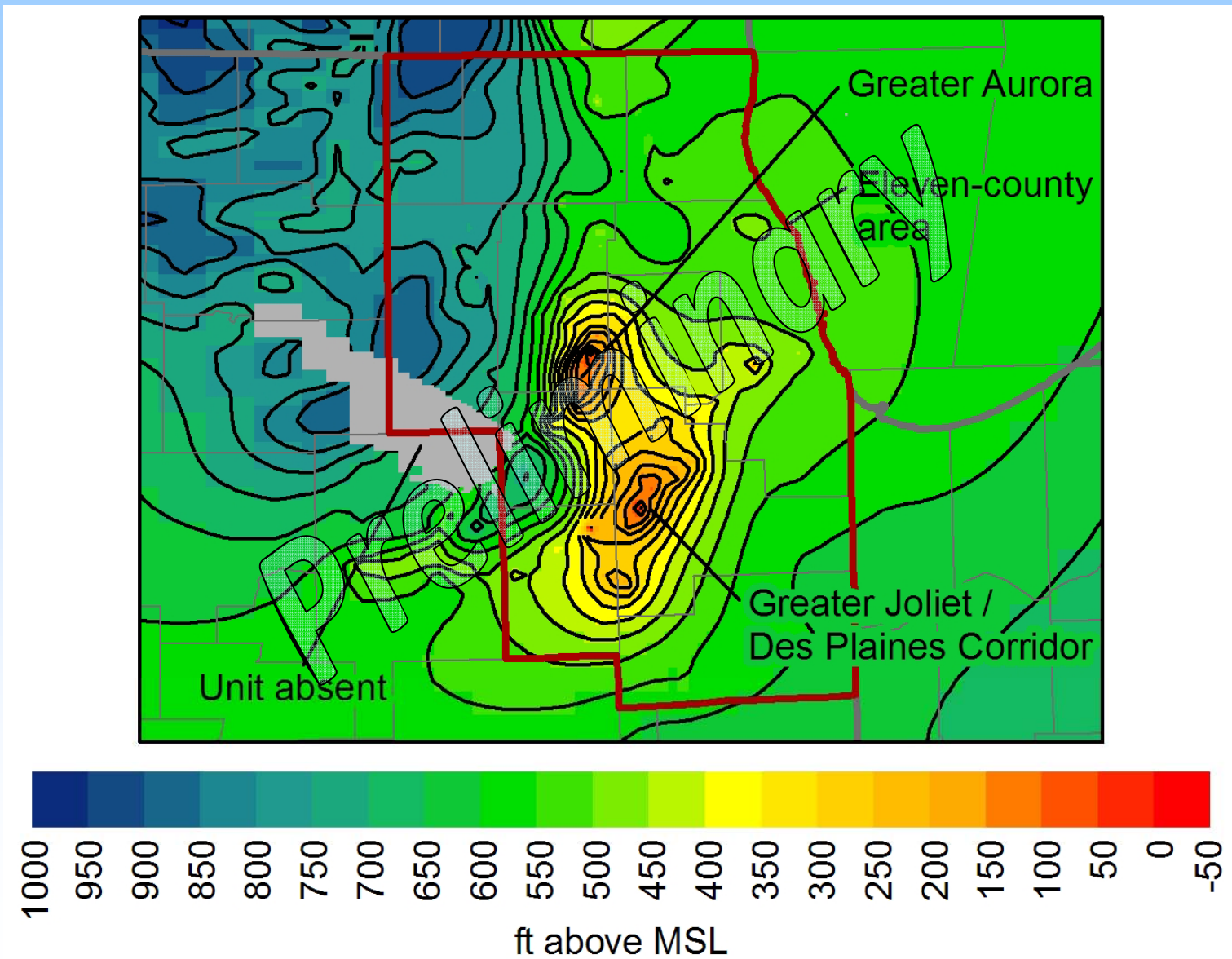


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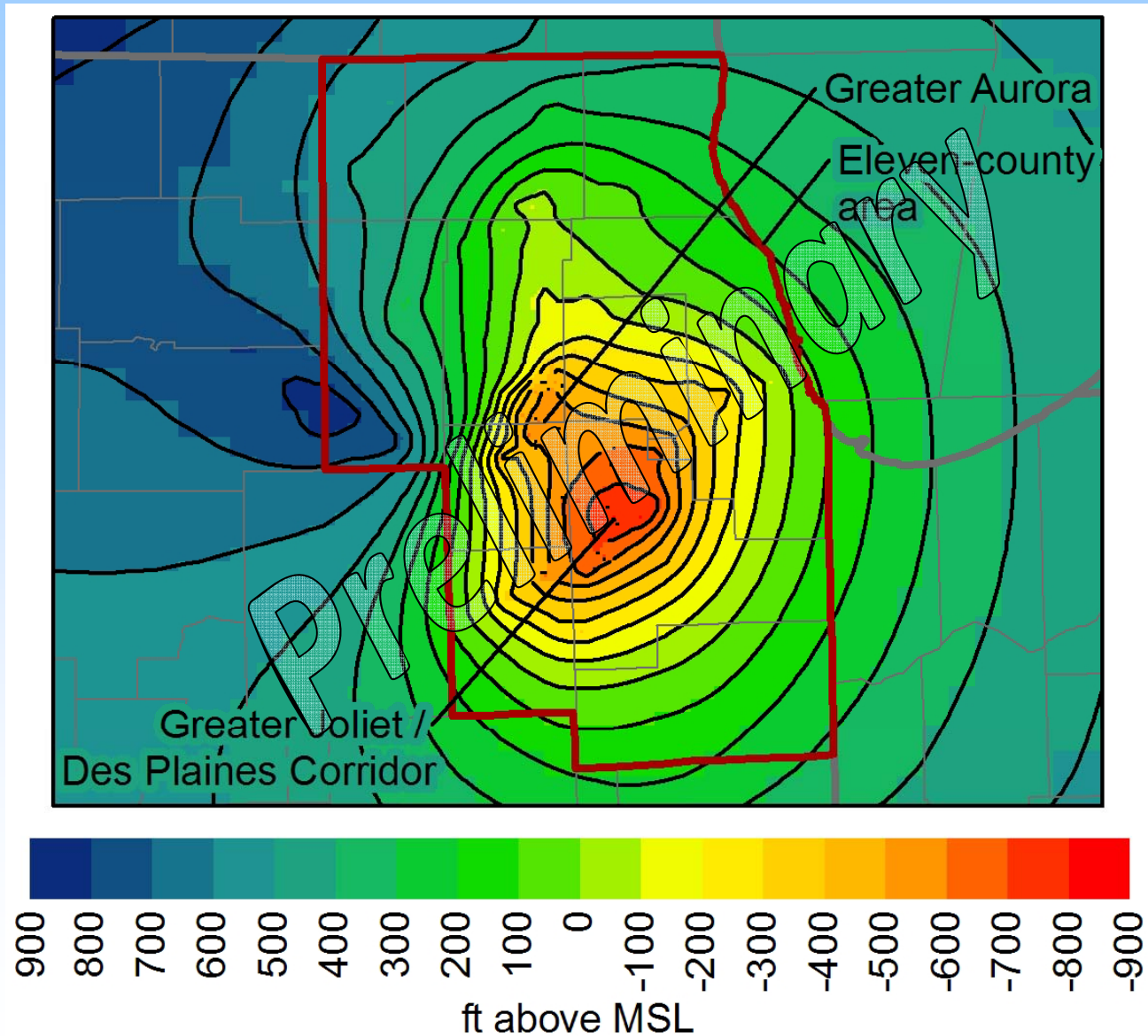
Simulated Head Surface: Ancell Unit (St. Peter) at end of 2050

Baseline Scenario



Simulated Head Surface: Ironton-Galesville Unit at End of 2050

Baseline Scenario

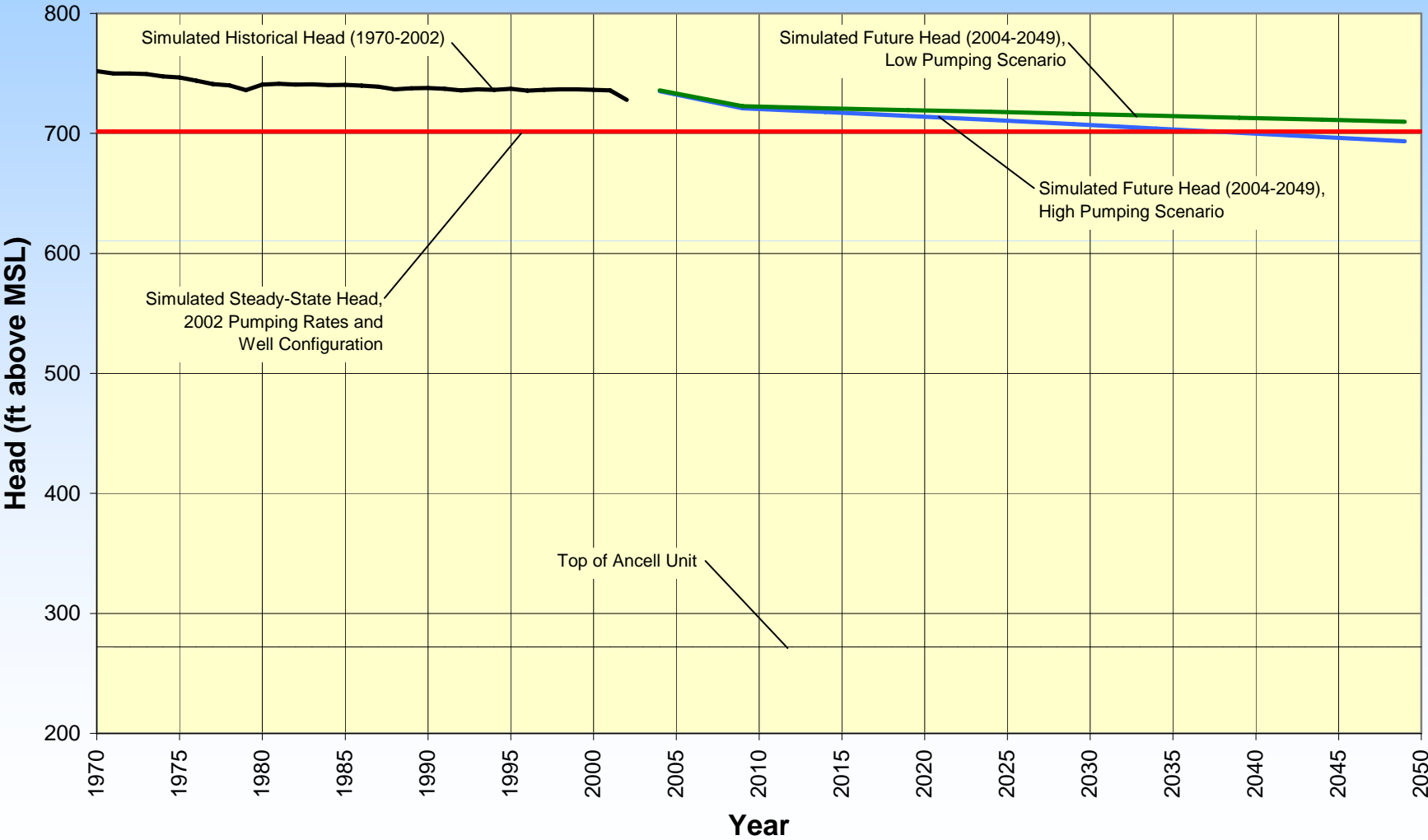


Location Map for Deep Bedrock Hydrographs



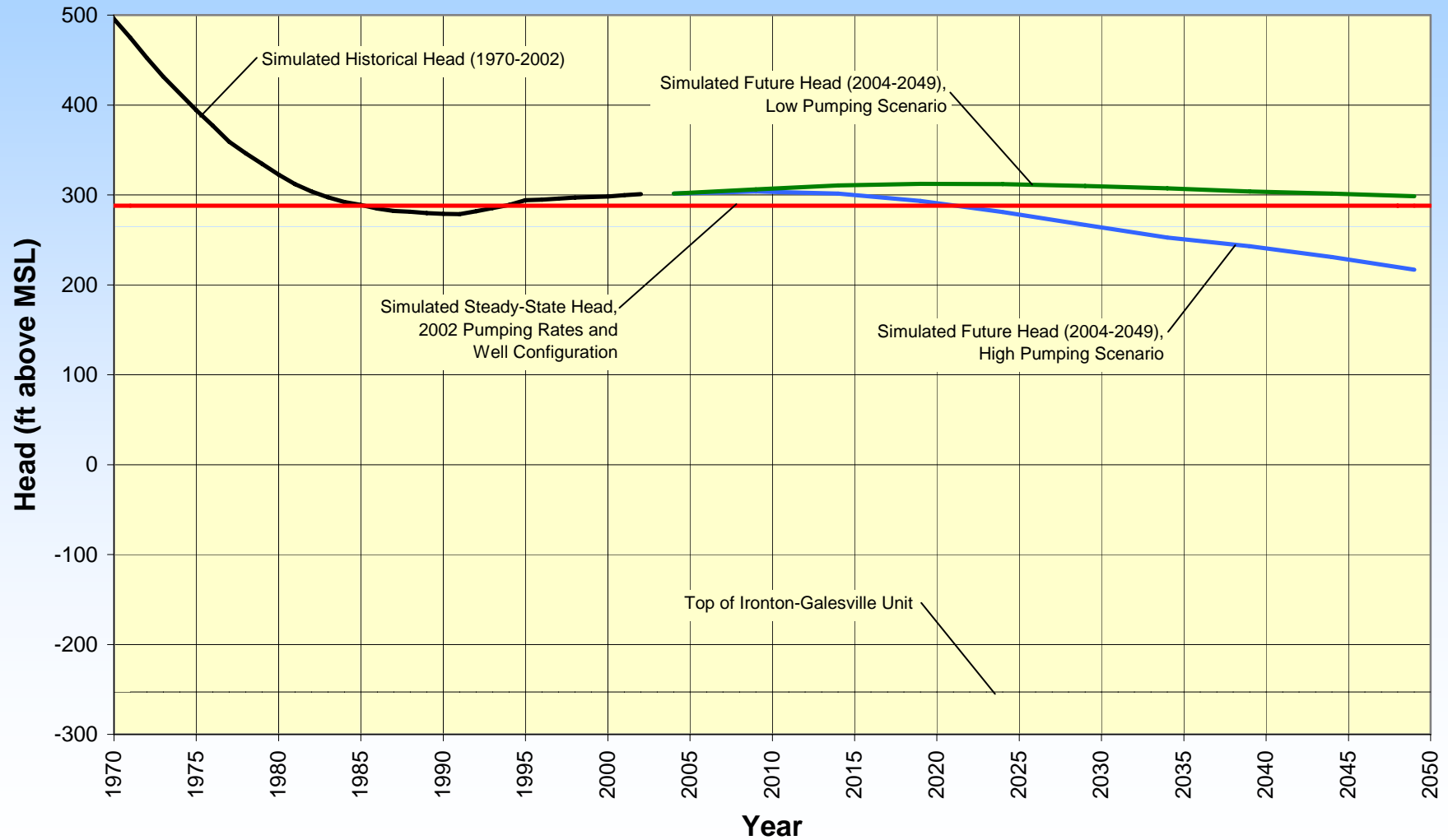
Simulated Ancell Unit Head, Maple Park

Kane County Project Regional Model Results



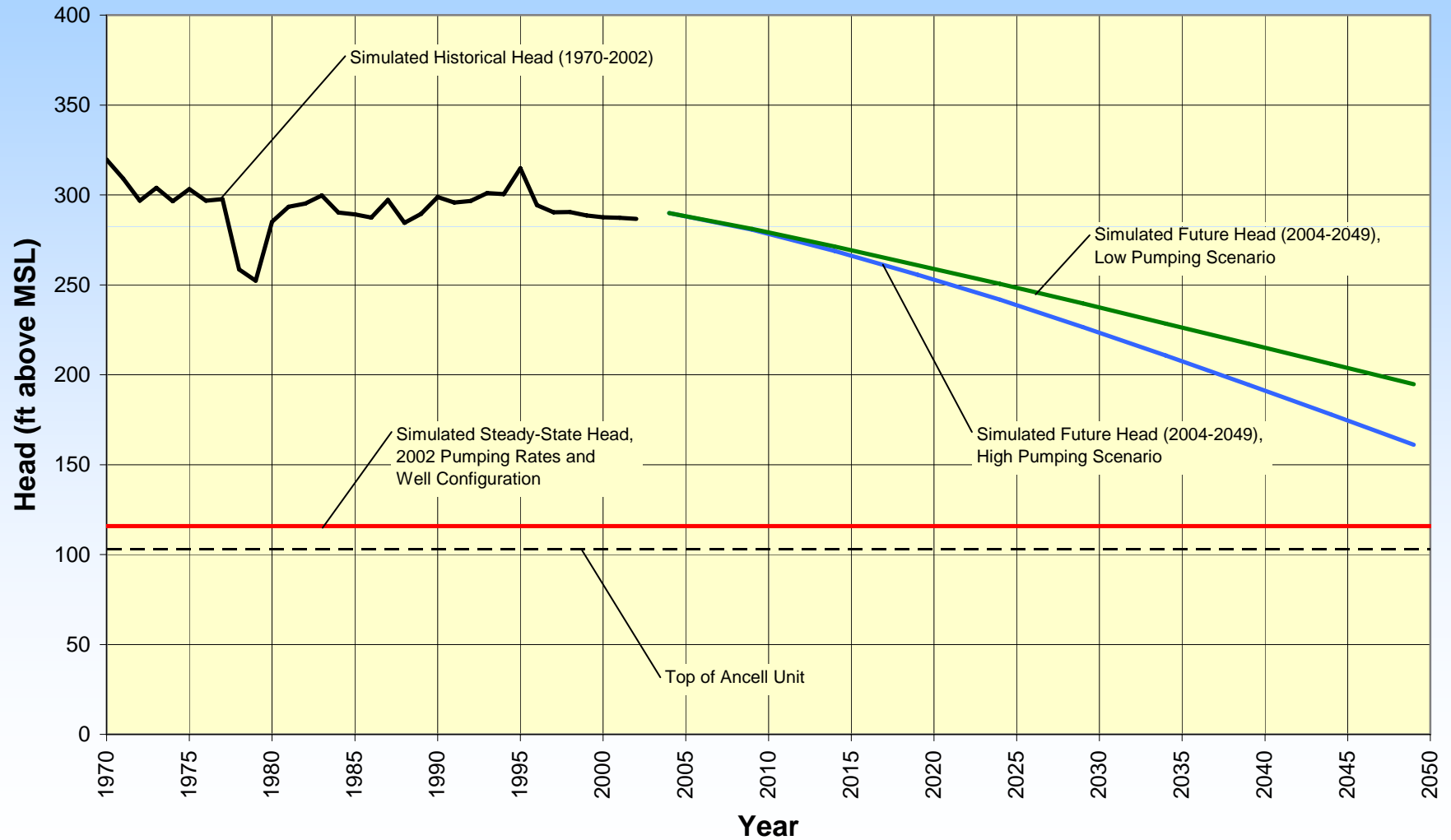
Simulated Ironton-Galesville Unit Head, Maple Park

Kane County Project Regional Model Results



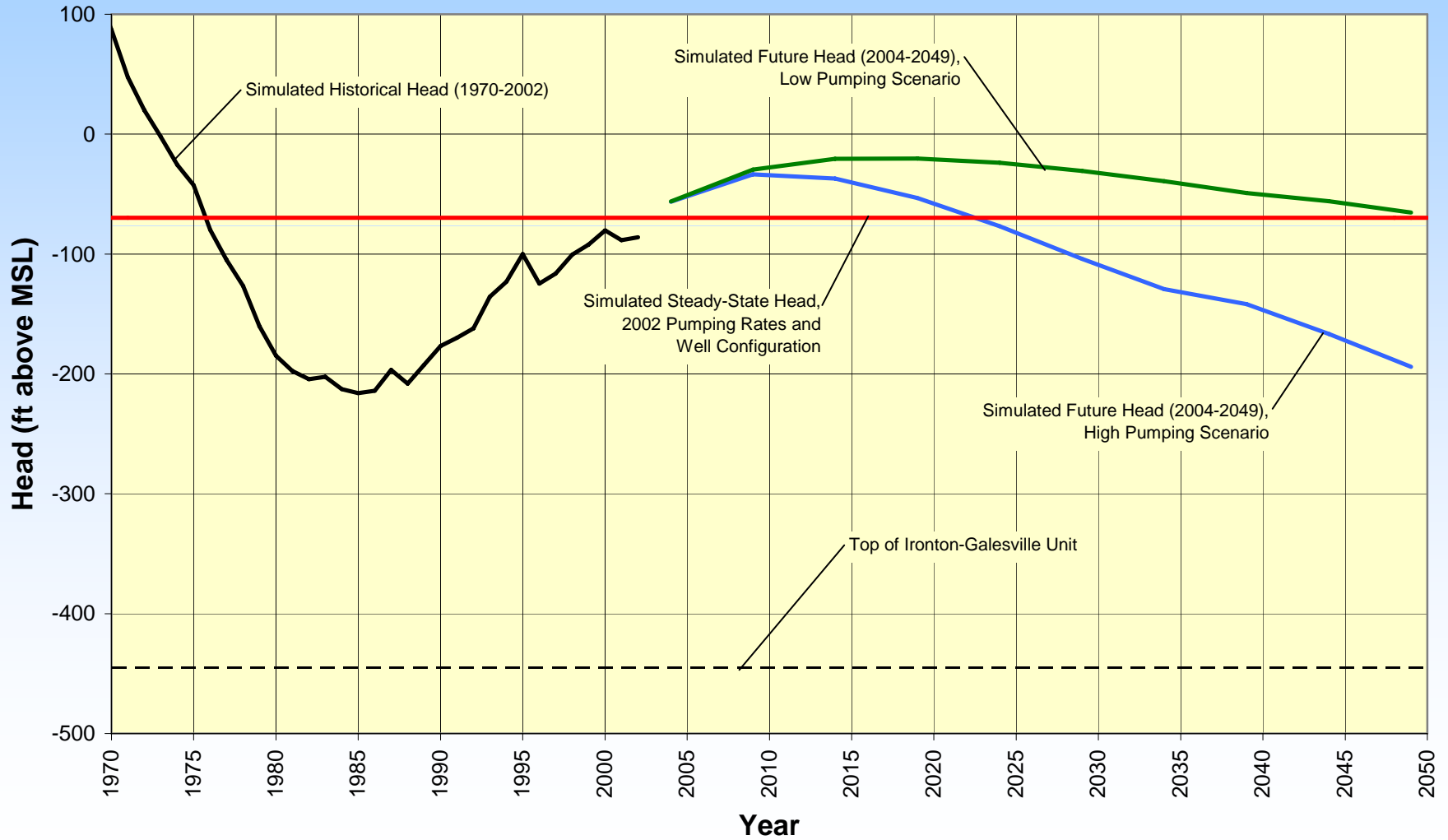
Simulated Ancell Unit Head, St. Charles

Kane County Project Regional Model Results



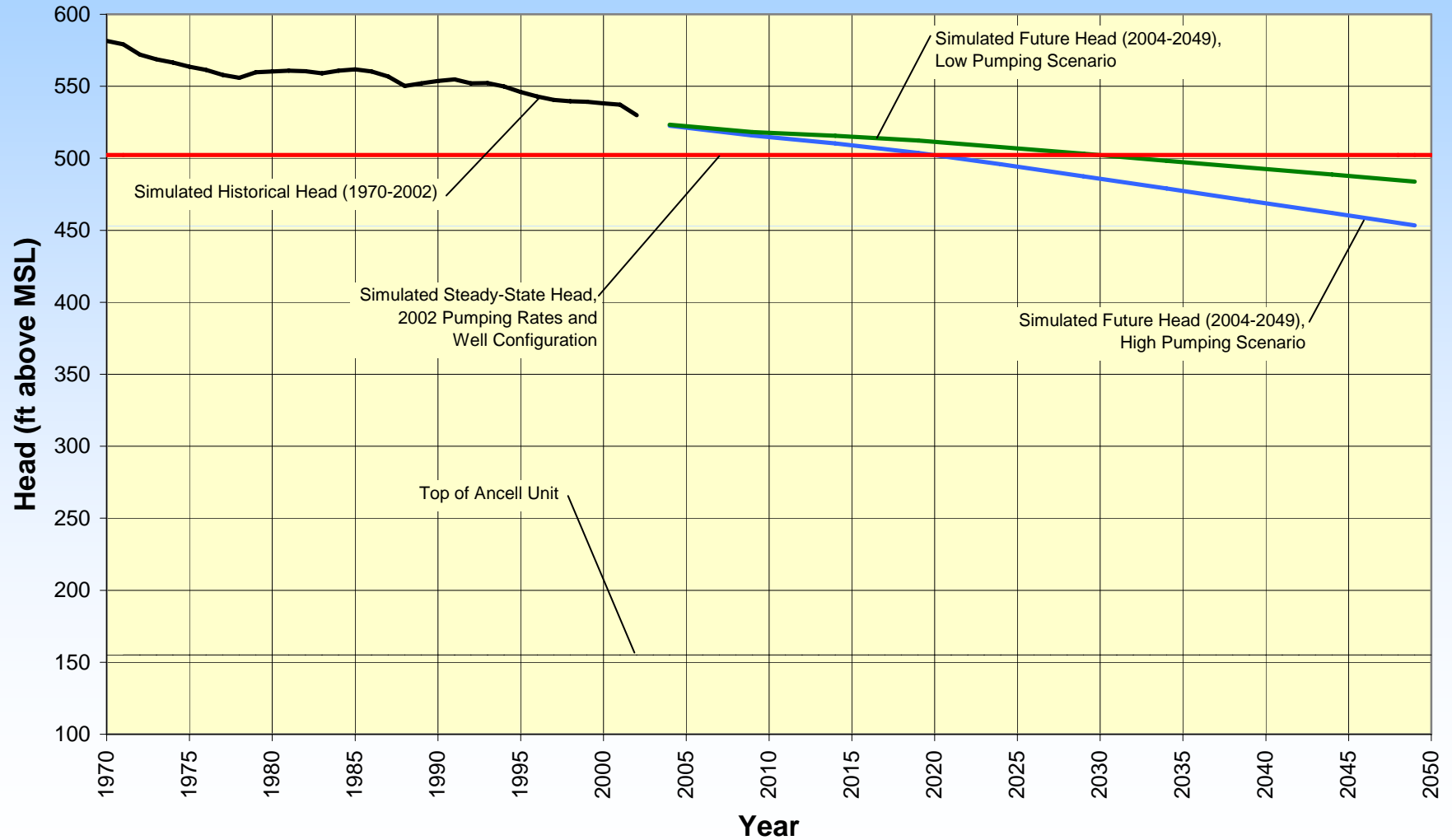
Simulated Ironton-Galesville Unit Head, St. Charles

Kane County Project Regional Model Results



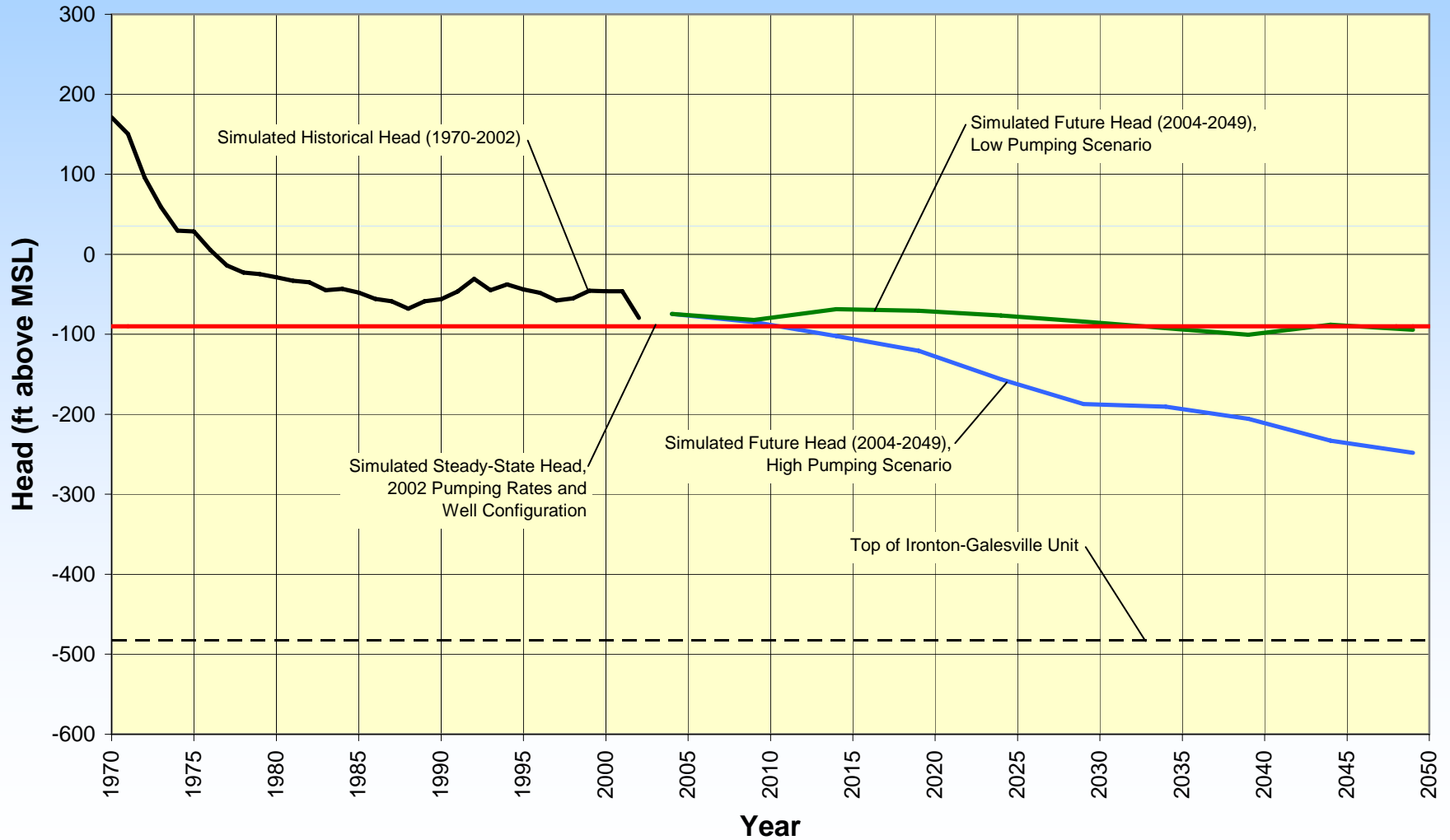
Simulated Ancell Unit Head, Yorkville

Kane County Project Regional Model Results



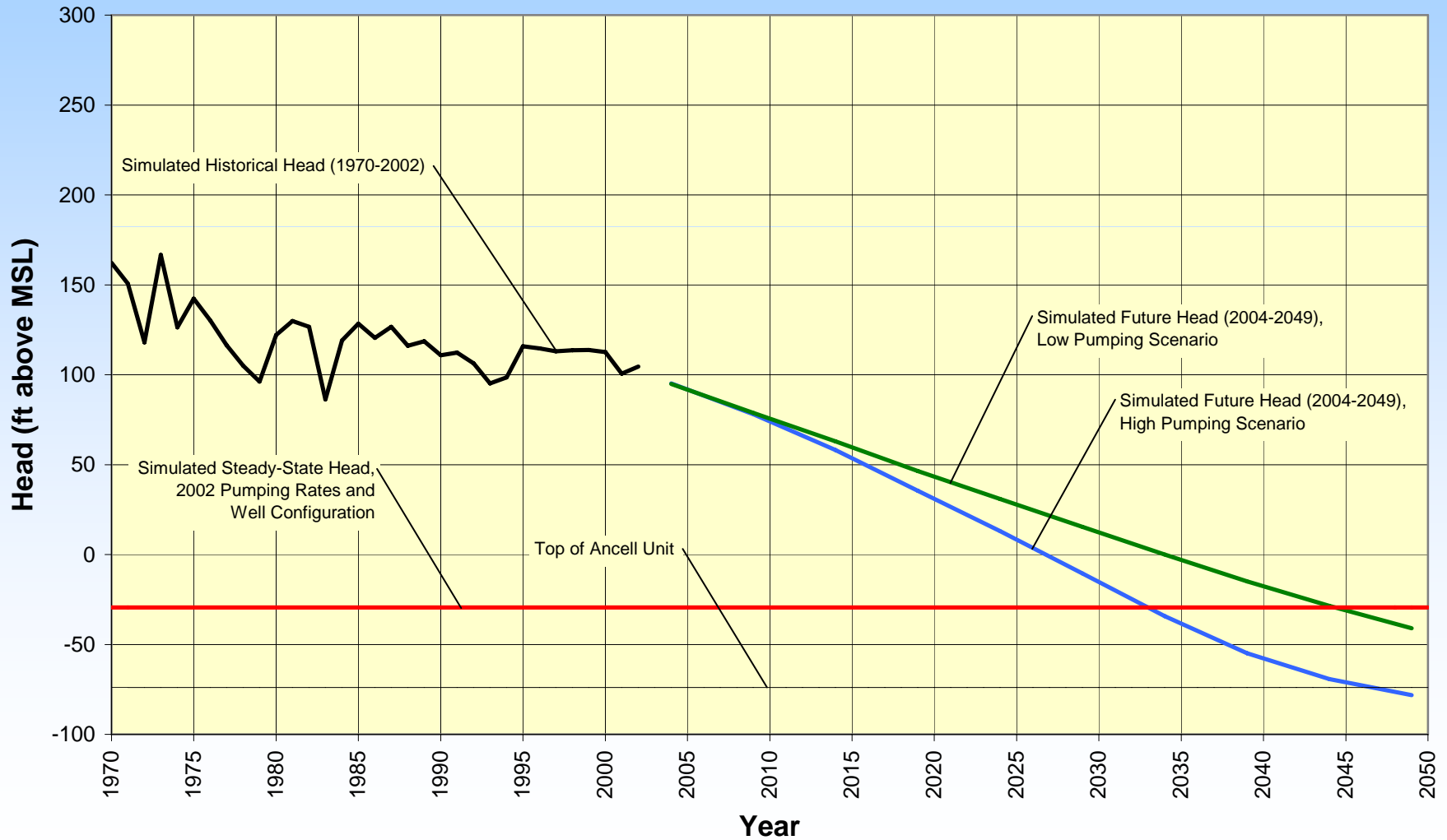
Simulated Ironton-Galesville Unit Head, Yorkville

Kane County Project Regional Model Results



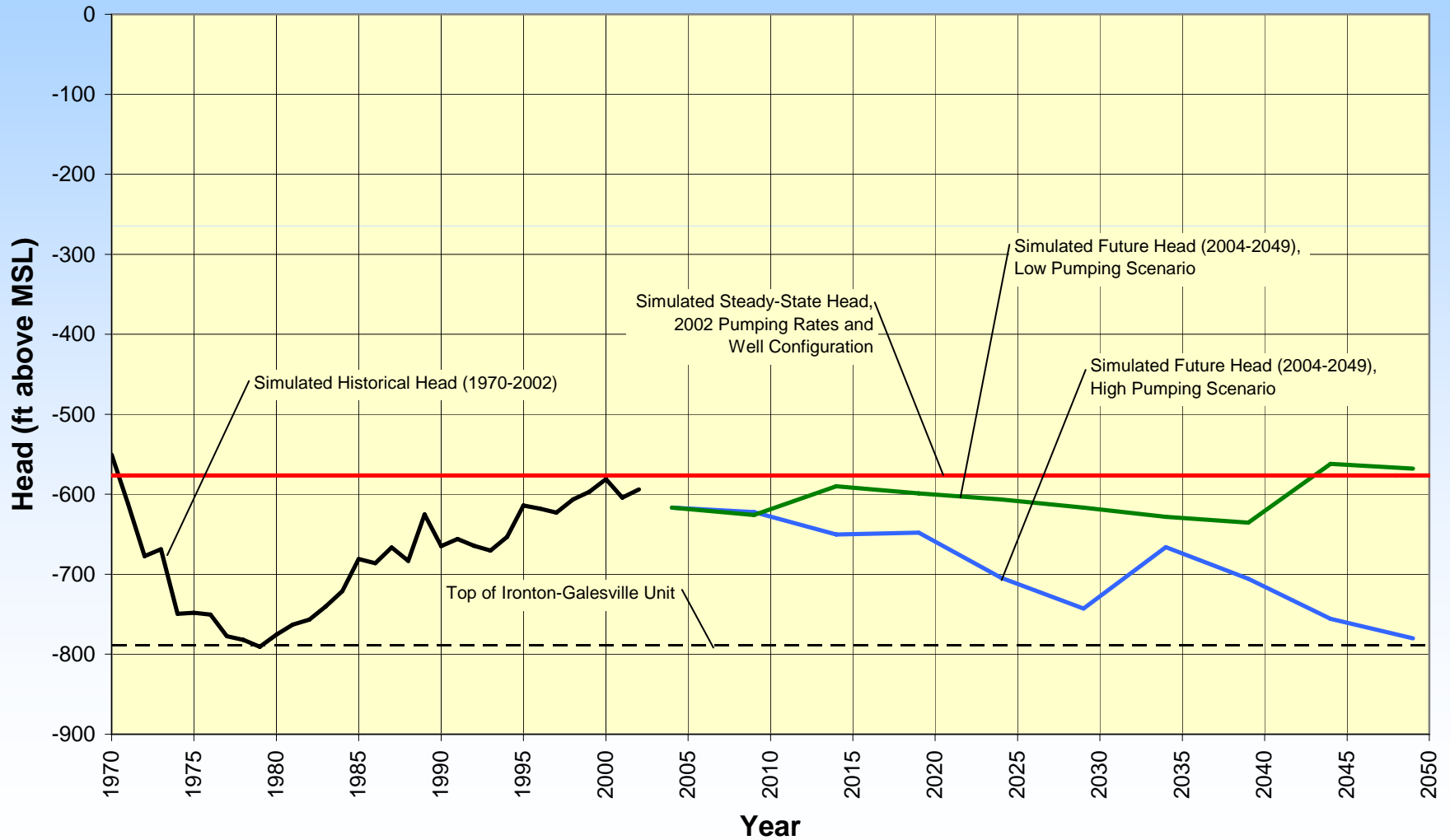
Simulated Ancell Unit Head, Joliet

Kane County Project Regional Model Results

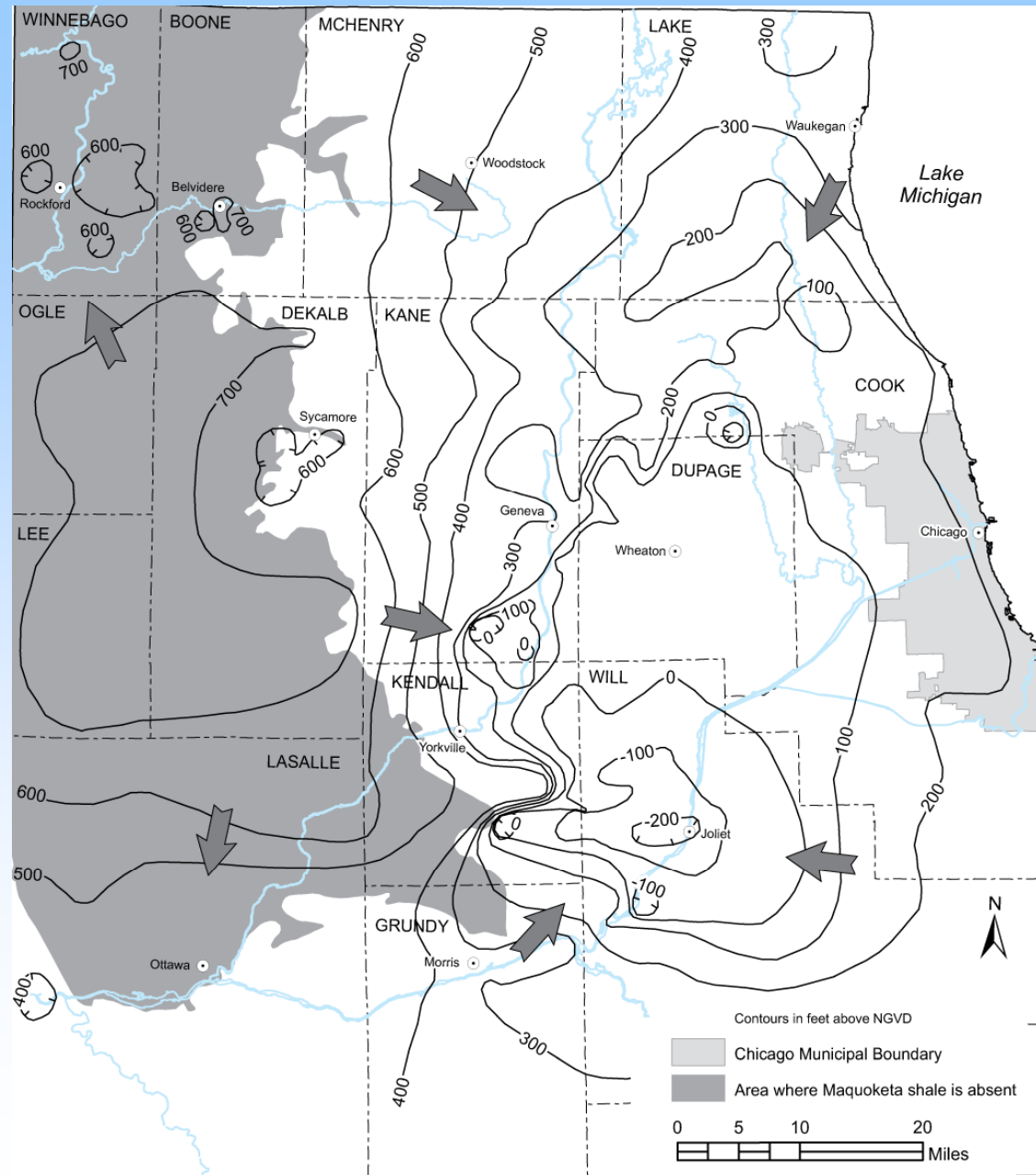


Simulated Ironton-Galesville Unit Head, Joliet

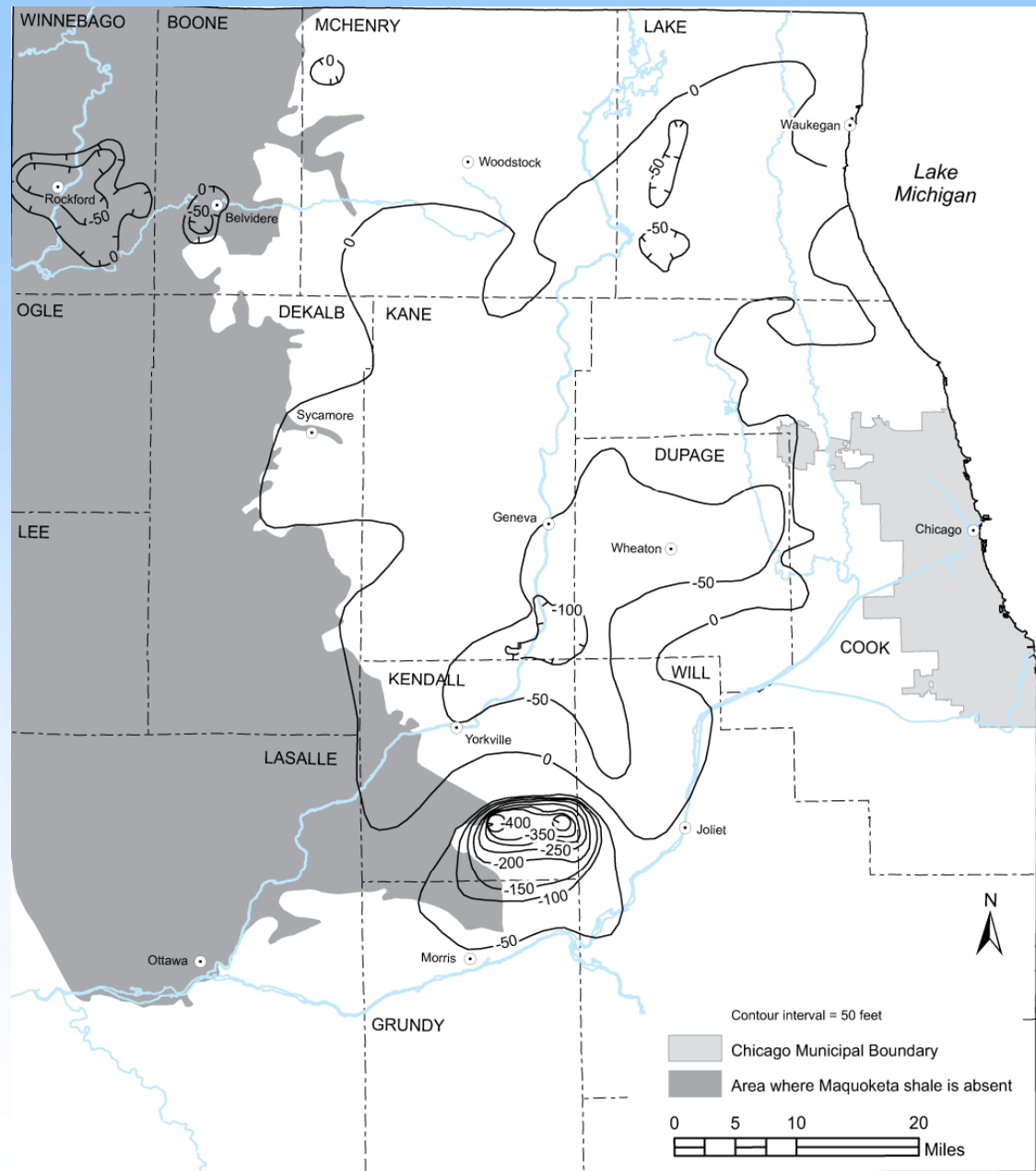
Kane County Project Regional Model Results



Deep Bedrock Aquifer Potentiometric Surface 2007



Change in Deep Bedrock Heads, 2000-2007



Questions? Comments?

Water Supply Home Page is:

<http://www.sws.illinois.edu/wsp>

