

Midwest Technology Assistance Center
Groundwater Resource Assessment for Small Communities

**Groundwater Availability
At
Montrose, Illinois
(Effingham County)**

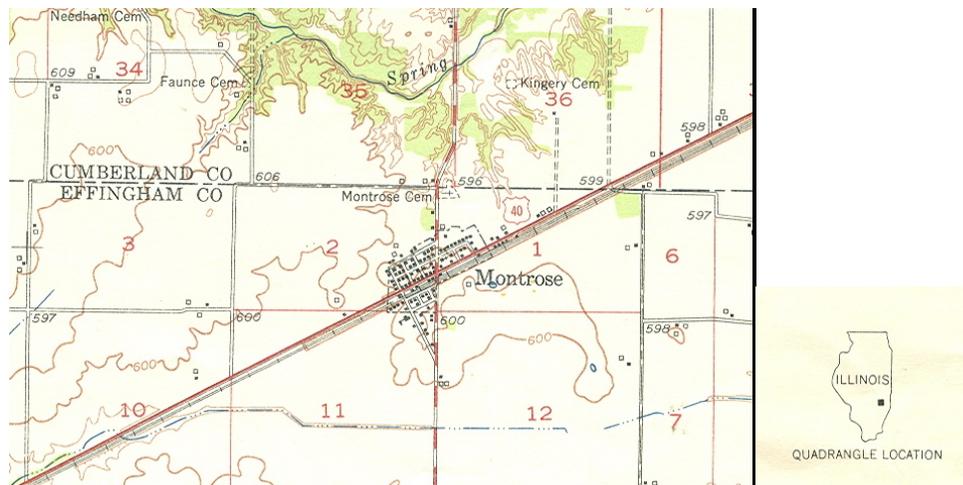
Project Overview

This project is an outgrowth of the Public Service Program of the Center for Groundwater Science (CGS) at the Illinois State Water Survey. For over 50 years, the CGS has provided groundwater information to any requesting individual, commercial facility or public water facility. Groundwater resource assessments have been an integral part of this public service and have been undertaken for thousands of individuals and facilities throughout its history. Community groundwater supplies that have been identified as potentially “deficient” are the targets for this project. The criterion used for determining community deficiency were; 1) Water Supply and Demand (operating time), 2) Aquifer Limitation, 3) Well Specific Capacity, and 4) Facility History.

Project Goal

To provide a resource tool of pertinent groundwater information to each target facility. This document describes a summary of historic information, current conditions and the potential for expansion of the water supply within 5 and 10 miles of Montrose.

Montrose (Effingham County)



The Village of Montrose (Facility Number 0490350) utilizes two active community water supply wells. Well Nos. 1 and 2 (Illinois EPA Nos. 45174 and 45175, respectively) combine to produce approximately 19,300 gallons per day delivered to 135 service connections and serve an estimated population of 257.

Montrose was determined to be “Adequate” mainly because of the well field capacity for the required supply. This report summarized groundwater resources within this area should the village look to increase usage.

Historic Information

Background Well Information

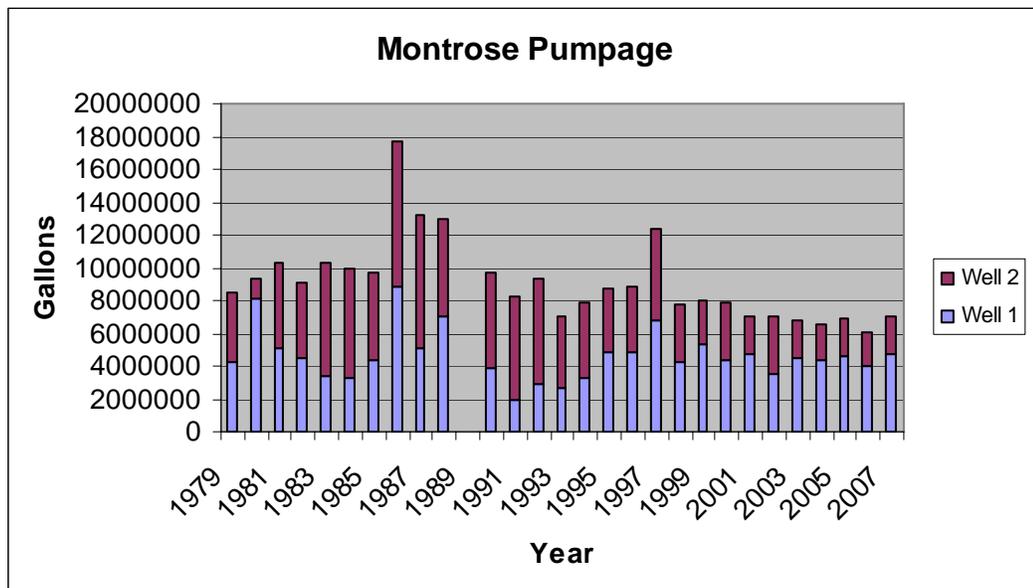
Well No.1

Finished in shallow sand and gravel deposits located along Route 40 in Section 11, T.8N., R.7E., Effingham County. The well was drilled to a depth of 36 feet in 1961 and is currently rated at about 30 gallons per minute (gpm).

Well No.2

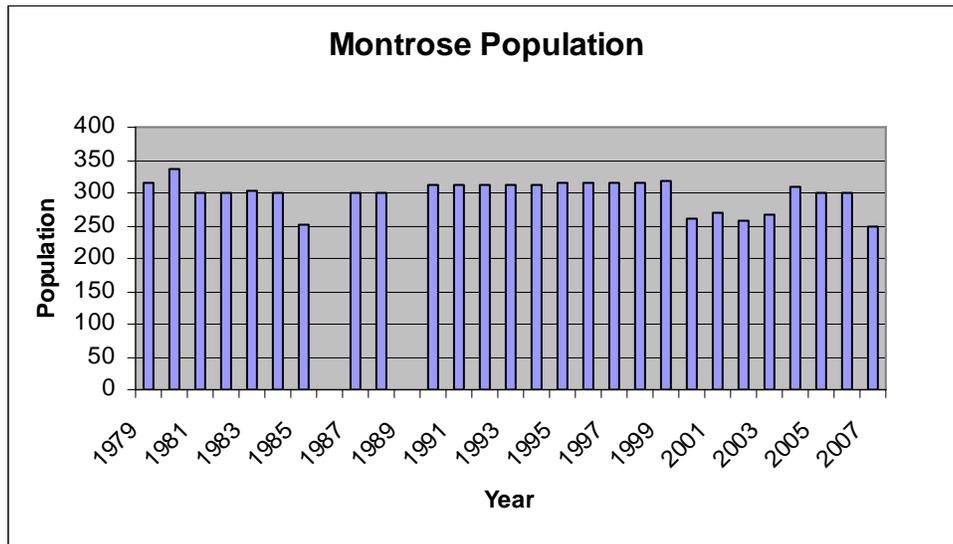
Finished in shallow sand and gravel deposits located along Route 40 in Section 10, T.8N., R.7E., Effingham County. The well was drilled to a depth of 44 feet in 1971 and has a current rating of about 100 gallons per minute but is typically ran at 60 gpm. This well can supply the entire village need if required.

Background Pumpage Information



Source: ISWS Illinois Water Inventory Program

Historic Population Information



Source: ISWS Illinois Water Inventory Program

Regional Information

Resources within 5 miles of Montrose.

Domestic Groundwater Supplies

The available regional data indicate that groundwater for domestic and farm use in this part of Illinois is obtained from mainly large-diameter (approximately 3 feet) bored wells finished in the unconsolidated materials above bedrock. These wells tap stringers or lenses of silt, sand, or gravel only a few inches thick contained in the unconsolidated materials above bedrock. The yield of this type of well is limited to a few hundred gallons per day and may be only barely adequate for normal household uses.

A few reported wells in the area have been drilled into the underlying Pennsylvanian bedrock formations. These wells are finished in thin sandstone and creviced limestone beds in the shallow bedrock. Upon completion, these wells were pumped at very low rates for short periods of time.

Municipal Groundwater Supplies

There is only one town within five miles of Montrose; the village of Woodbury in Cumberland County. This town does not report a municipal water supply and it is assumed that the residents use domestic wells for their water needs.

Resources with 10 miles of Montrose.

Municipal Groundwater Supplies

Towns within 5 to 10 miles of Montrose include: Dieterich, Effingham, and Teutopolis, all in Effingham County, Sigel in Shelby County, and Island Grove, Gila, and Wheeler all in Jasper County.

Island Grove, Gila, and Wheeler do not report a municipal water supply and it is assumed that the residents use domestic wells for their water needs. The City of Effingham provides water to its residents from Lake Sara, located to the northwest of town and does sell water to some surrounding towns.

The Villages of Teutopolis, Dieterich, and Sigel maintain wells for a municipal supply in the Montrose area.

The Village of Teutopolis uses three wells located in T.8N., R.7E., Effingham County. Their wells are finished in local sand and gravel deposits at depths ranging from 30 to 74 feet below land surface. These wells reportedly were run at rates ranging from 60 to 100 gallons per minute but only provide a portion of their needed water. Teutopolis also purchases water from the City of Effingham that supplements its groundwater source.

The Village of Dieterich uses five shallow sand and gravel wells all located to the southwest of town near Dieterich Creek. These wells are located in Sections 14, 22, and 23 of T.7N., R.7E., Effingham County. They range in depth from 24 to 41 feet and each produces about 11 gpm.

The Village of Sigel uses three shallow sand and gravel wells for its supply. The wells range in depth from 58 to 65 feet and each has a long-term production rates determined to be around 10 gpm. These wells are located in Sections 13 and 14, T.9N., R.6E., Effingham County.

Figures 1 and 2 picture the ISWS Potential Yield maps for sand and gravel and bedrock aquifer in Illinois, respectively. The pertinent counties for Dieterich are highlighted. Figure 1 indicates that sand and gravel deposits are variable throughout most of the Dieterich area and no major deposits are indicated. The bedrock map (Figure 2) indicates poor availability of groundwater from the bedrock throughout the Dieterich area. Figures 3 and 4 present the probability of occurrence of the sand and gravel and the water-yielding character of the shallow bedrock for the Dieterich area as depicted in the Illinois State Geologic Survey Circular 225, *Groundwater Geology in South-Central Illinois* (Selkregg, et al., 1957). Figure 3 indicates "Fair to Good," variable and discontinuous sand and gravel deposits and Figure 4 indicates only small supplies are available from the shallow bedrock units. The domestic well construction records verify these map outlooks.

Groundwater Availability Summary

The available information indicates that the sand and gravel deposits the Village currently uses are capable of providing groundwater to meet the village needs. Regional information indicates that sand and gravel deposits are variable but productive for limited groundwater supplies. Testing within the local area has not indicated large quantities of sand and gravel for development of new wells for the village and test drilling histories for many nearby towns confirm very scarce groundwater supplies throughout the entire region.

Should the village need to expand, the only area that has potential would be the sand and gravel aquifer system known to be associated with the Embarras River about 10 miles east of the town. Several communities, as well as the EJ Water Corporation use this highly productive aquifer and Montrose could also develop a supply in the area. However, it may be too costly to develop. The City of Effingham provides water to Teutopolis and could potentially serve Montrose. EJ Water Corporation may also be able to sell water to Montrose being that they have been expanding to the west and north of their well field over the last several years.

Estimated Potential Yields of Sand and Gravel Aquifers in Montrose Area

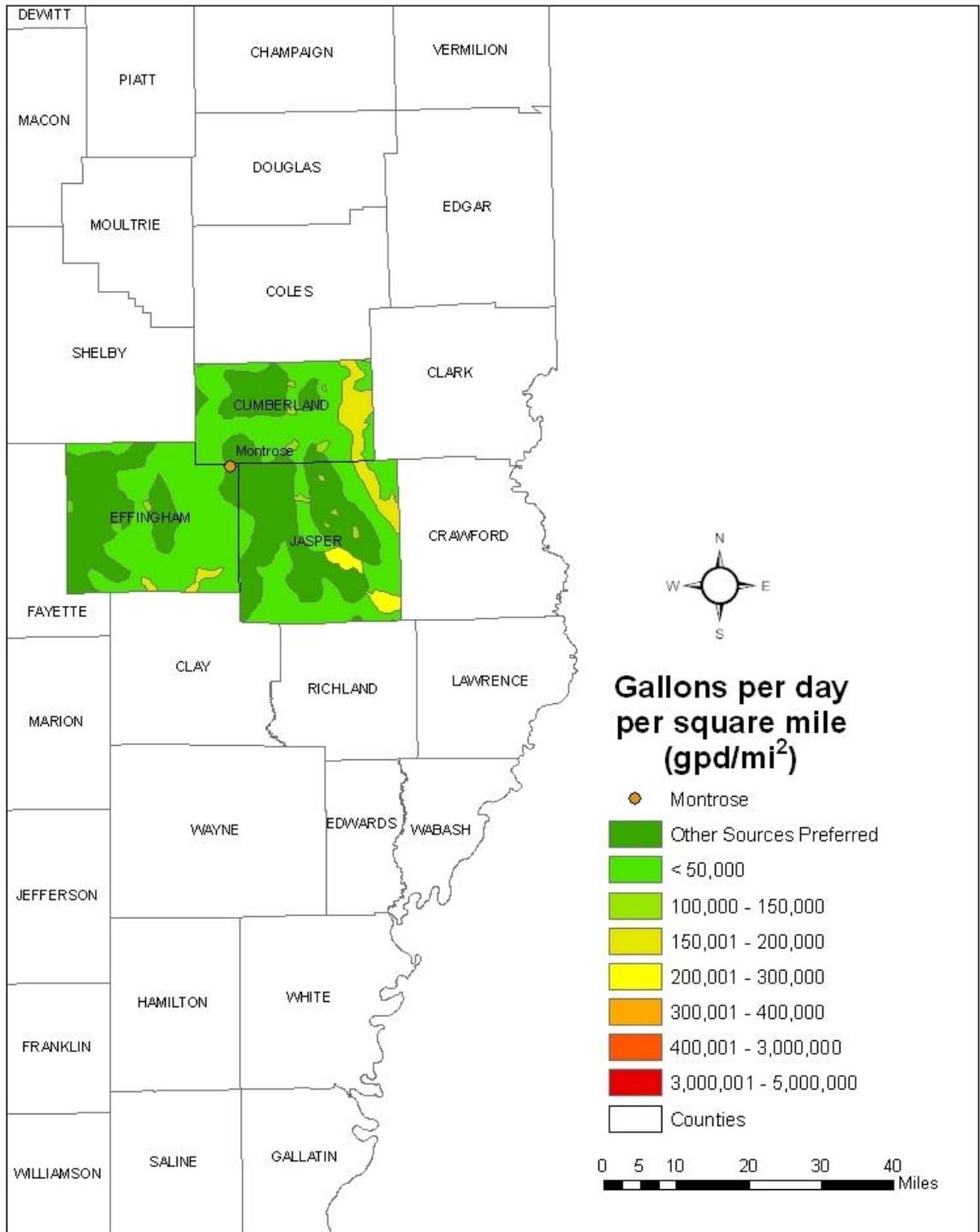


Figure 1.

Estimated Potential Yields of Shallow Bedrock Aquifers in Montrose Area

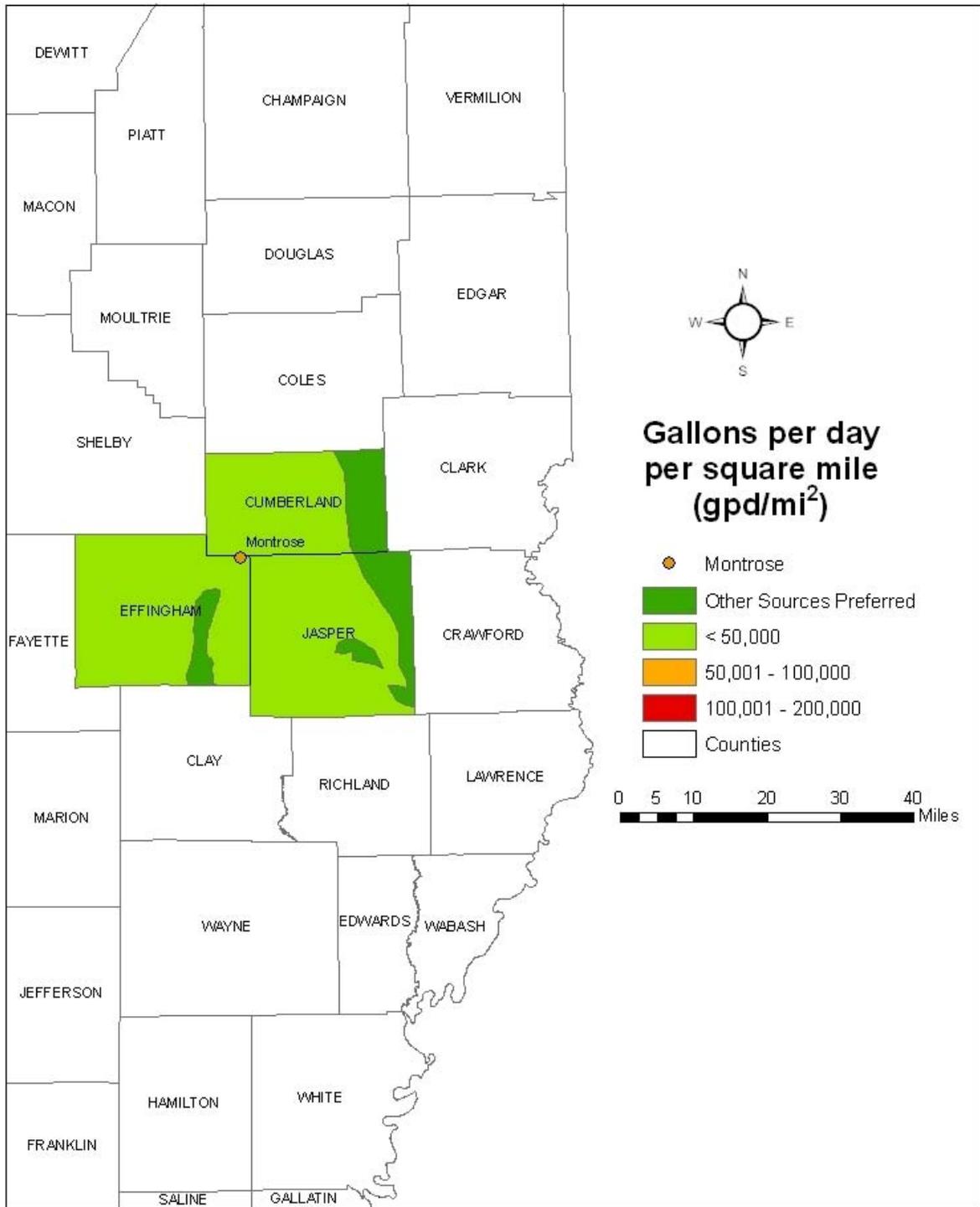


Figure 2.

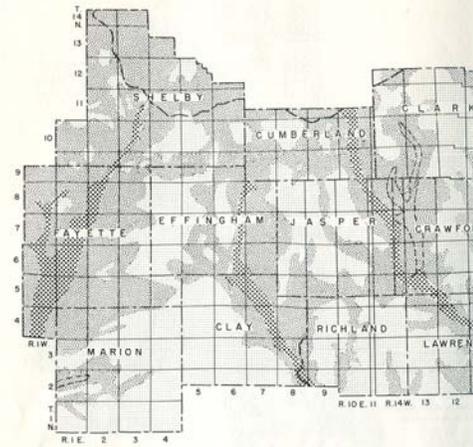
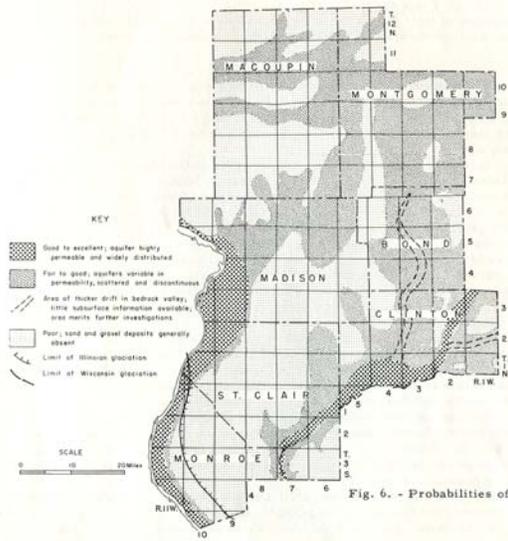


Figure 3.

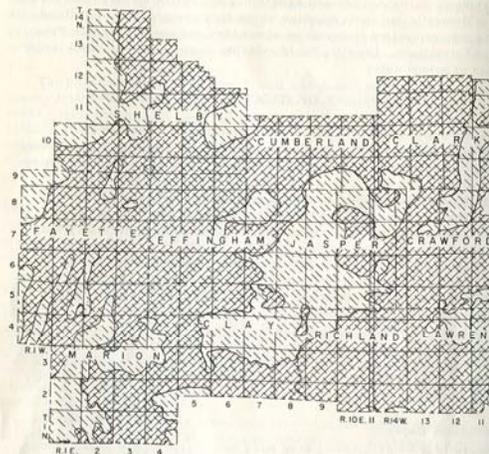
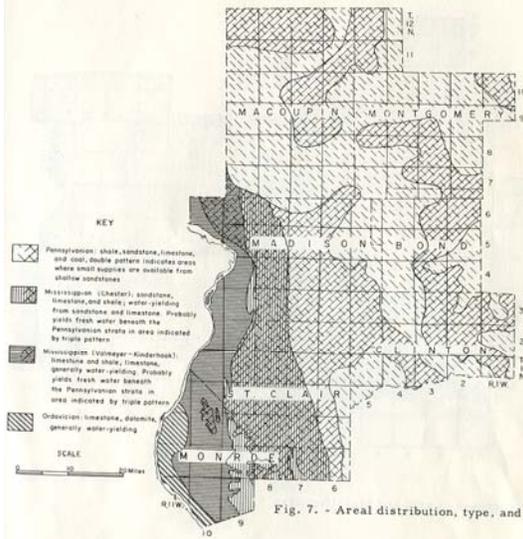


Figure 4.

References

Selkregg, L.F., W. Pryor, and J. Kempton. 1957. Groundwater Geology in South-Central Illinois, A preliminary Geologic Report. Illinois State Geological Survey Circular 225.

ISWS publications list for Montrose and surrounding areas.

CUMBERLAND

- *1965 RI-53 Potential yield of aquifers in Embarras River Basin, Illinois. Walton-Csallany. Open File Report.
- 1965 RS-48 Relationship between water use and population in the Embarras River Basin, Illinois. Csallany.
- *1978 CR-209 Assessment of public groundwater supplies in Illinois. Visocky-Wehrmann-Kim-Ringler. 193p.

EFFINGHAM

- *1965 RI-53 Potential yield of aquifers in Embarras River Basin, Illinois. Walton-Csallany. Open File Report.
- *1966 RI-55 Yields of wells in Pennsylvanian and Mississippian rocks in Illinois. Csallany. 42p.
- 1972 RI-70 Plans for meeting water requirements in the Kaskaskia River Basin, 1970-2020. Singh-Visocky-Lonnquist. 24p.
- *1978 CR-209 Assessment of public groundwater supplies in Illinois. Visocky-Wehrmann-Kim-Ringler. 193p.
- *1980 CR-237 Assessment of eighteen public groundwater supplies in Illinois. Wehrmann-Visocky-Burris-Ringler-Brower. 185p.
- 1992 COOP-14 Pilot Study: Agricultural chemicals in rural, private wells in Illinois. Schock-Mehnert-Caughey-Dreher-Dey-Wilson-Ray-Chou-Valkenburg-Gosar-Karny-Barnhardt-Black-Brown-Garcia. 84p.

- 1992 COOP-15 Characterization of the study areas for the Pilot Study:
Agricultural chemicals in rural, private wells in Illinois.
Barnhardt-Mehnert-Ray-Schock. 114p.

JASPER

- *1965 RI-53 Potential yield of aquifers in Embarras River Basin, Illinois.
Walton-Csallany. Open File Report.
- 1965 RS-48 Relationship between water use and population in the
Embarras River Basin, Illinois. Csallany.
- *1966 RI-55 Yields of wells in Pennsylvanian and Mississippian rocks in
Illinois. Csallany. 42p.
- *1980 CR-237 Assessment of eighteen public groundwater supplies in Illinois.
Wehrmann-Visocky-Burris-Ringler-Brower. 185p.
- 1998 CR-634 Ground-Water investigation in the Embarras River Valley,
Jasper County, Illinois. Sanderson. 173p.