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. The Village of Iola has been identified as a target community for groundwater assessment through this project.

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 Iola.

Iola (Clay County)
The Village of Iola (Facility Number 0250010) utilizes two active community water supply wells. Wells #2 (Illinois EPA #00303) and #3 (Illinois EPA #00304) supply approximately 80,000 gallons per day to an estimated population of 120 individuals at 54 service connections.

The project criterion ranked Iola as “adequate” mainly due to its use of a shallow sand and gravel well in combination with a shallow bedrock well for its supply. The pumping period for these wells combined with the need is currently adequate for this supply.

**Historic Information**

*Background Well Information*

**Well No.2**
Finished in shallow sand and gravel deposits located in Section 34, T.5N., R.5E., Clay County. The well was drilled to a depth of 40 feet in 1987 and, upon completion, reportedly produced 25 gallons per minute (gpm) for 3 hours with 19.1 feet of drawdown. Calculated specific capacity from this test was 1.3 gpm/ft. Static water level was reported as 4.38 feet below land surface. The long-term production rate determined from a test of this well was estimated to be around 10 gpm.

**Well No.3**
Finished in Pennsylvanian sandstone is located in Section 34, T.5N., R.5E., Clay County. The well was drilled to a depth of 174 feet in 1987 and, upon completion, produced approximately 6 gpm for 144 minutes with 53.27 feet of drawdown. Calculated specific capacity from this test was 0.11 gpm/ft. Static water level was reported as 29.04 feet below land surface. Estimated long-term production rate of this well was determined to be about 8 gpm.

*Background Pumpage Information*

![Iola Pumpage Chart](chart.png)

Source: ISWS Illinois Water Inventory Program
Regional Information

Resources within 5 miles of Iola (Figure 1).

Domestic Groundwater Supplies
The available regional data indicate that groundwater for domestic and farm use in this area is obtained from large-diameter dug and bored wells finished in the unconsolidated materials above bedrock and from small-diameter drilled wells tapping the shallow underlying bedrock formations. The large-diameter dug and bored 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.

Small-diameter (4- to 6-inch) wells have also been drilled into the underlying Pennsylvanian bedrock for domestic purposes. These wells tap thin sandstone formations found in the upper bedrock. Upon completion, these wells were pumped at very low rates for short periods of time.

Municipal Groundwater Supplies
There is only one town located within five miles of Iola; the Village of Cruse to the southwest. This town does not report a municipal water supply and it is assumed that the residents use domestic wells for their water needs.
Resources within 10 miles of Iola (Figure 2).

Municipal Groundwater Supplies
Towns within 5 to 10 miles of Iola include: Bible Grove, Hord, Louisville, and Oskaloosa all in Clay County; Mason and Edgewood in Effingham County; and La Clede in Fayette County. Louisville, Mason, and Edgewood all purchase water from EJ Water Corporation and all the other towns report no public water supply systems. It is assumed that these residents use domestic wells for their water needs.

Figures 3 and 4 picture the ISWS Potential Yield maps for sand and gravel and bedrock aquifer in Illinois, respectively. The pertinent counties for Iola are highlighted. Figure 3 indicates that sand and gravel deposits are virtually non-existent throughout the Iola area. Similarly, the bedrock map (Figure 4) indicates poor availability of groundwater from the bedrock throughout this area. Figures 5 and 6 present the probability of occurrence of the sand and gravel and the water-yielding character of the shallow bedrock for the Iola area as depicted in the Illinois State Geologic Survey Circular 225, *Groundwater Geology in South-Central Illinois* (Selkregg, et al., 195).

Figure 5 indicates poor availability of sand and gravel deposits and Figure 6 indicates only small supplies are available from the shallow bedrock units. The reports from this area as well as the domestic well construction records verify these map outlooks.

Groundwater Availability Summary

The available information indicates that the two wells the village currently uses are capable of supplying the residents with their water needs. However, it is evident that the groundwater resources from both the unconsolidated materials and the bedrock are very limited in this area. Should the village need to expand their supply or it begins to decline, the only alternative appears to be purchasing water from the EJ Water Corporation. Louisville, located to the southeast and Edgewood located to the northwest of Iola both purchase from EJ and it is assumed that a distribution line exists very near Iola. Discussions with the EJ Water Corporation are recommended as, at least, in using this source as an emergency supply for the village. Sand and gravel deposits to the east of town in the area of Dismal Creek might warrant exploration should the village want to continue using their own supply; however, all available information indicates poor groundwater availability throughout this entire area.
Figure 2. 10-mile radius map-Iola
Figure 3.

Estimated Potential Yields of Sand and Gravel Aquifers in Iola Area

Gallons per day per square mile (gpd/mi²)

- Green: Other Sources Preferred
- < 50,000
- 50,000 - 150,000
- 150,001 - 200,000
- 200,001 - 300,000
- 300,001 - 400,000
- 400,001 - 3,000,000
- 3,000,001 - 5,000,000
- Counties

Figure 3.
Estimated Potential Yields of Shallow Bedrock Aquifers in Iola Area

Gallons per day per square mile (gpd/mi²)

- Iola
- Other Sources Preferred
  - < 50,000
  - 50,001 - 100,000
  - 100,001 - 200,000
- Counties

Figure 4.
Figure 5.

Figure 6.
References


ISWS publications list for the Iiola and surrounding areas.

* = Publication is out of print.
$ = Payment required.

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