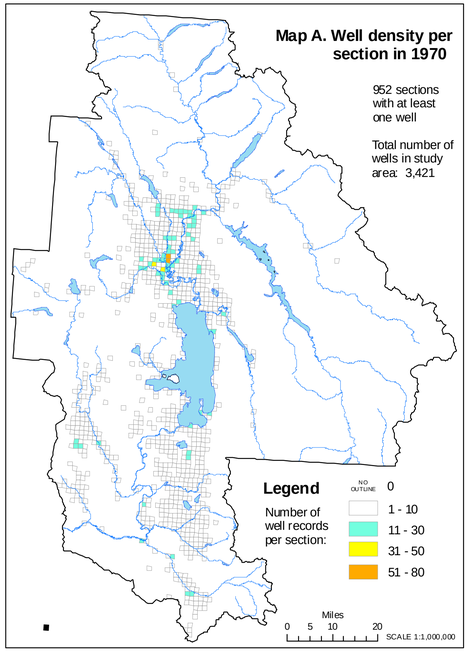
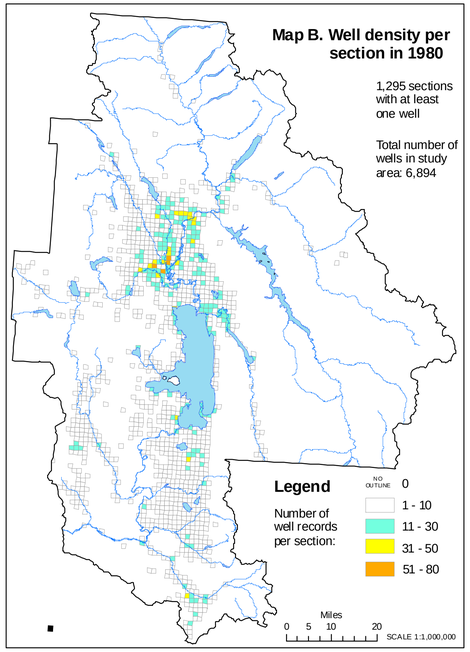
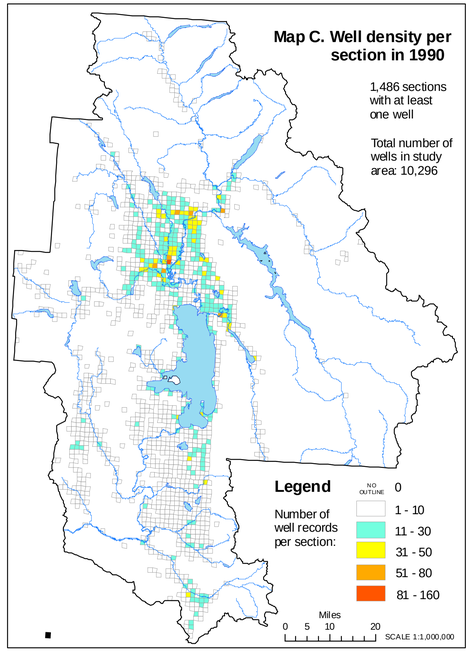
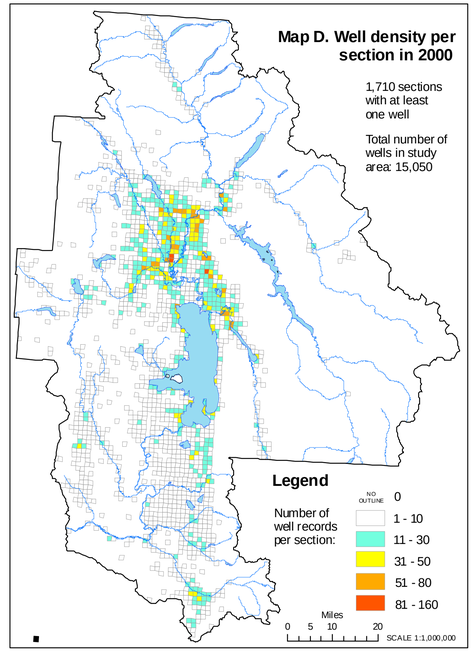
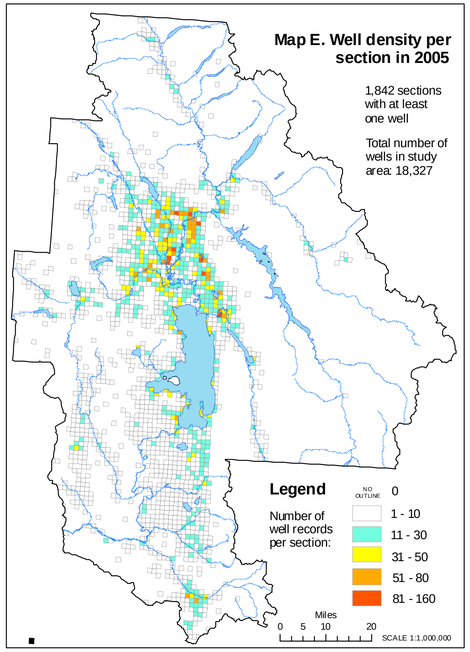










Ground-Water Resource Development in the Flathead Lake Ground-Water Characterization Area, Flathead, Lake, Missoula, and Sanders Counties, Montana

By Kirk B. Waren and Thomas W. Patton

Sheet 1. The number of water wells per section in 1970, 1980, 1990, 2000, and 2005.

Introduction

These maps are based on data from the Montana Ground-Water Information Center (GWIC) database (http://mbmggwic.mtech.edu/), and display how ground water has been developed in the Flathead Lake Ground-Water Characterization Area.

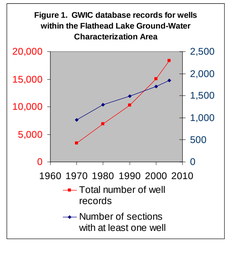
Explanation

The study area is defined by the Flathead Lake Ground-Water Characterization Area (LaFave and others, 2004). Maps A through E illustrate the number of water-well records per Public Land Survey System (PLSS) section in 10-year increments beginning in 1970 and include water-well records present in the GWIC database at the beginning of each stated year. Figure 1 (below) shows the progression graphically through 2005. While the number of PLSS sections with at least one well is increasing, the total number of wells is increasing at a much greater rate (note the separate scales in Figure 1). Throughout the map series, some PLSS sections that have small numbers of wells in non-valley locations result from incorrectly located wells in GWIC.

Map F shows selected lakes, streams, cities, towns, and counties within the study area.

Map G illustrates the general geology within the intermontane basins, locations of wells visited during the Flathead Lake Ground-Water Characterization Study, and the locations of statewide ground-water monitoring wells. Comparison of the locations of visited and statewide monitoring network wells with the PLSS section well densities shown on maps D and E shows that data from the visited wells and water-level records from the monitoring network are relevant to the most developed aquifers. These aquifers typically include large thicknesses of valley-fill aquifer materials. The alluvium shown on Map G includes largely surficial, generally unconsolidated sediments that are in relatively good hydrologic connection with surface water.

Map H shows PLSS sections that contained more than 50 wells in 2005, the alluvial aquifers, and hydrographs from selected statewide monitoring wells. The hydrographs show ground-water storage or pressure change in some of the most used aquifers.



References

LaFave, J.I., Smith, L.N., and Patton, T.W., 2004, Ground-water resources of the Flathead Lake Area: Flathead, Lake, and parts of Missoula and Sanders Counties: Part A- Descriptive overview: Montana Bureau of Mines and Geology Ground-Water Assessment Atlas 2A, 132 p.

Montana Ground-Water Information Center, Montana Bureau of Mines and Geology, Montana Tech of The University of Montana (http://mbmggwic.mtech.edu/).

Natural Resource Information System, Montana State Library, for base map coverages (http://nris.mt.gov/).

Acknowledgments

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