Private residential wells are generally in the shallow aquifer and 100 to 300 feet deep. Most municipal wells are 200 to 800 feet deep with some up to 2,200 feet deep, and are in both the shallow and deep aquifer.

Source: USGS.
Background

State of Wisconsin 2003 Wisconsin Act 310 Groundwater Management Area
(Area including and surrounding Brown and Waukesha Counties consisting of the entire City, Village, and Town where the groundwater level has been reduced by 150' or more)

Deep Sandstone Aquifer Drawdown

Pre-1864

Water Levels in the Sandstone Aquifer
(feet above sea level)

Area With 150' or More of Drawdown

2000

Water Levels in the Sandstone Aquifer
(feet above sea level)
Source: Water utilities and SEWRPC.
Source: Water utilities and SEWRPC.
PROJECTED AREAS SERVED BY MUNICIPAL AND OTHER THAN MUNICIPAL, COMMUNITY WATER SUPPLY SYSTEMS IN WALWORTH COUNTY: 2035

GROUNDWATER-SUPPLIED SYSTEMS IN 2005

2005  2035

- COUNTRY ESTATES SANITARY DISTRICT
- DARIEN WATER WORKS AND SEWER SYSTEM
- DELAVAN WATER AND SEWERAGE COMMISSION
- ELKHORN LIGHT AND WATER
- FONTANA MUNICIPAL WATER UTILITY
- LAKE COMO SANITARY DISTRICT NO. 1
- LAKE GENEVA MUNICIPAL WATER UTILITY
- PELL LAKES SANITARY DISTRICT NO. 1
- SHARON WATERWORKS AND SEWER SYSTEM
- TOWN OF EAST TROY SANITARY DISTRICT NO. 3

NEW SYSTEMS
- TOWN OF LYONS AREA
- TOWN OF EAST TROY, POTTER LAKE AREA

2005  2035

- VILLAGE OF EAST TROY MUNICIPAL WATER UTILITY
- VILLAGE OF GENOA CITY MUNICIPAL WATER UTILITY
- WALWORTH MUNICIPAL WATER AND SEWER UTILITY
- WHITEWATER MUNICIPAL WATER UTILITY
- WILLIAMS BAY MUNICIPAL WATER UTILITY
- MUKWONAGO MUNICIPAL WATER UTILITY

SOURCE: Water utilities and SEWRPC.

AREA SERVED BY OTHER THAN MUNICIPAL, COMMUNITY WATER SYSTEMS USING GROUNDWATER. IDENTIFICATION NUMBER CORRESPONDS WITH APPENDIX G.
Water Conservation Measures Envisioned Under the Alternative and Preliminary Recommended Water Supply Plan

Base Level Program (1,589,800 persons) Providing a 4% reduction in average day demand, and from 6 to 10% reduction in maximum day demand. Utilities using Lake Michigan with none or modest supply infrastructure needs.

- Water supply efficiency actions, such as leak detection and repair, water production system refinement, system audits
- Moderate level of public I & E
- Outdoor watering restrictions for residential users

Intermediate Level Program (501,500 persons) Providing a 6 to 8% reduction in average day demand, and a 12 to 14% reduction in maximum day demand. Utilities using groundwater supply with no major problems and with supply infrastructure needs or using new surface water supplies with significant infrastructure needs.

- All components of low level program
- Higher level public I & E
- Plumbing retrofits (shower heads, toilet displacement device kits)
- Water conservation rate structure revision and outdoor watering restrictions

Advanced Level Program (184,700 persons) Providing a 10% reduction in average day demand, and an 18% reduction in maximum day demand. Utilities using groundwater supply with aquifer problems and infrastructure needs or using new surface water supplies and new return flow required with major infrastructure needs.

- All components of intermediate level program
- Plumbing fixture management (toilet, washing machine, and water softener replacement rebates)
- More aggressive rate structure and outdoor watering restrictions

High Level Program (Evaluated and not included in regional plan recommendations may be considered on a local utility specific basis) Providing a 25 to 35% reduction in average day demand, and a 30 to 50% reduction in maximum day demand

- All components of advanced level program
- Rain Harvesting
- Greywater Reuse System

Note: The measures noted are intended to serve as a guide for local utilities to develop utility specific programs. All programs would be designed to meet requirements of the Compact and State regulations under development. Additional measures may be applicable if needed to meet sewerage system protection or stormwater management objectives.
CONCLUSIONS IN THE DEEP AQUIFER ASSOCIATED WITH ALTERNATIVE WATER SUPPLY PLANS

ALTERNATIVE PLAN 1

CHANGE RELATIVE TO 2006 CONDITIONS (FEET)

ALTERNATIVE PLAN 2

Note:
Results are from layer 11 in the Regional Aquifer simulation model.

Note:
Model nodes represent simulated average conditions over an approximately half-mile by half-mile area and model input is to some degree generalized. While this level of resolution is sufficient to compare impacts resulting from alternative plans and conditions, it is not sufficiently fine to predict site-specific impacts or to resolve differences in impacts between groundwater characteristics on a fine scale.

ALTERNATIVE PLAN 3

ALTERNATIVE PLAN 4

Source: U.S. Geological Survey

PRELIMINARY DRAFT
AQUIFER SIMULATION MODEL NODES WITH MORE THAN 10 PERCENT BASEFLOW DEPLETION OR BASEFLOW AUGMENTATION BETWEEN 2006 AND 2035 UNDER CONDITIONS ASSOCIATED WITH ALTERNATIVE WATER SUPPLY PLANS: 2035

ALTERNATIVE 1

LEGEND
- Surface water features in aquifer simulation model
- Subcontinental divide
- Model nodes with more than 10 percent baseflow depletion
- Model nodes with more than 10 percent baseflow augmentation
- Model nodes on stream system which receives recharge from point or non-point effluent
- Reaches where WATF effluent will be returned to the Great Lakes basin

Note: Model nodes represent simulated average conditions over an approximately half-state half-state area. While this level of resolution is sufficient to compare impacts resulting between alternative plans and conditions, it is not sufficient fine to predict site-specific impacts or to resolve differences in impacts between surface water features that are close physically to one another.

ALTERNATIVE 2

Note: Results shown are total estimates of baseflow depletion and augmentation. Bedrock is below 10 percent and 50 percent of streamflow on an annual basis.

ALTERNATIVE 3

Note: This is a rough preliminary draft to show no results. Final maps are in development.

ALTERNATIVE 4

Note: This is a rough preliminary draft to show no results. Final maps are in development.

Source: U.S. Geological Survey

PRELIMINARY DRAFT
GROUNDWATER AND SURFACE WATER CONDITIONS ASSOCIATED WITH SUBALTERNATIVES TO THE PRELIMINARY RECOMMENDED PLAN: 2035

CONDITIONS IN THE DEEP AQUIFER

SUBALTERNATIVE PLAN 1
LEGEND
CHANGE RELATIVE TO 2005 CONDITIONS (FEET)

SUBALTERNATIVE PLAN 2
LEGEND
SURFACE WATER FEATURES
IN AQUIFER SIMULATION MODEL
SUBCONTINENTAL DIVIDE
MODEL NODENLESS THAN 1 PERCENT BASEFLOW DEPLETION
MODEL NODES WITH MORE THAN 10 PERCENT BASEFLOW DEPLETION
MODEL NODES WITH MORE THAN 30 PERCENT BASEFLOW DEPLETION
MODEL NODES IN STREAM SYSTEMS WHICH RECEIVES SEWAGE TREATMENT PLANT EFFLUENT

AQUIFER SIMULATION MODEL NODES WITH MORE THAN 10 PERCENT BASEFLOW DEPLETION OR BASEFLOW AUGMENTATION

Note: Model nodes represent simulated average conditions over an approximately half-mile by half-mile area and model input is to some degree generalized. While this level of resolution is sufficient to compare impacts resulting from alternative plans and conditions, it is not sufficiently fine to predict site-specific impacts or to resolve differences in impacts between groundwater characteristics on a fine scale.

AQUIFER SIMULATION MODEL NODES WITH MORE THAN 10 PERCENT BASEFLOW DEPLETION OR BASEFLOW AUGMENTATION

Note: Results are from layer 11 in the Regional Aquifer simulation model.

ENVIRONMENTAL JUSTICE AND WATER SUPPLY PLANNING

What is Environmental Justice?

Three Fundamental Environmental Justice Principles… Related to Minority and Low-Income Populations:
- To avoid, minimize, or mitigate disproportionately high and adverse effects of decisions.
- To ensure full and fair participation in decision-making.
- To prevent denial, reduction, or significant delay in benefits (receiving proportionate share).

How does Environmental Justice Affect Regional Planning?
- Planning organizations like SEWRPC need to conduct planning that embodies Environmental Justice principles and evaluate plan recommendations to determine whether plans are balanced.
  - Fairly share burdens and benefits of recommendations across society, particularly with respect to minority and low-income populations.
- For decades, SEWRPC has advanced planning concepts and recommendations supporting a more sustainable Region:
  - Preserve and enhance the Region's natural environment.
  - Preserve prime agricultural land.
  - Encourage a more efficient, centralized regional land development pattern.
  - Encourage a more balanced, multi-modal transportation system.
- These principles lead to plans that help achieve Environmental Justice, in part because urban communities and neighborhoods can remain vital.

SEWRPC’s Environmental Justice (EJ) Task Force
- In 2007, the Commission formed an EJ Task Force comprised of 15 representatives of minority, low-income, and special needs populations from throughout southeastern Wisconsin.
- The Task Force is a nontraditional means to generate additional ideas and further broaden input, which may benefit minority and low-income populations, and others.
- Among important activities, the EJ Task Force reviews and comments upon regional planning documents, particularly at draft or scoping stages.
  - Specific focus on the effects of plans on EJ populations and whether and how the benefits and burdens of those plans are shared.

What We Have Heard So Far from the EJ Task Force?
- Comments that communities which receive Lake Michigan water from the City of Milwaukee in accord with implementation of a regional water supply plan should in turn fully implement other elements of regional plans:
  - Transportation (Public Transit)
  - Land Use
  - Housing