DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
COMMONWEALTH OF MASSACHUSETTS
WATER RESOURCES COMMISSION

HYDROLOGIC INVESTIGATIONS
ATLAS HA-460 (SHEET 2 OF 3)

AVAILABILITY OF GROUND WATER IN UNCONSOLIDATED DEPOSITS

EXPLANATION

Yield of properly designed and constructed wells finished in stratified drift and located by test drilling

Areas of till and bedrock; little or no stratified drift

Generally less than 100 gallons per minute from aquifer having estimated transmissivity between zero and 10,000 gallons per day per foot

Generally less than 300 gallons per minute from aquifer having estimated transmissivity between 10,000 and 30,000 gallons per day per foot

Favorable area for prospecting for well sites to yield 300 gallons per minute or more from aquifer having estimated transmissivity greater than 30,000 gallons per day per foot

Areas in which heavy pumping may induce intrusion of saline or brackish water into aquifer from Taunton River estuary

Lines of equal estimated transmissivity
Number is thousands of gallons per day per foot

Boundary of Taunton River basin

Boundary of subbasin
Listed in table 2 sheet 1

Gaging station
Numbered as listed in table 2, sheet 1

Low-flow partial-record station
Numbered as listed in table 2, sheet 1

PUMPING CENTERS IN STRATIFIED DRIFT

Municipal well
Number is capacity, in million gallons per day

Site of proposed municipal well
Number is capacity, in million gallons per day

Industrial or institutional well
Number is capacity, in million gallons per day

WELL AND BORINGS ON WHICH ESTIMATES OF TRANSMISSIVITY AND YIELD ARE BASED

Provides indication of extent of municipal and other test drilling and reliability of estimates

Well or boring in stratified drift

Well or boring in bedrock

The principal aquifer system is stratified, unconsolidated glacial drift, consisting of gravel, sand, silt, and clay, which forms the valley and lowland deposits of about 328 square miles (62 percent of the basin).

These deposits are underlain by till and bedrock which also form the hills bordering the aquifer. About 20 percent of the area of the aquifer system is underlain by relatively impermeable lacustrine clay, silt, and fine sand, the rest by permeable sand and gravel. The ground-water availability map showing the distribution of high-, medium-, and low-yielding zones of the principal aquifer is based on estimated transmissivity of more than 1,000 wells and borings. Transmissivity was calculated for 55 pumping tests, average permeability determined for the various types of deposits, and transmissivity values estimated for logged wells for which pump-test data are lacking. Transmissivity values range from less than 1,000 gpd per ft (gallons per day per foot) in thin stratified drift near the margins of the aquifer and in fine-grained lacustrine deposits to about 400,000 gpd per ft in thick, coarse, sandy gravel. Transmissivity values greater than 75,000 gpd per ft are rare. Experience indicates that in a properly designed and constructed well in an aquifer 50 feet or more thick the yield in gallons per minute should be about 1 percent of the transmissivity value.

About 90 areas, occupying a total area of 25 square miles, are worthy of prospecting for yields greater than 300 gpm (gallons per minute) per well. A much larger total area, suitable for testing for wells in the 100 to 300 gpm range, may include sites at which more than 300 gpm can be obtained. In all parts of the aquifer system are local horizontal and vertical changes in the texture of the stratified drift and changes in aquifer thickness. These changes may result in lower or higher transmissivity and yield than indicated on the map. Test drilling is needed, therefore, to locate the most productive parts of the aquifer. Proximity to sources of pollution, such as dumps and sewage-disposal works, and proximity to the brackish or saline water of the Taunton River estuary must also be considered in locating sites for wells. Urban development and economic factors may eliminate all or parts of the areas favorable for prospecting for ground water.

Till has such a low transmissivity that it is not considered an aquifer. However, locally, wells in till are used to provide domestic supplies. Bedrock aquifers are considered separately (sheet 3).

SCALE 1:48 000

1 ½ 0 1 2 3 MILES

1 .5 0 1 2 3 KILOMETERS

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

Base maps from U.S. Geological Survey 1:24,000 as shown by letters on map and list below:

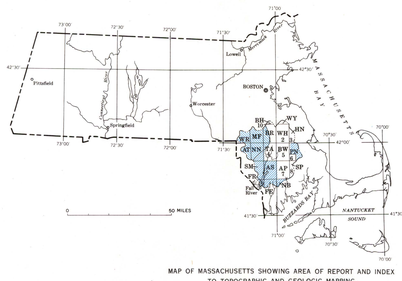
AF Assawompset Pond, 1965
AS Assonet, 1962
AT Attleboro, 1949
BH Blue Hills, 1956
BW Bridgewater, 1962
BR Brockton, 1962
FR Fall River, 1949
FE Fall River East, 1963
HN Hanover, 1962
MF Mansfield, 1964
NB New Bedford North, 1964
NN Norton, 1964
PN Plympton, 1962
SP Sulpatuit Pond, 1962
SM Somerset, 1949
TA Taunton, 1962
WY Weymouth, 1956
WH Whitman, 1962
WE Wrentham, 1964

Reports and maps with dates in parentheses listed on sheet 2:

Williams, J. R., assisted by R. E. Willey, 1966-67

Williams, (1968)

1 Chute (1956a, 1956b)
2 Petersen and Shaw (1967)
3 Shaw and Petersen (1967)
4 Hartshorn (1967)
5 Hartshorn (1965)
6 Conroy, A. R., unpub. map in files of U.S. Geol. Survey; J. R. Williams, 1966-67
7 Koteff (1964)
8 Waight, J. M., unpub. map in files of U.S. Geol. Survey; J. R. Williams, 1966-67
9 Allen and Ryan (1950)
10 Chute (1965)
General bedrock geology: Shaler, Woodworth, Foerste (1899)



MAP OF MASSACHUSETTS SHOWING AREA OF REPORT AND INDEX TO TOPOGRAPHIC AND GEOLOGIC MAPPING

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D.C.—1973—W71345

WATER RESOURCES OF THE TAUNTON RIVER BASIN, SOUTHEASTERN MASSACHUSETTS

By
J. R. Williams, D. F. Farrell, and R. E. Willey

1973