

Approved 8/2/49
for open file & water
resources Bulletin

Water-level measurements in an observation well found to be
useful in determining soil-moisture conditions.

Prepared by P. E. Dennis
July 1949

"By measuring the water levels in that well during the spring decline, I can tell which fields in the neighborhood are dry enough for cultivation and when they are too dry for planting", stated Mr. Max A. Jensen, our local observer who had measured U. S. observation well No. 52 near Wyndmere, Richland County, North Dakota, for a period of about 10 years. Mr. Jensen developed an interest in the significance of the water-level fluctuations in the well very early in the period of his employment and he soon observed a relation between the conditions of the fields with respect to their contained moisture and the water level in the well. To us this was a new and interesting application of water-level information, and it appears that it might have economic significance in areas where the water table is close enough to the land surface to affect the soil-moisture conditions.

The well near Wyndmere is located in the south-central part of the Shoyenne delta of glacial Lake Agassiz. The soil is composed chiefly of fine sand and silt and the depth to the water table at the site of the well varies from 1 to 9 feet below the land surface. The land surface is gently undulating and the water table is deeper beneath the hills and shallower in the bottoms of the depressions than it is at the well site. Thus, the fields on the higher ground become dry enough for cultivation when the water level in the well is between 1 and 2 feet below the surface, whereas the fields on lower land are dry enough for cultivation only when the water level in the well has declined to about 4 feet or more below the surface.

There is virtually no runoff from the area, the sandy surface absorbing all the precipitation. Heavy summer and fall rains may cause the water table to rise close enough to the surface to affect soil-moisture conditions. Water levels in the observation well have proved to be an index to soil-moisture conditions at these times also.