IOWA GEOLOGICAL SURVEY
In Cooperation with U. S. Geological Survey
RECORD OF WELL

L 6993

Location:

Town: Webster City (NE) (SW): County Hamilton

SW SE SE sec. 32 T. 89 N., R. 25 E. W. _____ Twp.

Well name and number Webster City City Well (1954)

Owner City of Webster City Address 600' E. of old

Tenant _____ Address Deep well

Contractor Thorpe Well Co. Address _____

Drillers _____

Drilling dates _____

Well data:

Altitudes: Drilling curb _____ feet; Land surface 1025+ feet

_____

Determined by _____

Topographic position _____

Total depth: Reported 2005' feet, Measured _____ feet

_____

Drilling method _____

Hole and casing data _____

_____

_____

_____

_____

Original depth to water _____ ft. above below _____ Date _____

Source of data _____

Sources of water: Principal _____

Others _____

Production Data

Date				
Static water level				
Measuring point				
Pumping water level				
Yield (g. p. m.)				
Duration of pumping				
Specific capacity				

Pump Data

Type pump _____ Column diameter and length _____

Cylinder or bowls diameter and length _____

Suction pipe _____ Airline _____

Power _____ Production _____ g. p. m. for _____ hours per day

Use of water _____

Dissolved constituents and properties (in parts per million except as indicated)

Date sampled				
Sampled by				
Silica (SiO_2)				
Iron (Fe)				
Manganese (Mn)				
Calcium (Ca)				
Magnesium (Mg)				
Potassium (K)				
Sodium (Na)				
Carbonate (CO_3)				
Bicarbonate (HCO_3)				
Sulfate (SO_4)				
Chloride (Cl)				
Fluoride (F)				
Nitrate (NO_3)				
Dissolved solids				
Hardness (as $CaCO_3$)				
Total				
Grains per gallon				
Noncarbonate				
Alkalinity (as $CaCO_3$)				
pH				
Specific conductance (micromhos at 25°C)				
Temperature (°F)				
Analysis No.				

Laboratory Data EG1-3,4,5,6

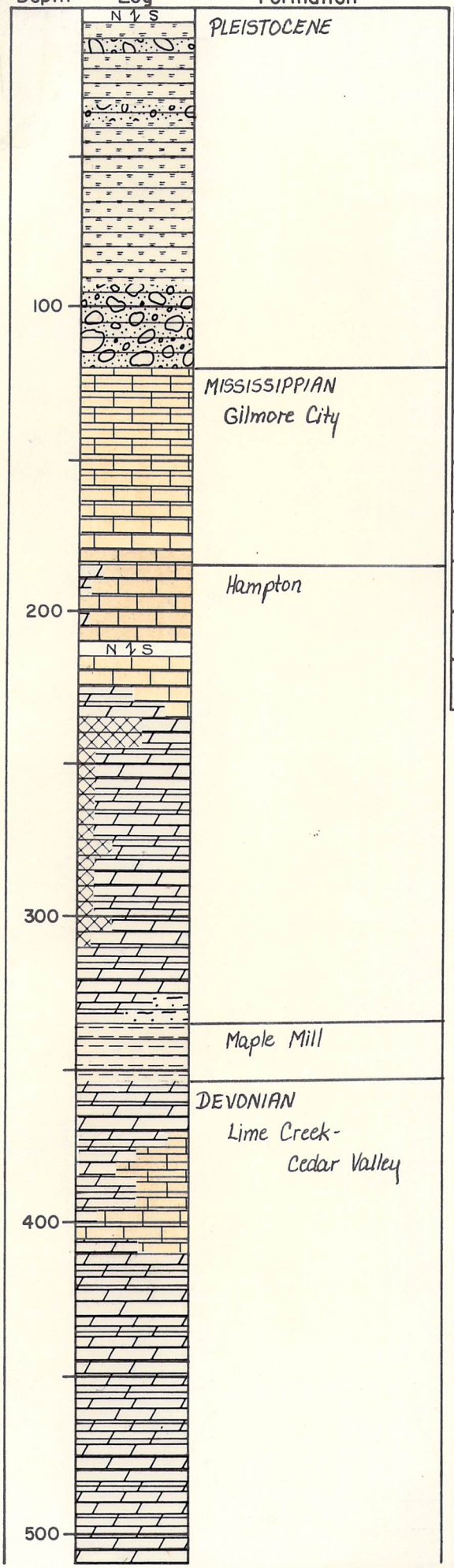
Well No. W 699? Sample range 1980 No. of samples 383

No. of dupls. and cond. 383 Good Washed range 115

Samples prepared by Wingert, Cahill, Gruver, Hudson Date 2/22/55

Logged by NORTHUP Date 3/28-31/56

Correlations by NORTHUP Date 3/28-31/56

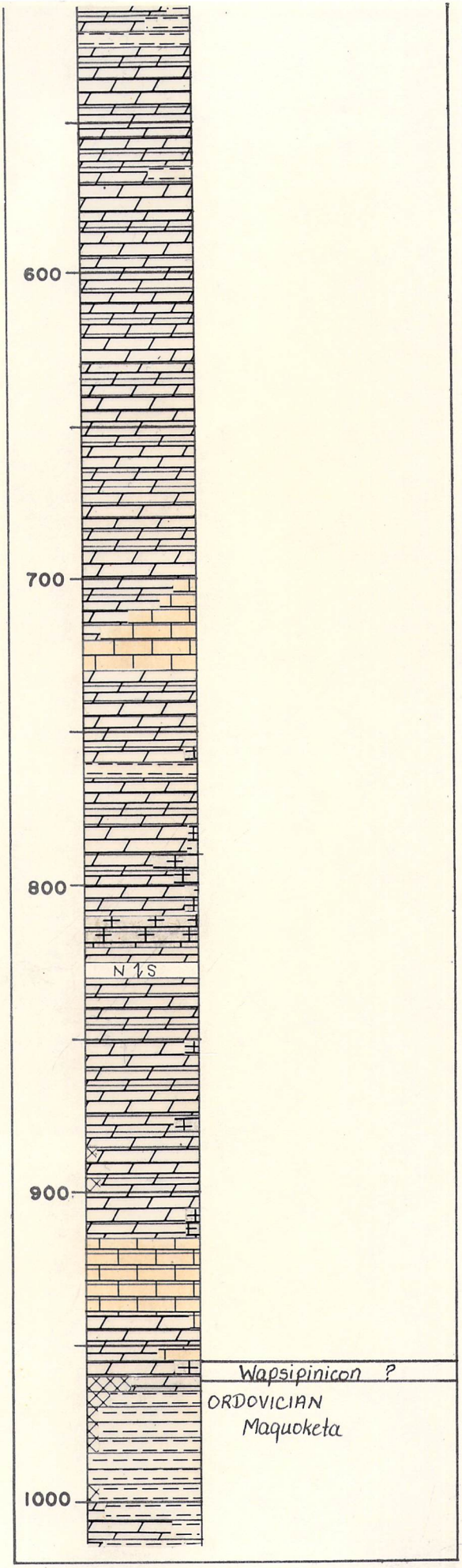


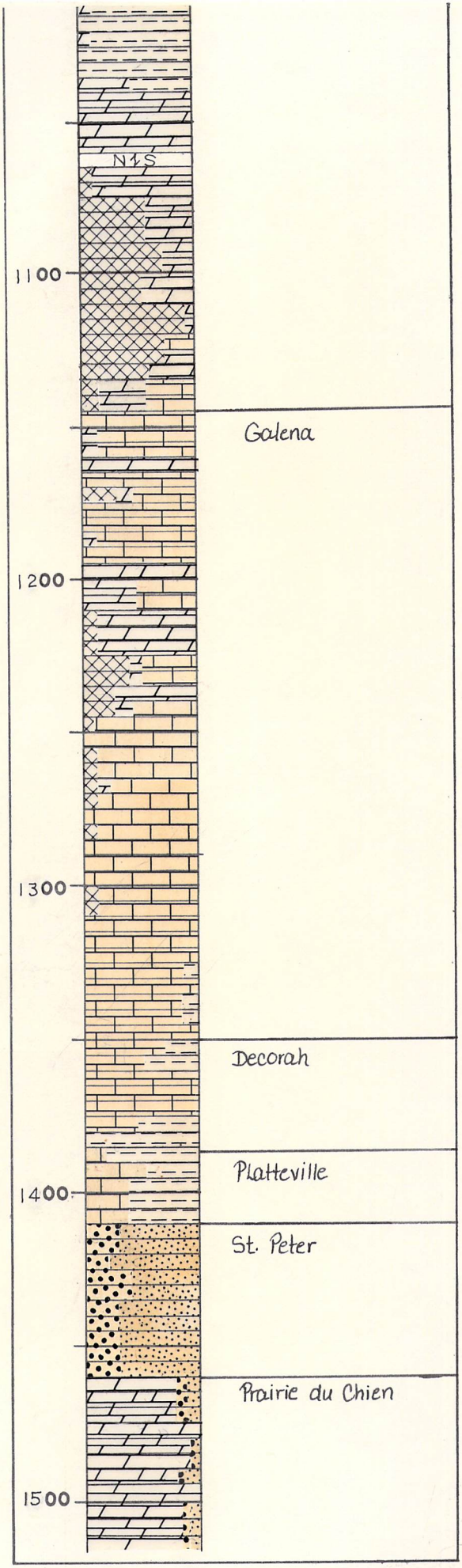
IOWA GEOLOGICAL SURVEY
In Cooperation with
U. S. GEOLOGICAL SURVEY
Iowa City, Iowa

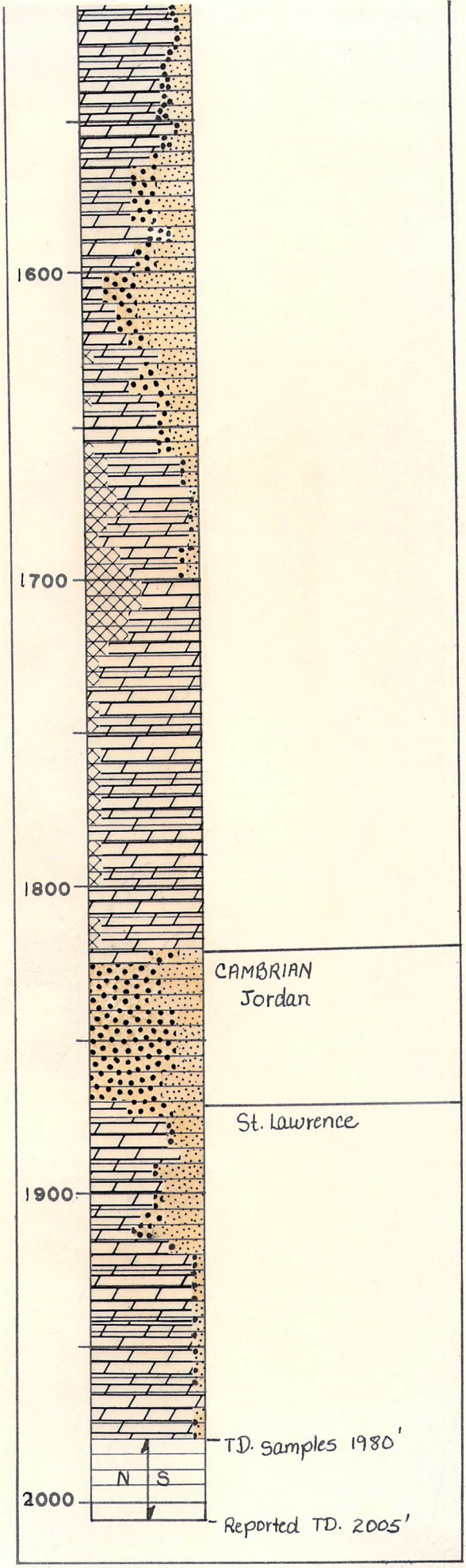
Name (1954) Webster City City Well	State Iowa
Town Webster City County Hamilton	Loc. SE SE SE (600' E. of old deep well)
Contractor Thorpe Well Co. Driller	Sec. 32
Drilling Dates April- Sept. 1954	T. 89 N., R. 25 W.
Casing Record 30" & 12" casing to 1446'	
S.W.L. G.P.M. D.D.	
Remarks Capable of 1500 gpm.	Elev. 1025' ±
	T.D. 2005'
Logged By Northup March 28-31, 1955	I.G.S. No. W-6993

Explanation of Colors

- Soil
- Loess, Silt or Siltstone
- Drift
- Sand & Gravel
- Shale
- Sandstone
- Limestone
- Dolomite
- Chert
- Gypsum or Anhydrite
- N ↓ S No Samples


600
700
800
N 1S
900
1000
Wapsipinicon ?
ORDOVICIAN
Maquoketa


N&S
1100
Galena
1200
1300
Decorah
Platteville
1400
St. Peter
Prairie du Chien
1500


1600
1700
1800
1900
2000
CAMBRIAN
Jordan
St. Lawrence
TD. samples 1980'
N
S
Reported TD. 2005'

MAY 13 1954

They Hope There's No Quartz

Workmen and their specialized machinery are well started on the job of digging the new Webster City water well near the municipal water plant, but still have more than a quarter of a mile of digging before the proposed 2000-foot depth is reached.

The 6½-ton bit was 162 feet below the ground Monday morning, digging in limestone.

The bouncing drill equipment has been running 24 hours a day for more than two weeks, driving the bit deeper into the ground.

Guy Elom, head driller, and Omer Sandven make up the afternoon crew of the Thorpe well company of Des Moines, and J.R. West and William White make up the morning crew. They work 12-hour shifts and change at noon and midnight.

Depending on what lies below the limestone strata they are now in, the job will take several months to complete.

The bit is lowered by 1½-inch steel cable, which is attached to the drill bit by a threaded cone. The cone-shaped joint, West explained, provides a stronger joint and insures all threads are holding tight, aiding in keeping the bit attached.

As the chisel-shaped points of the bit become dull another tool is attached and the dull bit sharpened. An oil forge is built near the drilling rig and the bit hoisted into the fire. Clay and brick are applied around the bit to seal in the heat. When the point of the bit is red-hot it is pulled from the forge and hammered to a sharp edge.

The cable leading from the bit coupling goes over the top of the 72-foot tower to winches that are powered by a diesel engine. The bit is hoisted 32 inches, then dropped to the bottom of the hole to cut away rock.

When the bit has dug about five feet it is pulled from the well and a bail bucket dropped in to remove waste material. The hole is filled within 20 feet of the top with water. As the bailer sinks, a door on its bottom is open. When the bucket is hauled up the valve at the bottom closes and mud and rock are lifted out of the hole.

West said that before the well is finished, there will have been roughly $125,000 worth of equipment brought in and used by the company. The drill bits cost 45 cents a pound, and the 2,000 feet of cable is valued at 80 cents a foot. In addition the equipment includes the drill rig and heavy machine tools.

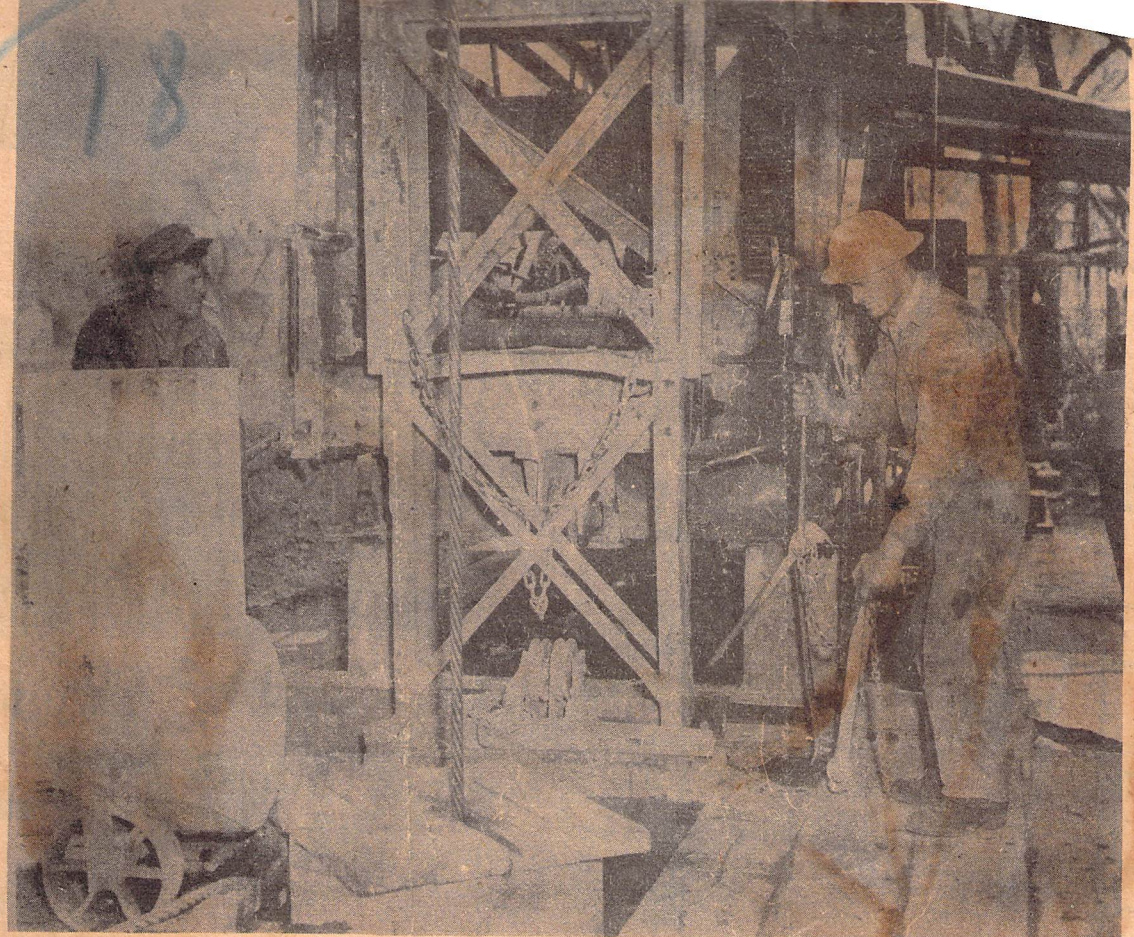
As the bit is picked up and dropped 40 times a minute, the twist in the suspending cable tends to turn it in the hole. Thus as the bit strikes bottom it loosens the rock in an even, round hole. The hole is 26 inches in diameter at the top. As the hole is dug deeper, smaller bits will be used.

Quartz, according to West, is the toughest digging and in quartz formations deep under the ground only a few inches a day may be dug. West doesn't expect to hit much quartz in the 2000-foot Webster City well.

The bit was temporarily stuck by falling rock Monday morning and workmen were gingerly trying to loosen it without losing the bit or breaking the cable.

When a bit is lost down the hole a tedious fishing process begins until it can be snagged and pulled out. If the cable breaks, it may snarl and wind around the inside of the hole and a special grappling hook is used to entangle the broken cable and haul it up.

DRILL CITY WELL--Harold Hanna and J.R. West stand back as the drill comes swinging out of the well the men are digging for the city. A depth of 1,416 feet has been reached using a inch and quarter drill and a 150 horse power caterpillar diesel. (Graphic photo)



WELL-DIGGERS---J. R. West (right) and William White make up one of the crews busy digging a new water well for Webster City near the municipal water plant. (See story on page 1) West and White work a 12-hour shift from midnight to noon, and another crew works the other 12 hours. The hole was down about 160 feet Monday, with a long way to go before the well reaches its probable 2,000-foot depth. The workers operate controls which raise and lower [illegible] bit attached to 1½-inch steel cable. (Graphic photo)

SEP 29 1954

Well Digging Is Completed; Await Testing

Drillers Get Down to Sandstone Strata at 2,005-Foot Mark

Drilling of Webster City's new deep well has halted at a depth of 2,005 feet and preparations are now being made for testing the quantity and quality of the water available.

City Manager C. C. McCarthy said the drillers have gone through the Jordan sandstone formation where large quantities of water are expected to be available. The well is cased down to 1,500 feet.

Will Test Well

Thorpe Well company workers were removing their heavy drilling rig today and taking it to another job. However, the same company will move in a test pump for determining the quantity of water available.

It is hoped to draw 1,500 gallons a minute from the well. The other deep well in service pumps about 700 gallons a minute. It taps a different sandstone formation at about 1,800 feet.

Drillers reported they believed there was lots of water where they drilled. If the sandstone formation is too tight to allow as much water as expected the opening may be enlarged by "shooting" it with nitro glycerine.

If no further development of the well is needed the pumping equipment will be purchased and construction of a pump house and pipe line to the water plant started, McCarthy said. The pump house will be built above the high water level set by the June floods.

Oct. 1 Completion Date

Oct. 1 was the completion date first set by Thorpe, but the floods held up drilling for several weeks and a mechanical breakdown caused another delay. However the city manager said, they have made good progress in spite of the delays.

The contract awarded to the Thorpe company calls for a price of $50,850. Digging of the well was authorized by the city council in January, on the recommendation of the city manager who explained that a new well was the most pressing need in the water system which operates at full capacity during heavy demand periods.