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## Dundy County Test Hole Logs

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# **Dundy County Test-Hole Logs**

**Duane A. Eversoll**

**Nebraska Water Survey  
Test-Hole Report No. 29**

**Conservation and Survey Division  
School of Natural Resources  
Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln**

**Compiled from State-wide Test-hole Database on May 2007**

## UNIVERSITY OF NEBRASKA-LINCOLN CREDITS

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Publication and price lists are furnished upon request.

## **ACKNOWLEDGMENTS**

The authors gratefully acknowledge the contributions of the following Conservation and Survey Division personnel for production of this test-hole log book: Duane Mohlman and Rod Vasek for their computer assistance, Ann Harding for typing some of the logs, and Jerry Leach for drafting the illustrations.

## INTRODUCTION

In 1930, the Conservation and Survey Division of the University of Nebraska and the U.S. Geological Survey began a program of cooperative groundwater studies in Nebraska. Since then test drilling by use of rotary drilling equipment has been an integral part of that program. This report contains logs of all the test holes drilled in the county under the program as well as those drilled by the Conservation and Survey Division with financial assistance from other government agencies.

The map in this report shows the location of all test holes drilled in the county since 1930.

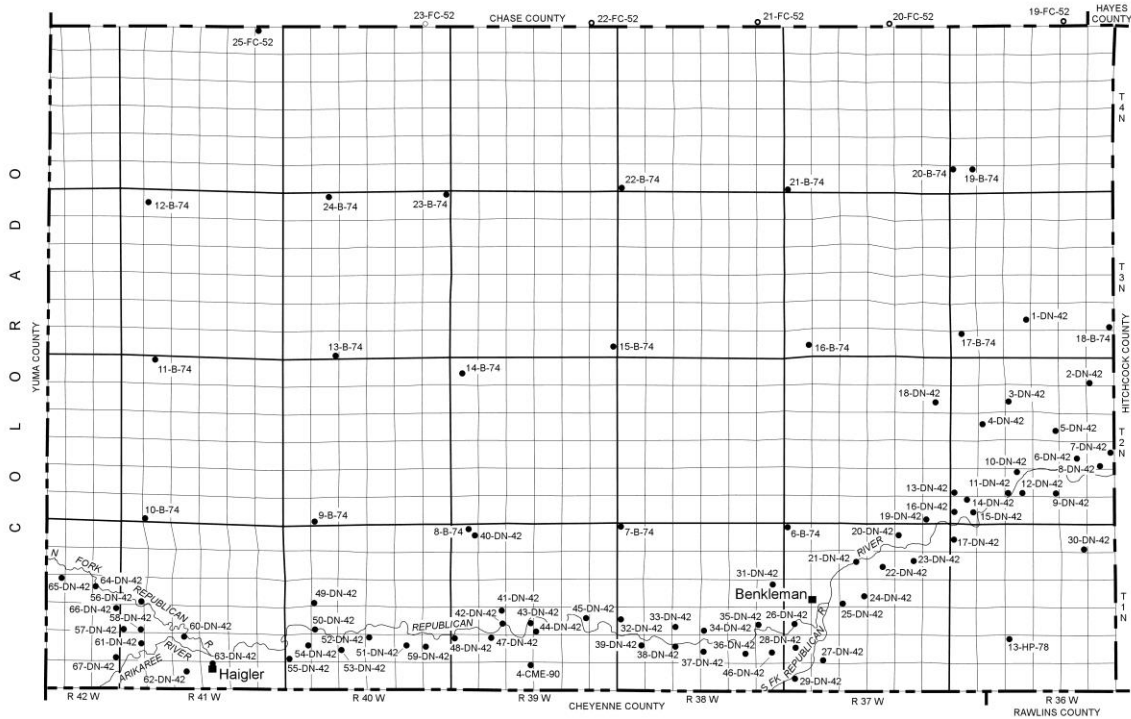
Present techniques of test-hole logging and sampling include use of drilling mud suitable to drilling conditions, timing by stopwatch of the drilling of each 5-foot increment of depth, and removal of all cuttings from the test hole at intervals of 5 feet or less. During the drilling of the hole, cuttings from each interval are examined immediately; samples representing each 5-foot interval and each recognizable change in material are retained. After samples are washed, they are described lithologically and the color is evaluated by comparison with standard color charts. The samples then are dried, stored, and cataloged. Beginning in September 1951, the test holes have been logged electrically. All samples are processed and kept on open file in the offices of Conservation and Survey Division, 113 Nebraska Hall, University of Nebraska-Lincoln, 68588.

This publication is one of a series being issued to make more readily available the record of test holes drilled since 1930. The series of publications is made on a county basis and includes, with some exceptions, logs of all test holes drilled in each of the counties. The logs have not been reviewed for conformance with editorial standards and nomenclature.

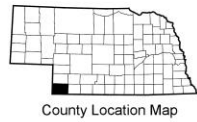
The method whereby the altitude of the land surface at test-hole sites was determined is indicated in the heading of each log, as follows: a = altimeter, h = hand leveling, i = spirit leveling, t = estimated from topographic map.

The test-hole records accurately reflect subsurface conditions only at the locations where the test holes were drilled. Interpretive data reflecting probable subsurface conditions between test-holes are being compiled for publication in county reports and are available for inspection in the office of the Conservation and Survey Division.

Each test hole is identified by a number assigned in the field (for example #3-B-67, #41-79), and most are also identified by a number indicating its location within the land divisions of the U.S. Bureau of Land Management's survey of Nebraska. Location numbers of test holes east of the 6th principal meridian, that passes through Columbus in a north-south direction, are preceded by the capital letter A; those west of the principal meridian have no preceding letter. The first numeral indicates the township, the second the range, and the third the section. As shown in figure 1, the letters that follow the section number indicate the location of the test hole within the section, the first letter indicating the quarter section and the second letter indicating the quarter-quarter section. The letters A, B, C, and D are applied in counterclockwise direction beginning with A in the northeast quadrant. The last numeral is the serial number of the test hole within the quarter-quarter section. No number is shown unless more than one test hole is within the given quarter-quarter section.



- Test hole description published in this report
- Test hole description published in other reports



# DUNDY

Figure 1. Test-hole location map for Dundy County.

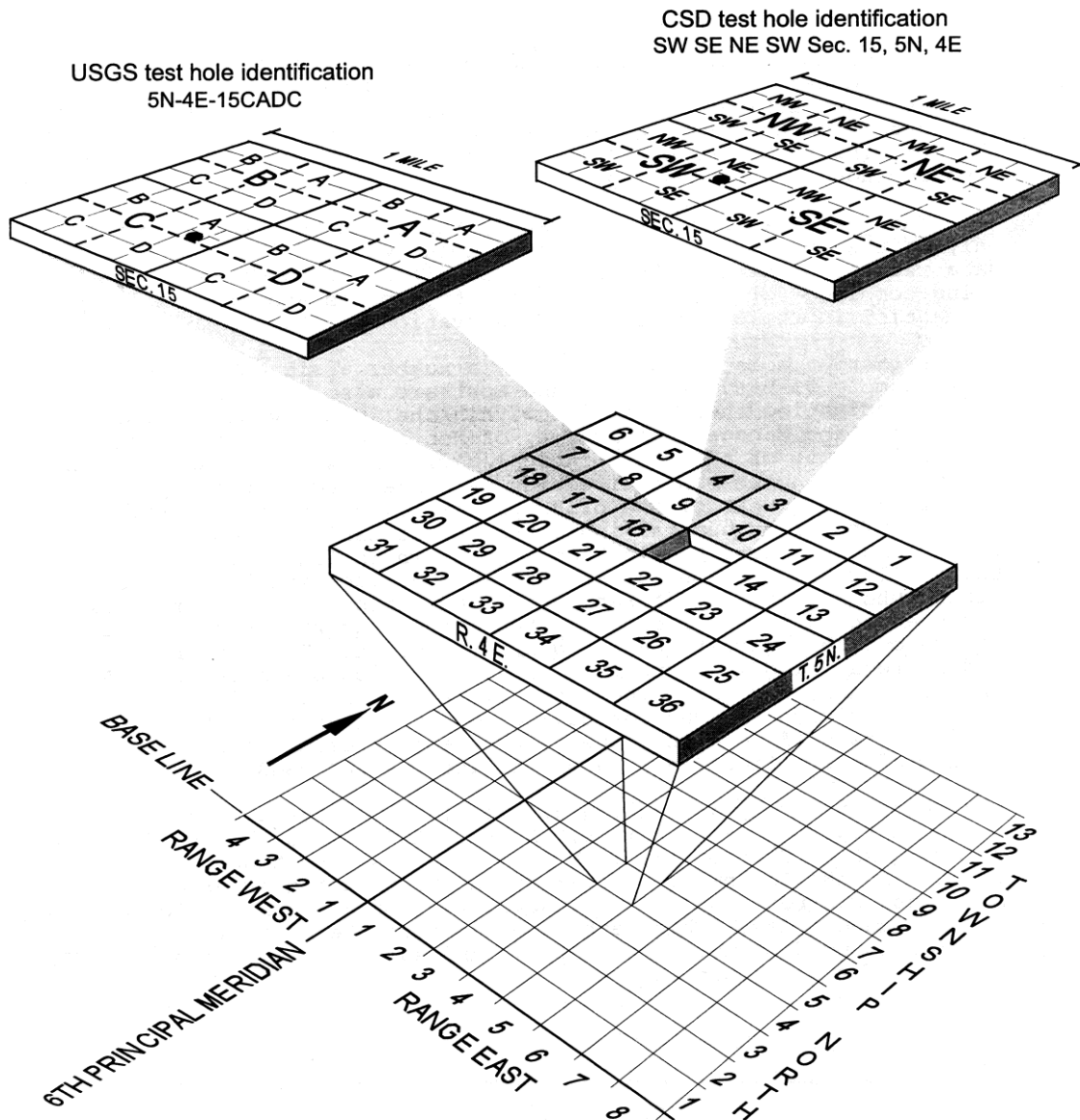


Figure 2. System for identifying test-hole location by legal description.

**Dundy County  
Test-hole Table of Contents**

**Test-hole Number**

**Page**

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**Test-hole No. 10-B-74  
(2N-41W-32CCCC)  
Dundy County**

**Legal Description:** T2N, R41W, Sec 32, SW SW SW SW  
**Footages from Section Lines:** North 8.0 ft; East 90.0 ft  
**Latitude:** 40.090618 [40° 5' 26.225"]  
**Longitude:** -101.985423 [-102° 59' 7.523"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Haigler  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3465.0 ft  
**Source Elev:** Unknown  
**Depth to Water:** 36.2  
**Geophysical Log(s):** Yes  
 Note: Recorder: Goeke

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Sand, very fine to medium, slightly silty and clayey, reddish brown to light brown gray.....	0.0	14.5
Silt, slightly clayey, sandy, some shells, some calcareous zones, very pale brown to 20 feet then grayish pale brown.....	14.5	25.0
Note: Possible soil between 14.5 and 20 feet		
Sand, very fine to medium, trace coarse, silty, slightly silty with some reworked sandstone and limy below 35 feet, pale brown.....	25.0	45.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Silt, very sandy, very fine to fine, moderately clayey, some medium limy sand below 50 feet, calcareous, pale brown to 50 feet then white.....	45.0	52.0
Sand and gravel, fine sand to medium gravel, thin silty clay layers 55.5 to 56 feet and 62.8 to 63.2 feet.....	52.0	64.2
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, weathered and yellowish pale brown, some iron staining, slightly calcareous, dark gray black below 86 feet.....	64.2	90.0

**Test-hole No. 11-B-74  
(2N-41W-5BAAA)  
Dundy County**

**Legal Description:** T2N, R41W, Sec 5, NW NE NE NE  
**Footages from Section Lines:** South 125.0 ft; East 2624.0 ft  
**Latitude:** 40.176881 [40° 10' 36.77"]  
**Longitude:** -101.977227 [-102° 58' 38.018"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Haigler NW  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3510.0 ft  
**Source Elev:** Estimated from Map  
**Depth to Water:** 24.25'  
**Geophysical Log(s):** Yes  
 Note: Recorder: Goeke

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Road fill, silt, sand and clay, some gravel and rock.	0.0	1.0
Topsoil, silt, some very fine to medium sand, dark brownish gray.....	1.0	4.8
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Silt, clayey some very fine to fine sand, limy areas, rare ash shards between 11 and 15 feet, some manganese staining, pale brown to white, light brown below 8.8 feet, limy nodules below 21.5 feet.	4.8	23.5
Silt, sandy, very fine to fine, some coarse gravel grains, very clayey and limy, white.....	23.5	27.6
Sand and gravel, fine sand to coarse gravel,.....	27.6	30.0
Silt, sandy very fine to fine, slightly clayey, light brownish olive to reddish brown.....	30.0	32.0
Silt, very sandy very fine to medium, slightly clayey, interbedded with silty very fine sand, very silty and clayey between 46 and 58 feet, occassional rootlets,.....	32.0	60.0
Sandstone, very fine to fine, calcareous, some rootlets, pale brown to white.....	60.0	68.0
Sand, fine to medium trace fine gravel, slightly silty and clayey, pale brown to white.....	68.0	74.0
Silt, very sandy, interbedded with very fine to medium sand, some thin calcareous sandstone lenses, occassional ash shards and siliceous rootlets, light brown.....	74.0	84.0
Sand, very fine to coarse, some medium to coarse gravel below 90 feet, reddish.....	84.0	103.0
Silt, very sandy, interbedded with fine to medium sandstone, reddish brown to 112 feet then clayey and grayish green.....	103.0	120.0
Sandstone, very fine to fine, interbedded with very fine to fine silty sand, limy areas, reddish brown.	120.0	152.0

Silt, clayey, slightly sandy, calcareous, light greenish olive to white.....	152.0	160.0
Sand, very fine to medium, some coarse grains, interbedded with fine sandstone, few thin claystone lenses, light gray to white.....	160.0	186.0
Sand, very fine to coarse some medium to coarse gravel, reddish.....	186.0	192.5
Silt, clayey and sandy, slightly calcareous, some thin fine sandstone lenses, pale brown.....	192.5	202.5
Silt, clayey and sandy, some calcareous siltstone lenses, pale brown.....	202.5	216.0
Sand, very fine to coarse interbedded with sandstone.	216.0	222.0
Sand and gravel, fine sand to very coarse gravel.....	222.0	229.5
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay weathered and yellowish brown and gray, some iron staining, dark grayish black below 237.5 feet.....	229.5	240.0

**Test-hole No. 12-B-74  
(3N-41W-5BCBC)  
Dundy County**

**Legal Description:** T3N, R41W, Sec 5, NW SW NW SW  
**Footages from Section Lines:** South 1800.0 ft; East 25.0 ft  
**Latitude:** 40.260038 [40° 15' 36.138"]  
**Longitude:** -101.986054 [-102° 59' 9.795"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Reservoir Lake SW  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3530.0 ft  
**Source Elev:** Estimated from Map  
**Depth to Water:** 14.84  
**Geophysical Log(s):** Yes  
 Note: Recorder: Goeke

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Topsoil, silt, sandy, very fine to medium, dark brown.....	0.0	2.5
Sand, silty, very fine to medium trace of coarse, brown.....	2.5	18.0
Silt, sandy, very fine to fine, slightly clayey, light brown.....	18.0	22.0
Sand, fine to very coarse, silty lenses below 26 feet, slightly silty and fine to medium with a trace of coarse below 34 feet. grayish brown.....	22.0	40.3
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Silt, clayey, slightly sandy. limy, interbedded fine to very coarse sand lenses, light grayish white to 50 feet then pale brown, reddish tint below 55 feet, trace ash shards between 55 and 59 feet, very limy below 56.5 feet.....	40.3	62.0
Sandstone, very fine to medium, limy lenses, some rootlet and cemented lenses with manganese staining, pale brown to light brown.....	62.0	80.0
Silt, clayey, some very fine sand, light gray to white.....	80.0	86.5
Sand, very fine to fine, some medium, silty and limy, pale brown.....	86.5	91.0
Sandstone, very fine to coarse, some medium to very coarse sand, few rootlets, limy, very silty between 97 and 99 feet with some manganese staining, light brown.....	91.0	114.0
Silt, slightly clayey, thin fine sandstone to siltstone lenses, slightly calcareous, reddish brown.....	114.0	122.0
Sandstone, very fine to coarse, silty and limy, reddish light brown.....	122.0	138.0
Sand and gravel, fine sand to very coarse		

gravel, slightly silty with some fine to coarse sandstone between 144 and 150 feet.....	138.0	156.0
Siltstone, some very fine sandstone, pale brown.....	156.0	164.0
Sandstone, very fine to medium, some very fine to medium sand and rootlets, reddish tint.....	164.0	176.0
Sand, very fine to coarse, interbedded fine to coarse sandstone, limy with some cemented lenses..	176.0	195.0
Sand and gravel, fine sand to coarse gravel, some limy sandstone lenses.....	195.0	212.0
Silt, very sandy very fine to fine, clayey, very calcareous. light grayish white.....	212.0	216.0
Siltstone, some very fine to fine sandstone lenses, very calcareous, some siliceous cementation below 228 feet and sandy, very fine to fine below 234 feet.....	216.0	243.0
Silt, very clayey, slightly calcareous, reddish brown.....	243.0	249.0
Sandstone, very fine to fine, some interbedded very fine to fine sand.....	249.0	260.0
Silt, clayey, some very fine sand, light grayish olive.....	260.0	264.0
Siltstone, some interbedded slightly clayey silt, light grayish olive.....	264.0	280.0
Sand, very fine to medium, limy lenses, reddish brown.....	280.0	285.0
Sand and gravel, fine sand to coarse gravel.....	285.0	301.0
Sand, very fine to medium, very silty lenses.....	301.0	312.0
Sand and gravel, fine sand to very coarse gravel.....	312.0	321.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, weathered yellowish light brown with some iron staining, light gray to black below 332..	321.0	340.0

**Test-hole No. 13-B-74  
(3N-40W-32DDDA)  
Dundy County**

**Legal Description:** T3N, R40W, Sec 32, SE SE SE NE  
**Footages from Section Lines:** North 456.0 ft; West 8.0 ft  
**Latitude:** 40.177049 [40° 10' 37.378"]  
**Longitude:** -101.853018 [-102° 51' 10.863"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Haigler NE  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3425.0 ft  
**Source Elev:** Estimated from Map  
**Depth to Water:** 44  
**Geophysical Log(s):** Yes  
 Note: Recorder: Goeke, Neale

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Roadfill, silt, sandy some limy silty sand, dark brown.....	0.0	1.0
Sand, very fine to medium, silty, brown light yellowish brown below 16 feet.....	1.0	17.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Silt, clayey, some very fine to fine sand, very limy, some caliche and marl lenses.....	17.5	28.0
Sandstone, interbedded with very fine to medium sand, some coarse, very limy, reddish brown to white.....	28.0	34.0
Silt, clayey, some very fine sand and interbedded very fine to fine sandstone, very limy, cemented between 42.6 and 42.8 feet, pale brown. reddish tint below 41 feet then pale reddish white.....	34.0	50.0
Sandstone, very fine to medium. limy, scarce hackberry seeds, light pale brown to white.....	50.0	72.0
Silt, clayey, some very fine sand. pale brown.....	72.0	76.0
Sand and gravel, fine sand to very coarse gravel.....	76.0	84.0
Silt, clayey, some very fine sand with scattered thin fine sandstone lenses, light brown to reddish brown.....	84.0	92.0
Sandstone, very fine to medium interbedded with fine to medium sand, some limy lenses, very pale brown to white.....	92.0	122.0
Sand, very fine to medium, some interbedded very fine to medium sandstone, limy, pale brown.....	122.0	150.0
Sand and gravel, coarse sand to very coarse gravel...	150.0	153.0
Sandstone, very fine to medium, limy, light grayish white.....	153.0	160.0
Silt, slightly clayey, some very fine to fine sand, limy lenses with limestone lense from 179.5 to 179.9 feet and from 187 to 187.2 feet, pale brown		

to white.....	160.0	205.0
Note: Slow from 177, faster 177 to 179.5 then slow to 180		
Sand and gravel, medium sand to very coarse gravel, scattered thin fine to coarse sandstone lenses.....	205.0	216.0
Sandstone, fine to very coarse with much sand and some gravel grains, very silty 217 to 219 feet, pale brown to white.....	216.0	222.0
Silt, interbedded with very fine to fine sand, very fine to medium sandstone lenses between 227 and 230 feet, olive to light grayish white.....	222.0	232.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, some iron staining, weathered yellowish brown to 238 then light gray, black below 240.....	232.0	250.0

**Test-hole No. 13-HP-78  
(1N-36W-28BBBC)  
Dundy County**

**Legal Description:** T1N, R36W, Sec 28, NW NW NW SW  
**Footages from Section Lines:** South 710.0 ft; East 28.0 ft  
**Latitude:** 40.030131 [40° 1' 48.473"]  
**Longitude:** -101.398595 [-102° 23' 54.943"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3224.0 ft  
**Source Elev:** Estimated from Map  
**Depth to Water:** Unknown  
**Geophysical Log(s):** Yes  
**Note:** Recorder: L. Kellison

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Topsoil, silt, slightly clayey, medium brown gray....	0.0	3.0
Silt, slightly clayey, some very fine sand, light brown gray.....	3.0	8.0
Silt, slightly sandy, very fine to fine, slightly clayey, light yellowish brown.....	8.0	10.0
Silt, slightly sandy, very fine, sandier 28 to 31 ft, some magnetite grains, light yellowish brown...	10.0	47.0
Sand, very fine to fine, very silty.....	47.0	51.0
Silt, slightly sandy, very fine, magnetite grains, light yellowish brown.....	51.0	68.0
Silt, slightly clayey and sandy, very fine, magnetite grains, light yellowish brown with pinkish tint.....	68.0	77.0
Silt, sandy, very fine to fine, magnetite grains, light yellowish brown.....	77.0	87.0
Sand, very fine to medium, trace coarse, slightly silty, light brown.....	87.0	93.0
Silt, slightly sandy, very fine, limy and poorly consolidated, some magnetite, very pale brown.....	93.0	97.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Sand, fine to coarse, some fine to medium gravel, silty and limy, limestone lense 118 to 119.5 ft, very fine to medium and light yellowish brown below 125 ft.....	97.0	137.5
Sand, very fine to fine, few coarse grains.....	137.5	139.0
Clay, very silty, yellowish, very pale brown, greenish tint.....	139.0	157.5
Claystone, very pale brownish white.....	157.5	158.0
Sand, fine to medium, rare coarse grains, thin lenses of silty clay.....	158.0	166.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		



Clay, silty, yellow gray to light yellow brown.....	166.0	197.0
Shale, clay, dark gray.....	197.0	200.0

**Test-hole No. 14-B-74  
(2N-39W-6CBBB)  
Dundy County**

**Legal Description:** T2N, R39W, Sec 6, SW NW NW NW  
**Footages from Section Lines:** South 2436.0 ft; East 192.0 ft  
**Latitude:** 40.169134 [40° 10' 8.882"]  
**Longitude:** -101.776674 [-102° 46' 36.027"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Haigler NE  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3379.0 ft  
**Source Elev:** Estimated from Map  
**Depth to Water:** 52.41  
**Geophysical Log(s):** Yes  
 Note: Recorder: Goeke, Neale

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Sand, very fine to fine, very silty, dark brown to 3 feet then light brown.....	0.0	5.5
Sand, very fine to fine, very silty and slightly clayey, organic, dark brown.....	5.5	7.0
Note: Paleosol ?		
Silt, very sandy very fine to fine, light brown to pale brown.....	7.0	15.7
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Silt, very sandy very fine to fine, limy, pale brown to white.....	15.7	24.0
Sand and gravel, fine sand to very coarse gravel.....	24.0	30.0
Sandstone, very fine to coarse, very limy, some siltstone and limestone lenses, very pale brown....	30.0	37.0
Limestone, some opaline nodules, white.....	37.0	42.0
Siltstone, some very fine sand, very limy, reddish brown.....	42.0	55.0
Sandstone, very fine to medium, interbedded with very fine to medium sand lenses, light grayish white.....	55.0	76.0
Limestone, some siltstone and very fine sandstone, white.....	76.0	80.0
Silt, slightly clayey, some very fine to fine sand, reddish brown.....	80.0	82.0
Sand and gravel, fine sand to very coarse gravel.....	82.0	90.0
Sandstone, fine to coarse, silty, limy, light gray...	90.0	92.0
Sand and gravel, fine sand to medium gravel.....	92.0	100.0
Sandstone, very fine to medium. some fine to medium sand, limy with few rootlets, cemented between 112 and 114 feet, light olive to 110 feet then light grayish white.....	100.0	118.0
Silt, slightly clayey, slightly sandy, olive gray....	118.0	122.0
Sand, very fine to medium, silty, light gray.....	122.0	126.0

Sand, very fine, silty and slightly clayey, very silty below 135 feet, calcareous, grayish olive,...	126.0	142.0
Silt, very sandy, siltstone lenses between 142.7 and 143.0 feet and 144.8 to 144.9 feet, pale olive.....	142.0	150.0
Silt, some very fine to fine sand, slightly clayey, pale olive.....	150.0	159.0
Sand and gravel, fine sand to very coarse gravel, some thin sandstone lenses.....	159.0	199.0
Silt, sandy very fine to medium, slightly clayey, interbedded with fine to medium sand lenses and thin siltstones, pale olive.....	199.0	211.0
Sand and gravel, fine sand to very coarse gravel, rare reworked shale fragments.....	211.0	226.5
Silt, sandy, limy, pale brown.....	226.5	227.0
Sand and gravel, fine sand to coarse gravel with thin lenses of sandstone.....	227.0	233.5
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, some iron staining, slightly weathered and light gray to 240.8 feet then black,.....	233.5	250.0

**Test-hole No. 15-B-74  
(3N-39W-36DADA)  
Dundy County**

**Legal Description:** T3N, R39W, Sec 36, SE NE SE NE  
**Footages from Section Lines:** North 1650.0 ft; West 9.0 ft  
**Latitude:** 40.181870 [40° 10' 54.731"]  
**Longitude:** -101.663463 [-102° 39' 48.466"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Benkelman NW  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3323.0 ft  
**Source Elev:** Estimated from Map  
**Depth to Water:** Unknown  
**Geophysical Log(s):** Yes  
 Note: Recorder: Goeke, Neale

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Sand, very fine to fine, very silty, dark brown.....	0.0	2.0
Sand, very fine to fine, very silty, slightly clayey, light reddish brown.....	2.0	7.0
Sand, very fine to fine, slightly silty, brown reddish tint.....	7.0	13.0
Silt, very sandy very fine to fine, pale brown.....	13.0	22.0
Sand, very fine to fine, silty, silt lense 27 to 30 feet, very silty below 35 feet, pale brown.....	22.0	43.5
Sand, very fine to fine, some thin silt lense, light gray brown.....	43.5	54.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Silt, sandy fine to coarse, trace of fine to medium gravel, slightly clayey, some limy nodules,.....	54.5	57.0
Sand and gravel, fine sand to very coarse gravel.....	57.0	71.3
Sandstone, fine to very coarse, slightly silty, limy cemented lenses, some opaline cementation below 80 feet with limy manganese stained nodules, light gray to white.....	71.3	96.0
Silt, very sandy and limy, light gray.....	96.0	100.7
Sandstone, very fine to medium. slightly silty, light gray.....	100.7	109.0
Sand and gravel, fine sand to coarse gravel.....	109.0	114.0
Sandstone, fine to medium, few limy nodules, few siliceous rootlets between 120 and 125 feet, slightly cemented siltstone below 141.5 feet, pale brown to light gray.....	114.0	150.0
Sandstone, very fine to medium, very silty, grayish white.....	150.0	160.0
Sand and gravel, coarse sand to very coarse gravel, silty seam 170 to 173 feet.....	160.0	176.0
Silt, very sandy very fine to fine, pale brown.....	176.0	185.0
Sandstone, very fine to fine, silty, some limy		

lenses, pale brown.....	185.0	194.0
Note: Harder 191.5 to 191.7 and 193.0 to 193.3 feet		
Silt, sand very fine to fine, pale brown.....	194.0	204.0
Siltstone, some very fine to medium interbedded sand, silty, light brown to gray.....	204.0	207.0
Sand and gravel, fine sand to very coarse gravel, slightly cemented 209 to 210 feet, shale fragments 215 to 225 feet, silty between 223.5 and 225 feet and silty and clayey below 225 feet.....	207.0	227.0
Note: Slower below 223.5 feet		

**Cretaceous System - Upper Cretaceous Series - Montana Group:**

**Pierre Formation:**

Shale, clay, weathered yellowish brown with light gray and some iron staining to 230 feet then light gray, black below 245 feet.....	227.0	250.0
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**Test-hole No. 169-42  
(2N-36W-24ADCD)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 24, NE SE SW SE  
**Footages from Section Lines:** South 2600.0 ft; West 800.0 ft  
**Latitude:** 40.126196 [40° 7' 34.307"]  
**Longitude:** -101.327595 [-102° 19' 39.341"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max NE  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2856.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 6 feet, November 14, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Loam, sandy, dark.....	0.0	5.0
Clay, sandy, yellow.....	5.0	26.0
Gravel, fine, medium, coarse, and clay.....	26.0	36.0
Gravel, fine to medium.....	36.0	43.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	43.0	49.0

**Test-hole No. 16-B-74  
(3N-37W-31DAAA)  
Dundy County**

**Legal Description:** T3N, R37W, Sec 31, SE NE NE NE  
**Footages from Section Lines:** North 2534.0 ft; West 163.0 ft  
**Latitude:** 40.184843 [40° 11' 5.436"]  
**Longitude:** -101.530538 [-102° 31' 49.935"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Arrowhead Lake  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3195.0 ft  
**Source Elev:** Estimated from Map  
**Depth to Water:** 42.1  
**Geophysical Log(s):** Yes  
 Note: Recorder: Goeke, Neale

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Sand, very fine to fine, slightly silty and limy, light brownish gray.....	0.0	1.0
Sand, very fine to fine, silty, very pale brown,.....	1.0	6.0
Sand, very fine to fine, reddish brown.....	6.0	13.7
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Sandstone, very fine to fine, poorly consolidated, silty and limy, very pale brown to white.....	13.7	18.0
Sandstone, very fine to coarse, some sand fine to medium trace medium to coarse gravel, siliceous rootlets, some opaline fragments, some manganese staining, very pale brown.....	18.0	26.0
Sand and gravel, fine sand to very coarse gravel, interbedded with sandstone lenses.....	26.0	38.0
Silt, sandy very fine to fine, limy, light brown.....	38.0	43.0
Sandstone, very fine to medium, trace of fine to medium gravel, cemented lenses, limy, occasional siliceous rootlets with some opaline fragments, some thin siltstone lenses, pale brown to white....	43.0	60.0
Sandstone, very fine to fine, silty.....	60.0	66.0
Sandstone, very fine to medium trace of coarse, silty, interbedded with fine to medium sands, some cemented limy lenses, olive to pale brown to white.	66.0	110.0
Sandstone, very fine to medium, interbedded very fine to medium sand and siltstone lenses, silty, with lime cemented zones, scattered rootlets, pale brown to 120 feet then grayish white.....	110.0	155.0
Sand, very fine to medium trace of medium to coarse gravel.....	155.0	163.5
Sandstone, very fine to medium, very silty and limy, very pale brown.....	163.5	172.5
Sand and gravel, fine sand to very coarse gravel, some thin fine sandstone lenses, scattered shale		

fragments.....	172.5	179.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, weathered yellowish brown and gray with some iron staining to 191.9 feet then dark gray....	179.0	200.0



**Test-hole No. 170-42  
(2N-36W-24CDAD)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 24, SW SE NE SE  
**Footages from Section Lines:** North 700.0 ft; East 2250.0 ft  
**Latitude:** 40.120216 [40° 7' 12.778"]  
**Longitude:** -101.334425 [-102° 20' 3.929"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max SE  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2854.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 14 feet, November 14, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	22.0
Gravel, fine to medium.....	22.0	33.0
Sand and gravel, fine to medium gravel.....	33.0	36.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	36.0	42.0

**Test-hole No. 171-42  
(2N-36W-23DBBC)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 23, SE NW NW SW  
**Footages from Section Lines:** North 2050.0 ft; West 2600.0 ft  
**Latitude:** 40.124611 [40° 7' 28.601"]  
**Longitude:** -101.352329 [-102° 21' 8.383"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max SE  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2869.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 17 feet, November 14, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Loam, sandy, dark.....	0.0	10.0
Clay, sand, light.....	10.0	18.0
Gravel, fine, medium, coarse, and clay.....	18.0	28.0
Sand and gravel, fine, medium, coarse gravel.....	28.0	38.0
Sand and gravel, fine gravel.....	38.0	42.0
Gravel, fine, medium, coarse.....	42.0	48.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	48.0	53.0

**Test-hole No. 172-42  
(2N-36W-15DADD)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 15, SE NE SE SE  
**Footages from Section Lines:** North 1400.0 ft; West 9.0 ft  
**Latitude:** 40.137314 [40° 8' 14.331"]  
**Longitude:** -101.362384 [-102° 21' 44.583"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max NE  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2917.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 21 feet, November 14, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Loam, sandy, dark.....	0.0	10.0
Clay, sandy, yellow.....	10.0	49.0
Gravel, fine, medium, coarse, and clay.....	49.0	55.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	55.0	60.0

**Test-hole No. 173-42  
(2N-36W-28ABAB)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 28, NE NW NE NW  
**Footages from Section Lines:** South 200.0 ft; West 1700.0 ft  
**Latitude:** 40.115677 [40° 6' 56.439"]  
**Longitude:** -101.392032 [-102° 23' 31.313"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2879.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 12 feet, November 14, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	10.0
Clay, sandy, yellow, and gravel.....	10.0	21.0
Gravel, fine, medium, coarse, some clay.....	21.0	31.0
Gravel, fine, medium, coarse, some clay.....	31.0	33.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	33.0	39.0

**Test-hole No. 174-42  
(2N-36W-9CBBA)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 9, SW NW NW NE  
**Footages from Section Lines:** North 2300.0 ft; East 600.0 ft  
**Latitude:** 40.155411 [40° 9' 19.479"]  
**Longitude:** -101.396789 [-102° 23' 48.44"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Rock Canyon  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3083.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 97 feet, November 14, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, yellow, some sand.....	0.0	50.0
Clay, yellow.....	50.0	77.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Lime and clay, no detailed description recorded.....	77.0	97.0
Clay and sand, no detailed description recorded.....	97.0	106.0
Clay and lime fragments, no detailed description recorded.....	106.0	126.0
Sand, lime fragments and clay.....	126.0	138.0

**Test-hole No. 175-42  
(2N-36W-28CCCB)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 28, SW SW SW NW  
**Footages from Section Lines:** North 1200.0 ft; East 6.0 ft  
**Latitude:** 40.104865 [40° 6' 17.516"]  
**Longitude:** -101.398452 [-102° 23' 54.426"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2886.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 8 feet, November 14, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Loam, sandy, light and dark, some gravel.....	0.0	5.0
Clay, dark, some gravel.....	5.0	12.0
Sand and gravel, fine to medium gravel, some clay....	12.0	27.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	27.0	34.0

**Test-hole No. 176-42  
(2N-36W-28DCCC)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 28, SE SW SW SW  
**Footages from Section Lines:** North 6.0 ft; West 2550.0 ft  
**Latitude:** 40.104930 [40° 6' 17.749"]  
**Longitude:** -101.389444 [-102° 23' 21.999"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2887.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 15 feet, November 14, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	10.0
Clay, sandy, yellow, some gravel.....	10.0	15.0
Sand and gravel, fine, medium.....	15.0	35.0
Gravel, fine, medium, coarse.....	35.0	42.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	42.0	49.0

**Test-hole No. 177-42  
(2N-36W-27DDDD)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 27, SE SE SE SE  
**Footages from Section Lines:** North 63.0 ft; West 100.0 ft  
**Latitude:** 40.104512 [40° 6' 16.243"]  
**Longitude:** -101.362214 [-102° 21' 43.969"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max SE  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2867.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 5 feet, November 14, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Sand and gravel, no detailed description recorded....	0.0	9.0
Sand and gravel, fine to medium gravel.....	9.0	29.0
Gravel, fine to medium.....	29.0	33.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	33.0	39.0



**Test-hole No. 178-42  
(2N-36W-31ABAA)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 31, NE NW NE NE  
**Footages from Section Lines:** South 20.0 ft; West 1500.0 ft  
**Latitude:** 40.104228 [40° 6' 15.222"]  
**Longitude:** -101.423147 [-102° 25' 23.33"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2913.0 ft  
**Source Elev:** Unknown  
**Depth to Water:** 20 feet, November 10, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	10.0
Clay, sandy, dark.....	10.0	27.0
Sand and gravel, fine gravel, some clay.....	27.0	39.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	39.0	45.0

**Test-hole No. 179-42  
(2N-36W-30CCDC)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 30, SW SW SE SW  
**Footages from Section Lines:** North 6.0 ft; East 792.0 ft  
**Latitude:** 40.104833 [40° 6' 17.398"]  
**Longitude:** -101.433035 [-102° 25' 58.925"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2924.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 32 feet, November 10, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Loam, sandy, dark.....	0.0	9.0
Clay, sandy, yellow.....	9.0	38.0
Sand and gravel, fine gravel, some clay.....	38.0	48.0
Sand and gravel, fine to medium gravel.....	48.0	51.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	51.0	59.0

**Test-hole No. 17-B-74  
(3N-36W-31BAAC)  
Dundy County**

**Legal Description:** T3N, R36W, Sec 31, NW NE NE SW  
**Footages from Section Lines:** South 513.0 ft; East 2030.0 ft  
**Latitude:** 40.189580 [40° 11' 22.487"]  
**Longitude:** -101.428552 [-102° 25' 42.787"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Rock Canyon  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3222.0 ft  
**Source Elev:** Estimated from Map  
**Depth to Water:** 201.6  
**Geophysical Log(s):** No  
**Note:** Recorder: Goeke, Neale

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Roadfill, silt, slightly clayey and sandy, dark gray brown below 2.4 ft.....	0.0	3.5
Silt, sandy very fine to fine, yellowish brown, calcareous.....	3.5	10.0
Silt, very sandy very fine to fine, calcareous, light yellowish brown.....	10.0	70.0
Silt, slightly clayey, calcareous, brown yellow.....	70.0	75.0
Silt, moderately clayey, some very fine sand, limy nodules below 78.3 ft, sandier below 81.3 ft, very pale brown.....	75.0	93.0
Note: Loveland?		
Sand, very fine to fine, slightly silty, moderately silty below 97.4 ft, pale brown to white.....	93.0	105.0
Silt, very sandy very fine to fine, limy, very pale brown.....	105.0	120.0
Sand, very fine to medium, some coarse, reddish brown.....	120.0	124.0
Silt, very sandy very fine to fine, very limy, very pale brown to white.....	124.0	134.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Sandstone, very fine to fine, interbedded limestone layers, some opaline fragments, light gray to white	134.0	136.0
Silt, slightly clayey and sandy, limy, white.....	136.0	141.0
Sandstone, very fine to coarse, light brown.....	141.0	145.0
Sandstone, very fine to medium, slightly silty, lime cemented, light gray to white.....	145.0	161.1
Sand, fine to very coarse, interbedded sandstones, moderately silty and limy, very pale brown.....	161.1	170.2
Sandstone, very fine to fine, very limy and moderately silty, very pale brown to white.....	170.2	182.5
Silt, very clayey, pale olive.....	182.5	186.1
Sand, very fine to fine some medium, silty to 190		

ft, reddish brown.....	186.1	195.9
Silt, very sandy very fine to fine, slightly clayey, limy very pale brown to white.....	195.9	200.5
Sandstone, very fine some siltstone, interbedded light olive silts, white.....	200.5	208.5
Sand, very fine to fine, slightly silty, pale olive..	208.5	213.8
Silt, interbedded very fine to fine sandstone lenses, limy nodules, light gray to 215 ft then pale olive.....	213.8	218.5
Sandstone, very fine to medium some coarse, light gray with reddish tint.....	218.5	225.0
Sand, very fine to medium, interbedded sandstone, light gray with reddish tint.....	225.0	245.3
Sandstone, very fine to fine, silty, limy, light gray, white to 255 ft then pale olive.....	245.3	265.0
Sand, very fine to fine with interbedded sandstone lenses, olive to reddish brown.....	265.0	282.1
Sandstone, very fine to medium, silty and limy, some interbedded silty fine sands, light pale olive.....	282.1	286.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, weathered light gray to yellowish brown.	286.0	290.0

**Test-hole No. 180-42  
(2N-36W-31CBBB)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 31, SW NW NW NW  
**Footages from Section Lines:** North 2350.0 ft; East 6.0 ft  
**Latitude:** 40.097288 [40° 5' 50.236"]  
**Longitude:** -101.435677 [-102° 26' 8.438"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2913.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 15 feet, November 10, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	18.0
Sand and gravel, fine to medium gravel.....	18.0	28.0
Gravel, fine, medium, coarse, some clay.....	28.0	31.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	31.0	39.0

**Test-hole No. 181-42  
(2N-36W-31DABB)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 31, SE NE NW NW  
**Footages from Section Lines:** North 2500.0 ft; West 1300.0 ft  
**Latitude:** 40.096720 [40° 5' 48.193"]  
**Longitude:** -101.421603 [-102° 25' 17.77"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2900.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 12 feet, November 10, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	10.0
Clay, sandy, yellow, some sand.....	10.0	21.0
Sand and gravel, fine to medium gravel.....	21.0	31.0
Sand and gravel, fine gravel.....	31.0	33.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	33.0	39.0

**Test-hole No. 182-42  
(2N-37W-36CCBA)  
Dundy County**

**Legal Description:** T2N, R37W, Sec 36, SW SW NW NE  
**Footages from Section Lines:** North 1000.0 ft; East 500.0 ft  
**Latitude:** 40.093329 [40° 5' 35.985"]  
**Longitude:** -101.452797 [-102° 27' 10.07"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2940.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 39 feet, November 10, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	32.0
Gravel, fine, medium, coarse.....	32.0	47.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	47.0	53.0

**Test-hole No. 183-42  
(1N-37W-2BCAA)  
Dundy County**

**Legal Description:** T1N, R37W, Sec 2, NW SW NE NE  
**Footages from Section Lines:** South 1490.0 ft; East 1150.0 ft  
**Latitude:** 40.086272 [40° 5' 10.579"]  
**Longitude:** -101.469394 [-102° 28' 9.818"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2940.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 27 feet, November 10, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Loam, sandy, dark, some lime.....	0.0	10.0
Clay, sandy, yellow.....	10.0	19.0
Gravel, fine, medium, coarse; some clay.....	19.0	39.0
Sand and gravel, fine to medium gravel.....	39.0	43.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	43.0	49.0



**Test-hole No. 184-42  
(1N-37W-9ACCB)  
Dundy County**

**Legal Description:** T1N, R37W, Sec 9, NE SW SW NW  
**Footages from Section Lines:** South 2140.0 ft; West 2590.0 ft  
**Latitude:** 40.070292 [40° 4' 13.051"]  
**Longitude:** -101.501668 [-102° 30' 6.004"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Benkelman  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2944.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 7 feet, November 1 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Loam, sandy, yellow.....	0.0	10.0
Gravel, fine, medium, coarse.....	10.0	14.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	14.0	20.0

**Test-hole No. 185-42  
(1N-37W-19CABD)  
Dundy County**

**Legal Description:** T1N, R37W, Sec 19, SW NE NW SE  
**Footages from Section Lines:** North 2000.0 ft; East 1850.0 ft  
**Latitude:** 40.037489 [40° 2' 14.96"]  
**Longitude:** -101.542315 [-102° 32' 32.336"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Benkelman  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2982.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 4 feet, November 11, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	4.0
Sand and gravel, fine gravel.....	4.0	13.0
Gravel, fine, medium, coarse, some clay.....	13.0	23.0
Gravel, fine, medium, coarse, some sand and clay.....	23.0	26.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	26.0	34.0

**Test-hole No. 186-42  
(1N-37W-30BDDDB)  
Dundy County**

**Legal Description:** T1N, R37W, Sec 30, NW SE SE NW  
**Footages from Section Lines:** South 2250.0 ft; East 2160.0 ft  
**Latitude:** 40.026407 [40° 1' 35.066"]  
**Longitude:** -101.541795 [-102° 32' 30.463"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Benkelman  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3001.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 17 feet, November 11, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	10.0
Clay, sandy, yellow, some gravel.....	10.0	17.0
Gravel, fine, medium, coarse.....	17.0	34.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	34.0	39.0

**Test-hole No. 187-42  
(1N-37W-31CAAC)  
Dundy County**

**Legal Description:** T1N, R37W, Sec 31, SW NE NE SW  
**Footages from Section Lines:** North 2112.0 ft; East 2100.0 ft  
**Latitude:** 40.008346 [40° 0' 30.047"]  
**Longitude:** -101.541907 [-102° 32' 30.865"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Benkelman  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2999.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 7 feet, November 11, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	5.0
Clay, sandy, yellow, some fine gravel.....	5.0	18.0
Gravel, fine to medium, some clay.....	18.0	25.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	25.0	33.0

**Test-hole No. 188-42  
(1N-37W-29CDDD)  
Dundy County**

**Legal Description:** T1N, R37W, Sec 29, SW SE SE SE  
**Footages from Section Lines:** North 300.0 ft; East 2640.0 ft  
**Latitude:** 40.017946 [40° 1' 4.606"]  
**Longitude:** -101.521370 [-102° 31' 16.932"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Benkelman  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3005.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 20 feet, November 11, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Loam, sandy, yellow.....	0.0	3.0
Clay, sandy, yellow, some sand.....	3.0	21.0
Sand and gravel, fine gravel, some clay.....	21.0	30.0
Gravel, fine, medium, coarse.....	30.0	42.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	42.0	49.0

**Test-hole No. 189-42  
(1N-37W-16CCCC)  
Dundy County**

**Legal Description:** T1N, R37W, Sec 16, SW SW SW SW  
**Footages from Section Lines:** North 10.0 ft; East 150.0 ft  
**Latitude:** 40.047082 [40° 2' 49.495"]  
**Longitude:** -101.511421 [-102° 30' 41.116"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Benkelman  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2976.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 17 feet, October 30, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	5.0
Sand and clay, yellow clay.....	5.0	14.0
Clay, yellow.....	14.0	24.0
Clay, dark and fine gravel.....	24.0	33.0
Gravel, fine to medium; some clay.....	33.0	42.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	42.0	49.0

**Test-hole No. 18-B-74  
(3N-36W-25DDDD)  
Dundy County**

**Legal Description:** T3N, R36W, Sec 25, SE SE SE SE  
**Footages from Section Lines:** North 5.0 ft; West 75.0 ft  
**Latitude:** 40.191567 [40° 11' 29.643"]  
**Longitude:** -101.325667 [-102° 19' 32.403"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max NE  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3095.0 ft  
**Source Elev:** Estimated from Map  
**Depth to Water:** 167.32  
**Geophysical Log(s):** Yes  
 Note: Recorder: Goeke, Neale

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Topsoil, silt, sandy very fine to fine, slightly clayey, some limy fragments, dark brown, light brown below 1.5 feet.....	0.0	5.0
Silt, slightly clayey, slightly sandy very fine, moderately calcareous, compact below 45 feet with some manganese staining, some magnitite grains, yellow to pale brown.....	5.0	65.0
Silt, clayey, some very fine sand, light brown to gray.....	65.0	71.8
Note: Gilman Canyon		
Silt, slightly clayey, sandy very fine to medium, some manganese staining, light brown.....	71.8	80.0
Silt, slightly clayey, some very fine to fine sand, calcareous, some magnitite grains, limy zones, yellowish brown.....	80.0	104.0
Silt, slightly clayey, sandy very fine to fine, calcareous, limy zones, trace medium to coarse sand 110 to 112.8 feet and 117 to 120.5, trace coarse gravel below 122 feet.....	104.0	124.1
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Sand and gravel, fine sand to coarse gravel, silty between 134 and 137 feet.....	124.1	140.0
Sandstone, fine to medium, interbedded sand and silt layers, limy and calcareous, few rootlets and seeds, pale brown to white.....	140.0	171.0
Note: Slower between 152.8 to 155 feet		
Sand, very fine to medium, slightly clayey, silty lenses 187 to 188 feet and 189 to 190 feet, interbedded sandstone layers, scattered rootlet fragments,.....	171.0	190.0
Sandstone, very fine to fine, interbedded sand lenses very fine to fine, silty, slightly clayey,		

some limy zones,.....	190.0	205.7
Sand and gravel, fine sand to very coarse gravel, silty layer 217 to 218 feet.....	205.7	219.5
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, weathered pale yellow with gray streaks, gray, iron stains, light gray below 232 and dark gray to black below 234 feet.....	219.5	240.0



**Test-hole No. 190-42  
(1N-37W-16DADD)  
Dundy County**

**Legal Description:** T1N, R37W, Sec 16, SE NE SE SE  
**Footages from Section Lines:** North 1584.0 ft; West 9.0 ft  
**Latitude:** 40.050666 [40° 3' 2.399"]  
**Longitude:** -101.493037 [-102° 29' 34.934"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2982.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 25 feet, November 10, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	32.0
Sand, fine, and fine gravel, some clay.....	32.0	42.0
Sand and gravel, fine to medium gravel, some clay....	42.0	52.0
Gravel, fine to medium.....	52.0	62.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	62.0	69.0

**Test-hole No. 191-42  
(1N-37W-10DBBB)  
Dundy County**

**Legal Description:** T1N, R37W, Sec 10, SE NW NW NW  
**Footages from Section Lines:** North 2490.0 ft; West 2500.0 ft  
**Latitude:** 40.068323 [40° 4' 5.965"]  
**Longitude:** -101.482791 [-102° 28' 58.049"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2941.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 7 feet, November 10, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Loam, sandy, yellow.....	0.0	5.0
Clay, sandy, yellow.....	5.0	14.0
Sand and gravel, fine gravel.....	14.0	22.0
Sand and gravel, fine to medium gravel.....	22.0	27.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	27.0	33.0

**Test-hole No. 192-42  
(1N-37W-11ACAA)  
Dundy County**

**Legal Description:** T1N, R37W, Sec 11, NE SW NE NE  
**Footages from Section Lines:** South 1200.0 ft; East 2450.0 ft  
**Latitude:** 40.071739 [40° 4' 18.261"]  
**Longitude:** -101.460467 [-102° 27' 37.683"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2930.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 11 feet, November 10, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Loam, sandy, yellow, and silt.....	0.0	4.0
Clay, sandy, dark yellow.....	4.0	10.0
Clay, dark, some sand and fine to medium gravel.....	10.0	16.0
Sand and gravel, fine to medium gravel.....	16.0	30.0
Gravel, fine, medium, coarse.....	30.0	34.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	34.0	39.0

**Test-hole No. 193-42  
(1N-38W-26DBCB)  
Dundy County**

**Legal Description:** T1N, R38W, Sec 26, SE NW SW NW  
**Footages from Section Lines:** North 1700.0 ft; West 2100.0 ft  
**Latitude:** 40.022909 [40° 1' 22.473"]  
**Longitude:** -101.578017 [-102° 34' 40.86"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Benkelman  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3015.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 17 feet, November 11, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Loam, sandy, dark.....	0.0	5.0
Clay, sandy, yellow.....	5.0	26.0
Gravel, fine, medium.....	26.0	36.0
Sand and gravel, fine gravel.....	36.0	43.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	43.0	49.0

**Test-hole No. 194-42  
(1N-38W-27CBCC)  
Dundy County**

**Legal Description:** T1N, R38W, Sec 27, SW NW SW SW  
**Footages from Section Lines:** North 1460.0 ft; East 120.0 ft  
**Latitude:** 40.021519 [40° 1' 17.47"]  
**Longitude:** -101.605841 [-102° 36' 21.028"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Benkelman  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3040.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 23 feet, November 11, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Loam, sandy, dark.....	0.0	4.0
Sand, fine.....	4.0	12.0
Clay, yellow.....	12.0	23.0
Sand, fine, some clay.....	23.0	33.0
Sand, coarse.....	33.0	41.0
Sand and gravel, fine to medium gravel.....	41.0	52.0
Gravel, fine to medium, some lime fragments.....	52.0	60.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	60.0	68.0

**Test-hole No. 195-42  
(1N-38W-28BCCB)  
Dundy County**

**Legal Description:** T1N, R38W, Sec 28, NW SW SW NW  
**Footages from Section Lines:** South 2200.0 ft; East 15.0 ft  
**Latitude:** 40.026226 [40° 1' 34.414"]  
**Longitude:** -101.625010 [-102° 37' 30.035"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Parks  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3035.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 12 feet, November 11, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	20.0
Sand and clay, no detailed description recorded.....	20.0	24.0
Sand and gravel, fine to medium gravel.....	24.0	32.0
Sand and gravel, fine to medium gravel, some shale fragments.....	32.0	42.0
Gravel, fine, medium, coarse; some shale and lime fragments.....	42.0	52.0
Gravel, fine, medium, coarse, some shale.....	52.0	57.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	57.0	63.0

**Test-hole No. 196-42  
(1N-38W-30ADDA)  
Dundy County**

**Legal Description:** T1N, R38W, Sec 30, NE SE SE NE  
**Footages from Section Lines:** South 2200.0 ft; East 9999.0 ft  
**Latitude:** 40.026603 [40° 1' 35.77"]  
**Longitude:** -101.644691 [-102° 38' 40.889"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Parks  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3048.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 10 feet, November 13, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Clay, sandy, dark.....	0.0	10.0
Sand and gravel, fine to medium gravel; some clay....	10.0	21.0
Sand, fine to coarse.....	21.0	25.0
Sand and gravel, fine to coarse gravel.....	25.0	27.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	27.0	34.0

**Test-hole No. 197-42  
(1N-36W-6CBBC)  
Dundy County**

**Legal Description:** T1N, R36W, Sec 6, SW NW NW SW  
**Footages from Section Lines:** North 2112.0 ft; East 10.0 ft  
**Latitude:** 40.081579 [40° 4' 53.686"]  
**Longitude:** -101.436029 [-102° 26' 9.703"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2913.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 6 feet, November 10, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	9.0
Sand and gravel, fine gravel, some clay.....	9.0	18.0
Gravel, fine to medium.....	18.0	27.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	27.0	34.0



**Test-hole No. 198-42  
(1N-38W-24CBCC)  
Dundy County**

**Legal Description:** T1N, R38W, Sec 24, SW NW SW SW  
**Footages from Section Lines:** North 1000.0 ft; East 150.0 ft  
**Latitude:** 40.035970 [40° 2' 9.491"]  
**Longitude:** -101.568468 [-102° 34' 6.485"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Benkelman  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2999.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 4.6 feet, November 11, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	9.0
Sand and gravel, fine to medium gravel, some clay....	9.0	17.0
Gravel, fine, medium, coarse, some lime fragments....	17.0	23.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	23.0	29.0

**Test-hole No. 199-42  
(1N-38W-22CCBC)  
Dundy County**

**Legal Description:** T1N, R38W, Sec 22, SW SW NW SW  
**Footages from Section Lines:** North 900.0 ft; East 9.0 ft  
**Latitude:** 40.033986 [40° 2' 2.349"]  
**Longitude:** -101.606413 [-102° 36' 23.087"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Benkelman  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3028.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 9 feet, November 3, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	9.0
Sand, fine.....	9.0	19.0
Gravel, fine, medium, coarse.....	19.0	27.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	27.0	33.0

**Test-hole No. 19-B-74  
(4N-36W-36AAA)  
Dundy County**

**Legal Description:** T4N, R36W, Sec 36, NE NE NE NE  
**Footages from Section Lines:** South 145.0 ft; West 325.0 ft  
**Latitude:** 40.278067 [40° 16' 41.042"]  
**Longitude:** -101.326674 [-102° 19' 36.026"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Wauneta  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3228.0 ft  
**Source Elev:** Unknown  
**Depth to Water:** 275.2  
**Geophysical Log(s):** Yes  
 Note: Recorder: Goeke, Neale

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Topsoil, silt, slightly clayey, some very fine to fine sand, dark gray brown, pale brown below 2 feet	0.0	3.8
Silt, slightly silty some very fine sand, calcareous, pale yellowish brown.....	3.8	6.0
Silt, slightly sandy very fine to fine, slightly clayey, calcareous, some magnetite grains, light yellow brown.....	6.0	40.0
Silt, slightly clayey, calcareous, light brown.....	40.0	65.0
Silt, moderately clayey, calcareous, yellowish brown to light brown.....	65.0	68.5
Note: Gilman Canyon ?		
Silt, clayey, marly lenses, light yellow brown.....	68.5	86.0
Sand, very fine to fine, very silty, very pale brown.	86.0	90.0
Silt, moderately clayey, slightly sandy very fine to fine, pale brown with reddish tint.....	90.0	110.0
Sand, very fine to fine, some limy nodules, very pale brown to white.....	110.0	114.0
Silt, moderately clayey, sandy very fine to medium, marly lenses, lime nodules 145 to 146 feet, sandier below 60 feet, very pale brown.....	114.0	164.0
Sand, very fine to fine, slightly silty.....	164.0	172.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Sandstone, very fine to fine, moderately cemented, calcareous, very pale brown to white.....	172.0	178.0
Silt, clayey and sandy very fine to fine, calcareous, pale brown.....	178.0	181.0
Sand, very fine to fine, interbedded with sandstones, calcareous.....	181.0	186.0
Silt, clayey, sandy very fine to medium, calcareous, very pale brown to white.....	186.0	189.0
Sand, very fine to medium, interbedded sandstones and thin silt lenses, very pale brown to white.....	189.0	212.0

Sand, fine to coarse, interbedded sandstones, very calcareous, light gray to pale brown.....	212.0	217.0
Sandstone, fine to coarse, silty and limy, very pale brown.....	217.0	224.0
Sand, fine to very coarse, some medium to coarse gravel, silty, trace opaline fragments.....	224.0	231.0
Sand and gravel, fine sand to coarse gravel, loosely cemented below 240 feet.....	231.0	245.0
Sand and gravel, fine sand to fine gravel to 250 feet then more coarse to very coarse gravel.....	245.0	264.0
Sandstone, very fine to coarse, calcareous, pale brown.....	264.0	271.0
Sand and gravel, fine sand to very coarse gravel, silty, interbedded sandstones,.....	271.0	285.0
Sandstone, very fine to fine, coarser below 307 feet, very silty, some siliceous siltstone lenses, very silty lenses between 289 to 291; 294 to 296; 302 to 304 and 313 to 315 feet, very pale brown to white.....	285.0	320.0
Silt, slightly clayey, some very fine to fine sand, very pale brown to olive with greenish pink tint...	320.0	348.0
Sand, fine to coarse, slightly silty,.....	348.0	352.0
Sandstone, very fine to medium, slightly clayey and silty, calcareous, pale olive to yellowish light brown.....	352.0	356.0
Sand, fine to coarse, slightly clayey and silty.....	356.0	366.0
Silt, moderately clayey, pale olive.....	366.0	370.0
Sandstone, very fine to fine, interbedded very fine to fine sand, very pale brown with pinkish tint...	370.0	385.0
Sand, very fine to fine, silty, some interbedded sandstones, fine to medium below 395 feet.....	385.0	403.0
Sand and gravel, fine sand to coarse gravel, some sandstone lenses.....	403.0	407.0
Sand, fine to medium, interbedded sandstone lenses, silty and clayey lenses, very pale brown, some pinkish clay lenses.....	407.0	418.0
Silt, sandy, very fine to coarse, very pale brown, interbedded silty pinkish tinted clays.....	418.0	430.7
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, weathered yellowish light brown, some iron staining, brownish gray below 435 feet.....	430.7	440.0

**Test-hole No. 200-42  
(1N-38W-21CBCB)  
Dundy County**

**Legal Description:** T1N, R38W, Sec 21, SW NW SW NW  
**Footages from Section Lines:** North 1700.0 ft; East 20.0 ft  
**Latitude:** 40.036650 [40° 2' 11.939"]  
**Longitude:** -101.625149 [-102° 37' 30.535"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Parks  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3038.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 11 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	18.0
Sand, and fine to medium gravel, some clay.....	18.0	23.0
Gravel, fine, medium, coarse.....	23.0	27.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	27.0	34.0

**Test-hole No. 201-42  
(1N-38W-19BCCC)  
Dundy County**

**Legal Description:** T1N, R38W, Sec 19, NW SW SW SW  
**Footages from Section Lines:** South 2635.0 ft; East 18.0 ft  
**Latitude:** 40.040178 [40° 2' 24.642"]  
**Longitude:** -101.662247 [-102° 39' 44.09"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Parks  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3068.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 11.2 feet, November 13, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	2.0
Gravel, fine to medium, some sand.....	2.0	13.0
Sand and gravel, fine gravel.....	13.0	19.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	19.0	25.0

**Test-hole No. 202-42  
(1N-38W-25DACA)  
Dundy County**

**Legal Description:** T1N, R38W, Sec 25, SE NE SW NE  
**Footages from Section Lines:** North 1750.0 ft; West 750.0 ft  
**Latitude:** 40.025411 [40° 1' 31.48"]  
**Longitude:** -101.665200 [-102° 39' 54.72"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Parks  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3078.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 16 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	11.0
Sand, fine to coarse.....	11.0	21.0
Clay, gray, some sand.....	21.0	30.0
Sand, medium to coarse.....	30.0	40.0
Sand, no detailed description recorded.....	40.0	50.0
Gravel, fine to medium.....	50.0	57.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	57.0	63.0

**Test-hole No. 203-42  
(1N-39W-22BBBC)  
Dundy County**

**Legal Description:** T1N, R39W, Sec 22, NW NW NW SW  
**Footages from Section Lines:** South 450.0 ft; East 10.0 ft  
**Latitude:** 40.032376 [40° 1' 56.555"]  
**Longitude:** -101.719616 [-102° 43' 10.619"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Parks  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3097.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 17 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	28.0
Sand and gravel, fine to medium gravel; some lime fragments.....	28.0	33.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	33.0	39.0



**Test-hole No. 204-42  
(1N-39W-21DADA)  
Dundy County**

**Legal Description:** T1N, R39W, Sec 21, SE NE SE NE  
**Footages from Section Lines:** North 1700.0 ft; West 10.0 ft  
**Latitude:** 40.036964 [40° 2' 13.071"]  
**Longitude:** -101.720195 [-102° 43' 12.701"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Parks  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3093.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 4 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, yellow.....	0.0	2.0
Sand, fine to coarse, some clay.....	2.0	11.0
Sand and gravel, fine to medium gravel, some clay....	11.0	19.0
Gravel, fine, medium, coarse, some clay.....	19.0	29.0
Gravel, fine to medium, some Clay.....	29.0	39.0
Sand and gravel, medium gravel.....	39.0	58.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	58.0	64.0

**Test-hole No. 205-42  
(1N-39W-23ADAB)  
Dundy County**

**Legal Description:** T1N, R39W, Sec 23, NE SE NE NW  
**Footages from Section Lines:** South 550.0 ft; West 550.0 ft  
**Latitude:** 40.042629 [40° 2' 33.464"]  
**Longitude:** -101.683765 [-102° 41' 1.553"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Parks  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3088.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 8 feet, November 5, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	8.0
Clay, dark; some sand.....	8.0	14.0
Sand and gravel, fine to medium gravel.....	14.0	22.0
Gravel, fine to medium.....	22.0	24.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	24.0	29.0

**Test-hole No. 206-42  
(1N-39W-20DACB)  
Dundy County**

**Legal Description:** T1N, R39W, Sec 20, SE NE SW NW  
**Footages from Section Lines:** North 1900.0 ft; West 1150.0 ft  
**Latitude:** 40.037225 [40° 2' 14.01"]  
**Longitude:** -101.742634 [-102° 44' 33.483"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Parks  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3110.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 3 feet, November 15, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	2.0
Sand and gravel, fine to medium gravel, some clay....	2.0	21.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	21.0	27.0

**Test-hole No. 207-42  
(1N-39W-29BAAC)  
Dundy County**

**Legal Description:** T1N, R39W, Sec 29, NW NE NE SW  
**Footages from Section Lines:** South 500.0 ft; East 2550.0 ft  
**Latitude:** 40.030662 [40° 1' 50.382"]  
**Longitude:** -101.749930 [-102° 44' 59.748"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Parks  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3119.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 16 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	9.0
Clay, sandy, yellow; some fine gravel.....	9.0	23.0
Sand and gravel, fine to medium gravel, some clay....	23.0	29.0
Sand, fine, and fine gravel.....	29.0	39.0
Sand, fine, and fine to medium gravel.....	39.0	49.0
Sand, fine and fine gravel.....	49.0	59.0
Sand and gravel, fine to medium gravel, some shale...	59.0	75.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	75.0	81.0

**Test-hole No. 208-42  
(1N-39W-30BBCC)  
Dundy County**

**Legal Description:** T1N, R39W, Sec 30, NW NW SW SW  
**Footages from Section Lines:** Unknown north-south; Unknown  
**Latitude:** 40.028901 [40° 1' 44.045"]  
**Longitude:** -101.775536 [-102° 46' 31.929"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Rock Creek Lake  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3140.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 7 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	16.0
Gravel, fine, medium and clay.....	16.0	64.0
Sand and gravel, fine gravel, some clay.....	64.0	72.0
Gravel, fine, medium, some clay.....	72.0	77.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	77.0	83.0

**Test-hole No. 209-42  
(1N-40W-26BDCC)  
Dundy County**

**Legal Description:** T1N, R40W, Sec 26, NW SE SW SW  
**Footages from Section Lines:** South 2350.0 ft; East 1350.0 ft  
**Latitude:** 40.024723 [40° 1' 29.004"]  
**Longitude:** -101.809126 [-102° 48' 32.854"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Rock Creek Lake  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3181.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 16 feet, November 13, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	4.0
Clay, sandy, dark.....	4.0	20.0
Clay, sandy, light.....	20.0	32.0
Clay, dark, and fine gravel.....	32.0	41.0
Clay, dark and medium gravel.....	41.0	49.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	49.0	55.0

**Test-hole No. 20-B-74  
(4N-36W-31BBBC)  
Dundy County**

**Legal Description:** T4N, R36W, Sec 31, NW NW NW SW  
**Footages from Section Lines:** South 396.0 ft; East 2.0 ft  
**Latitude:** 40.276447 [40° 16' 35.209"]  
**Longitude:** -101.435694 [-102° 26' 8.5"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Wauneta SW  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3298.0 ft  
**Source Elev:** Unknown  
**Depth to Water:** 234.25'  
**Geophysical Log(s):** Yes  
 Note: Recorder: Goeke, Neale

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Topsoil, silt, slightly clayey and sandy, limy below 4 feet brown.....	0.0	7.5
Silt, slightly clayey, limy 8 to 11 feet, some maganese staining, scattered magnitite grains, slightly humic 10 to 15 feet, harder 39.5 to 40 feet, moderately clayey between 52 to 55 feet and below 65 feet, yellowish light brown.....	7.5	73.0
Silt, moderately clayey, calcareous, light brown to yellowish brown.....	73.0	77.0
Note: Gilman Canyon?		
Silt, moderately clayey, slightly sandy very fine to fine, calcareous, very pale brown.....	77.0	83.0
Silt, moderately clayey, brownish gray some gray streaks.....	83.0	84.0
Note: Paleosol?		
Silt, moderately clayey, calcareous, few limy lenses and nodules, very clayey 102 to 104 feet, light brown to gray.....	84.0	107.0
Silt, clayey, very fine to fine sand lenses, calcareous, limy lenses, pale brown.....	107.0	125.0
Sand, very fine to fine, silty and slightly clayey, very clayey 133 to 139 feet.....	125.0	149.0
Silt, sandy very fine to fine, slightly clayey, very clayey below 157 feet.....	149.0	160.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Sandstone, very fine to medium, interbedded very fine to medium silty sand layers, pale brown.....	160.5	179.0
Sandstone, very fine to fine, interbedded very fine to coarse silty sand lenses between 182 and 186 feet and 188 to 190 feet, very pale brown.....	179.0	196.0
Sand, very fine to coarse.....	196.0	200.0
Sandstone, very fine to fine, silty and clayey,		

interbedded very fine sands 212 to 215 feet and below 218 feet.....	200.0	223.0
Silt, slightly clayey, some very fine to fine sand...	223.0	230.0
Sandstone, very fine to coarse, interbedded fine to coarse sands, limy, very limy and cemented 256 to 259 feet, light gray to white.....	230.0	263.0
Sand, very fine to very coarse, clayey silt. lense between 269 to 271 feet.....	263.0	275.0
Sandstone, very fine to medium, slightly silty, marly below 282 with scattered opaline fragments, reddish brown.....	275.0	287.0
Sandstone, very fine to medium, interbedded very fine to fine sands, scattered rootlets, marly lenses between 310 to 315 feet and 329.5 to 330.5 feet.....	287.0	346.0
Silt, alightly clayey and sandy, very fine sand lense 370 to 372 feet, marly below 372 feet, brownish olive to pale brown, reddish tint below 374 feet.....	346.0	378.0
Sand and gravel, fine sand to fine gravel, some interbedded thin silty lenses, very silty clay lenses between 394 and 394.9 feet and 419.4 and 420 feet.....	378.0	423.5
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, weathered light yellow brown, some iron and manganses staining, light gray streaks below 425 feet and dark gray below 435 feet.....	423.5	440.0



**Test-hole No. 210-42  
(1N-40W-28CBBB)  
Dundy County**

**Legal Description:** T1N, R40W, Sec 28, SW NW NW NW  
**Footages from Section Lines:** North 2450.0 ft; East 50.0 ft  
**Latitude:** 40.024290 [40° 1' 27.446"]  
**Longitude:** -101.852501 [-102° 51' 9.002"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Rock Creek Lake  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3221.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 29 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	26.0
Gravel, fine, and clay.....	26.0	29.0
Clay, sandy, yellow.....	29.0	59.0
Gravel, fine and dark clay.....	59.0	63.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	63.0	69.0

**Test-hole No. 211-42  
(1N-41W-35BADD)  
Dundy County**

**Legal Description:** T1N, R41W, Sec 35, NW NE SE SE  
**Footages from Section Lines:** South 1000.0 ft; East 2550.0 ft  
**Latitude:** 40.014186 [40° 0' 51.07"]  
**Longitude:** -101.917499 [-102° 55' 2.995"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Haigler  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3287.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 46 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Sand and clay, yellow clay.....	0.0	20.0
Clay, yellow, some sand.....	20.0	40.0
Clay, yellow.....	40.0	70.0
Clay, yellow, and fine gravel.....	70.0	80.0
Clay, dark, and coarse sand.....	80.0	117.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	117.0	123.0

**Test-hole No. 212-42  
(1N-40W-27BBBB)  
Dundy County**

**Legal Description:** T1N, R40W, Sec 27, NW NW NW NW  
**Footages from Section Lines:** South 100.0 ft; East 9.0 ft  
**Latitude:** 40.031578 [40° 1' 53.68"]  
**Longitude:** -101.833491 [-102° 50' 0.569"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Rock Creek Lake  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3182.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Not measured, November 7, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	10.0
Sand and gravel, fine to medium gravel; some clay....	10.0	48.0
Sand and gravel, fine to medium gravel.....	48.0	63.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	63.0	69.0

**Test-hole No. 213-42  
(1N-40W-20CCBB)  
Dundy County**

**Legal Description:** T1N, R40W, Sec 20, SW SW NW NW  
**Footages from Section Lines:** North 900.0 ft; East 9.0 ft  
**Latitude:** 40.035161 [40° 2' 6.579"]  
**Longitude:** -101.870555 [-102° 52' 13.996"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Rock Creek Lake  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3192.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 4 feet, November 13, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	2.0
Sand and gravel, fine to medium gravel, some clay....	2.0	12.0
Gravel, fine, medium, coarse.....	12.0	22.0
Sand and gravel, fine to medium gravel, some clay....	22.0	27.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	27.0	34.0

**Test-hole No. 214-42  
(1N-40W-30ADDD)  
Dundy County**

**Legal Description:** T1N, R40W, Sec 30, NE SE SE SE  
**Footages from Section Lines:** South 2620.0 ft; West 10.0 ft  
**Latitude:** 40.025185 [40° 1' 30.667"]  
**Longitude:** -101.871199 [-102° 52' 16.317"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Rock Creek Lake  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3226.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 29 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	60.0
Gravel, fine, medium; some clay.....	60.0	64.0
Sand and gravel, fine to medium gravel, some clay....	64.0	74.0
Sand and gravel, fine gravel; some clay.....	74.0	92.0
Sand and gravel, fine to medium gravel, some clay....	92.0	102.0
Sand and gravel, fine to medium gravel, some clay and lime fragments.....	102.0	113.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	113.0	119.0

**Test-hole No. 215-42  
(1N-40W-30CCAA)  
Dundy County**

**Legal Description:** T1N, R40W, Sec 30, SW SW NE NE  
**Footages from Section Lines:** North 1200.0 ft; East 1200.0 ft  
**Latitude:** 40.020153 [40° 1' 12.55"]  
**Longitude:** -101.883896 [-102° 53' 2.027"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Haigler  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3250.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 46 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	23.0
Clay, yellow, and medium gravel.....	23.0	25.0
Clay, yellow.....	25.0	65.0
Clay, dark.....	65.0	75.0
Clay, and fine gravel.....	75.0	85.0
Clay and gravel, some shale.....	85.0	93.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	93.0	99.0

**Test-hole No. 216-42  
(1N-41W-25CCCC)  
Dundy County**

**Legal Description:** T1N, R41W, Sec 25, SW SW SW SW  
**Footages from Section Lines:** North 200.0 ft; East 150.0 ft  
**Latitude:** 40.017943 [40° 1' 4.596"]  
**Longitude:** -101.906959 [-102° 54' 25.054"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Haigler  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3271.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 48 feet, November 13, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Sand, yellow, some clay.....	0.0	25.0
Gravel, medium to coarse, some clay.....	25.0	32.0
Clay, yellow, some fine gravel.....	32.0	42.0
Clay, yellow.....	42.0	92.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	92.0	97.0

**Test-hole No. 217-42  
(1N-41W-33BDAA)  
Dundy County**

**Legal Description:** T1N, R41W, Sec 33, NW SE NE NE  
**Footages from Section Lines:** South 1350.0 ft; East 2300.0 ft  
**Latitude:** 40.013683 [40° 0' 49.258"]  
**Longitude:** -101.955652 [-102° 57' 20.347"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Haigler  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3277.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 16 feet, November 13, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	10.0
Clay, yellow.....	10.0	25.0
Clay and gravel, no detailed description recorded....	25.0	27.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, very hard, gray.....	27.0	42.0
Shale, dark.....	42.0	49.0



**Test-hole No. 218-42  
(1N-41W-28BACC)  
Dundy County**

**Legal Description:** T1N, R41W, Sec 28, NW NE SW SW  
**Footages from Section Lines:** South 1100.0 ft; East 1400.0 ft  
**Latitude:** 40.028696 [40° 1' 43.306"]  
**Longitude:** -101.960135 [-102° 57' 36.488"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Haigler  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3261.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 9 feet, November 13, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	10.0
Sand and gravel, fine to coarse gravel, some clay....	10.0	20.0
Sand and gravel, fine to medium gravel, some clay....	20.0	28.0
Sand and clay, dark clay.....	28.0	40.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	40.0	49.0

**Test-hole No. 219-42  
(1N-41W-18DDDD)  
Dundy County**

**Legal Description:** T1N, R41W, Sec 18, SE SE SE SE  
**Footages from Section Lines:** North 100.0 ft; West 5.0 ft  
**Latitude:** 40.047614 [40° 2' 51.409"]  
**Longitude:** -101.985379 [-102° 59' 7.365"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Haigler  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3293.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 4 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Loam, sandy, dark.....	0.0	4.0
Sand, fine.....	4.0	14.0
Sand and gravel, fine gravel.....	14.0	24.0
Gravel and clay, some decayed formation, weathered shal fragments.....	24.0	36.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	36.0	41.0

**Test-hole No. 21-B-74  
(4N-37W-31CCCC)  
Dundy County**

**Legal Description:** T4N, R37W, Sec 31, SW SW SW SW  
**Footages from Section Lines:** North 45.0 ft; East 34.0 ft  
**Latitude:** 40.263876 [40° 15' 49.954"]  
**Longitude:** -101.549133 [-102° 32' 56.879"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Ough  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3229.0 ft  
**Source Elev:** Unknown  
**Depth to Water:** 26.4  
**Geophysical Log(s):** Yes  
 Note: Recorder: Goeke, Neale

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Topsoil, sand very fine to fine, very silty, dark brown.....	0.0	1.5
Sand, very fine to fine, silty, slightly calcareous, light yellowish brown.....	1.5	9.0
Sand, very fine to fine, silty, calcareous, yellowish brown,.....	9.0	12.0
Note: Paleosol?		
Sand, very fine to fine, silty, slightly calcareous, light yellowish brown.....	12.0	17.0
Silt, sandy very fine to fine, slightly clayey and calcareous, some iron staining, some magnetite grains, light brownish gray.....	17.0	20.7
Sand, very fine to fine.....	20.7	24.0
Silt, moderately clayey and sandy very fine, iron and magneses staining, scattered magnetite grains, light brown.....	24.0	28.5
Sand, very fine to fine, moderately clayey and silty, reddish tint.....	28.5	30.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Sandstone, very fine to medium, silty and slightly clayey, limy, some interbedded very fine to fine silty sand lenses below 33 feet, very silty between 51 to 53 feet and below 57 feet, pinkish white to 40 feet then pale brownish white.....	30.0	61.0
Sandstone, very fine to fine, lilty lenses 66 to 68 feet and 71 to 74 feet, calcareous, some thin siliceous lenses, white to 65 feet then very pale brown, pinkish below 70.5 feet.....	61.0	77.0
Sand, very fine to fine, silty, silty lenses 83 to 85 feet, 87 to 89 feet and 94 to 95 feet,.....	77.0	101.0
Sand, very fine to coarse, silty, some limy cemented lenses.....	101.0	108.4

Sandstone, very fine to coarse, silty, very pale brown to white.....	108.4	112.0
Siltstone, to limestone, very pale brownish white....	112.0	118.0
Silt, clayey, limy lenses, some interbedded very fine sandstone, pale brown.....	118.0	128.0
Sandstone, fine to medium, scattered fine to coarse gravel grains, slightly silty, limy, very pale brown.....	128.0	132.0
Sand and gravel, fine sand to coarse gravel, silty and limy lenses.....	132.0	141.0
Sand, fine to coarse, some fine gravel, silty and slightly clayey, limy cemented lenses below 148 feet.....	141.0	152.7
Sand, very fine to medium, interbedded silty sandstone lenses, very silty lenses at 154 to 156 feet, 163 to 165 feet, 169 to 171 feet; 176 to 179 feet and below 186 feet, greenish gray white,.....	152.7	194.0
Sand, very fine to medium.....	194.0	203.0
Sandstone, very fine to fine, silty, calcareous, scattered limy nodules, pale brown.....	203.0	206.0
Sand, very fine to fine, silty.....	206.0	212.0
Silt, to very fine sand, very pale brown to white....	212.0	215.0
Sand, very fine to fine, silty, calcareous, very pale brown.....	215.0	225.0
Silt, very sandy very fine to fine, calcareous, very sandy between 235 and 239 feet and below 242 feet, very pale brown to white.....	225.0	243.0
Silt, slightly clayey, interbedded very fine to medium sands, limy, very sandy lense 251 to 253 feet, pale brownish gray.....	243.0	254.0
Sand and gravel, fine sand to very coarse gravel, silty and clayey.....	254.0	258.0
Sand, very fine to fine, silty and clayey, slightly silty below 261 feet, very pale brown.....	258.0	266.0
Sand and gravel, medium sand to very coarse gravel, trace reworked shale fragments.....	266.0	279.8
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, weathered yellowish brown some gray streaks, some dendritic iron and manganese staining, light gray to 294, dark gray below 295 feet.....	279.8	300.0

**Test-hole No. 220-42  
(1N-41W-19DDDA)  
Dundy County**

**Legal Description:** T1N, R41W, Sec 19, SE SE SE NE  
**Footages from Section Lines:** North 400.0 ft; West 6.0 ft  
**Latitude:** 40.033931 [40° 2' 2.151"]  
**Longitude:** -101.984908 [-102° 59' 5.67"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Haigler  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3348.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 38 feet, November 13, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Clay, sandy, yellow, and silt.....	0.0	10.0
Clay, sandy, yellow.....	10.0	16.0
Gravel, fine to medium, clay.....	16.0	30.0
Clay, hard, yellow, some gravel.....	30.0	32.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	32.0	37.0

**Test-hole No. 221-42  
(1N-41W-30ADAA)  
Dundy County**

**Legal Description:** T1N, R41W, Sec 30, NE SE NE NE  
**Footages from Section Lines:** South 1400.0 ft; East 9999.0 ft  
**Latitude:** 40.028314 [40° 1' 41.931"]  
**Longitude:** -101.984796 [-102° 59' 5.266"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Haigler  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3293.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 5 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	9.0
Sand and gravel, some clay.....	9.0	19.0
Sand, fine and fine gravel, some clay.....	19.0	25.0
Clay, yellow, and sand.....	25.0	35.0
Clay, yellow.....	35.0	46.0
Sand and gravel, fine to medium gravel, some clay....	46.0	48.0
Clay, hard, yellow, and gravel.....	48.0	51.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	51.0	56.0

**Test-hole No. 222-42  
(1N-41W-19CCBC)  
Dundy County**

**Legal Description:** T1N, R41W, Sec 19, SW SW NW SW  
**Footages from Section Lines:** North 825.0 ft; West 8.0 ft  
**Latitude:** 40.034315 [40° 2' 3.535"]  
**Longitude:** -102.000517 [-103° 0' 1.862"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Laird  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3386.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Caved at 13 feet, November 13, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Clay, yellow.....	0.0	10.0
Clay, yellow, some sand.....	10.0	20.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, yellow.....	20.0	49.0

**Test-hole No. 223-42  
(1N-42W-25DDDD)  
Dundy County**

**Legal Description:** T1N, R42W, Sec 25, SE SE SE SE  
**Footages from Section Lines:** North 50.0 ft; West 5.0 ft  
**Latitude:** 40.017999 [40° 1' 4.796"]  
**Longitude:** -102.001507 [-103° 0' 5.427"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Laird  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3291.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 14 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	39.0
Gravel, fine, medium, and clay.....	39.0	69.0
Sand, fine, coarse.....	69.0	74.0
Gravel, fine, medium.....	74.0	79.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	79.0	87.0



**Test-hole No. 224-42  
(1N-42W-15AAAA)  
Dundy County**

**Legal Description:** T1N, R42W, Sec 15, NE NE NE NE  
**Footages from Section Lines:** South 320.0 ft; West 50.0 ft  
**Latitude:** 40.062095 [40° 3' 43.543"]  
**Longitude:** -102.038964 [-103° 2' 20.27"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Laird  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3350.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Not measured, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow, some silt.....	0.0	2.0
Clay, sandy, yellow.....	2.0	12.0
Gravel, fine to medium, some clay.....	12.0	23.0
Sand, fine, and clay, some gravel.....	23.0	31.0
Gravel, fine to medium, and clay.....	31.0	37.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	37.0	43.0

**Test-hole No. 225-42  
(1N-42W-13BCCC)  
Dundy County**

**Legal Description:** T1N, R42W, Sec 13, NW SW SW SW  
**Footages from Section Lines:** South 2575.0 ft; East 20.0 ft  
**Latitude:** 40.054860 [40° 3' 17.495"]  
**Longitude:** -102.019338 [-103° 1' 9.615"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Laird  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3342.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 21 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, dark.....	0.0	10.0
Clay, sandy, yellow.....	10.0	28.0
Gravel, fine, medium, and clay.....	28.0	73.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	73.0	79.0

**Test-hole No. 226-42  
(1N-42W-24AAAA)  
Dundy County**

**Legal Description:** T1N, R42W, Sec 24, NE NE NE NE  
**Footages from Section Lines:** South 100.0 ft; West 80.0 ft  
**Latitude:** 40.046700 [40° 2' 48.119"]  
**Longitude:** -102.001489 [-103° 0' 5.36"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Laird  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3310.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 4 feet, November 13, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, dark; some fine gravel.....	0.0	10.0
Clay, sandy, yellow.....	10.0	30.0
Sand, fine, coarse.....	30.0	40.0
Sand and gravel, fine to medium gravel, some clay....	40.0	50.0
Sand and gravel, fine gravel.....	50.0	69.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	69.0	75.0

**Test-hole No. 227-42  
(1N-40W-17CCCC)  
Dundy County**

**Legal Description:** T1N, R40W, Sec 17, SW SW SW SW  
**Footages from Section Lines:** North 100.0 ft; East 10.0 ft  
**Latitude:** 40.046789 [40° 2' 48.441"]  
**Longitude:** -101.870680 [-102° 52' 14.45"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Rock Creek Lake  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3212.0 ft  
**Source Elev:** Unknown  
**Depth to Water:** Not measured, November 16, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, light.....	0.0	20.0
Sand, fine to coarse; some clay.....	20.0	29.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	29.0	35.0

**Test-hole No. 228-42  
(1N-39W-6ADEC)  
Dundy County**

**Legal Description:** T1N, R39W, Sec 6, NE SE NW SW  
**Footages from Section Lines:** South 1950.0 ft; West 1025.0 ft  
**Latitude:** 40.085137 [40° 5' 6.494"]  
**Longitude:** -101.761719 [-102° 45' 42.187"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Rock Creek Lake  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3195.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Not measured, November 16, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, dark.....	0.0	8.0
Gravel, fine, medium; some clay.....	8.0	18.0
Sand and gravel, fine gravel, some clay.....	18.0	28.0
Sand and clay, no detailed description recorded.....	28.0	38.0
Sand and gravel, fine to medium gravel, some clay....	38.0	47.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	47.0	53.0

**Test-hole No. 229-42  
(1N-39W-20AABC)  
Dundy County**

**Legal Description:** T1N, R39W, Sec 20, NE NE NW SW  
**Footages from Section Lines:** South 500.0 ft; East 9999.0 ft  
**Latitude:** 40.044668 [40° 2' 40.804"]  
**Longitude:** -101.742155 [-102° 44' 31.757"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Parks  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3113.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Not measured, November 16, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	38.0
Sand and gravel, fine gravel, some clay.....	38.0	47.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	47.0	52.0

**Test-hole No. 22-B-74  
(4N-38W-31CBBC)  
Dundy County**

**Legal Description:** T4N, R38W, Sec 31, SW NW NW SW  
**Footages from Section Lines:** North 1025.0 ft; East 10.0 ft  
**Latitude:** 40.267067 [40° 16' 1.44"]  
**Longitude:** -101.662494 [-102° 39' 44.978"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Champion SW  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3318.0 ft  
**Source Elev:** Estimated from Map  
**Depth to Water:** 24.2  
**Geophysical Log(s):** Yes  
 Note: Recorder: Goeke, Neale

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Sand, very fine to medium, slightly silty, calcareous, some magnitite grains, light brown, fairly clean below 1 foot.....	0.0	5.0
Sand, very fine to coarse, fairly clean, calcareous, some magnite grains, caliche between 11 and 13 feet,.....	5.0	14.0
Silt, some very fine to fine sand, scattered magnitite grains, some limy zones, very pale brown to 18.8 feet then pale brown.....	14.0	26.9
Sand, very fine to fine, slightly silty, few magnitite grains, reddish.....	26.9	32.7
Silt, some very fine sand, slightly clayey, calcareous, scattered magnitite grains, light brown.....	32.7	39.0
Sand, very fine to medium with scattered coarse grains, fairly clean, reddish.....	39.0	43.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Silt, interbedded very fine to fine sand lenses, clayey and limy, sandstone lenses between 46 to 47 feet, 44 to 51 feet and 52 to 53 feet, white, very pale brown between 44 to 46 feet and 54.89 to 58 feet,.....	43.0	61.6
Sandstone, very fine to medium, slightly clayey and marly, white silty clay lenses 64.4 to 69 feet, pale yellow to greenish white, calcareous,.....	61.6	70.5
Sandstone, very fine to medium, moderately silty, marly, very silty and pale brown below 85.6 feet, white to very pale brown.....	70.5	91.0
Sandstone, very fine to fine, slightly silty, calcareous, partly cemented, pale brown.....	91.0	95.0
Sandstone, very fine to fine, very silty and clayey, calcareous, pale brown.....	95.0	101.0

Sand and gravel, very fine sand to coarse gravel.....	101.0	107.0
Sandstone, very fine to medium, some medium to coarse sand lenses, very silty and clayey, limy, very pale brown.....	107.0	117.0
Sand, very fine to medium, interbedded very fine to medium sandstone,.....	117.0	123.5
Silt, slightly clayey, limy, pale olive.....	123.5	125.0
Sand, fine to coarse, slightly silty, some sandstone lenses, very silty below 133 feet, pale brown to reddish brown.....	125.0	138.0
Sand and gravel, fine sand to fine gravel, slightly silty, limy, light gray to pale brown.....	138.0	144.0
Silt, very sandy very fine to fine, calcareous, sandy lense from 147.5 to 149 feet. pale olive.....	144.0	151.0
Sand and gravel, fine sand to very coarse gravel,....	151.0	171.0
Sandstone, very fine to medium, thin silty lenses, limy, scattered rootlets, very pale brown.....	171.0	183.0
Sandstone, very fine to coarse, slightly silty, few rootlets, reddish very pale brown.....	183.0	197.0
Silt, moderately clayey, slightly sandy very fine to fine, light olive to gray.....	197.0	204.0
Sandstone, very fine to medium with some coarse, slightly silty, calcareous, scattered seed fragments, pale brown.....	204.0	216.0
Silt, moderately sandy fine to medium, calcareous, reddish brown.....	216.0	221.0
Sand, very fine to medium some coarse grains, slightly silty.....	221.0	234.0
Silt, moderately clayey, slightly sandy, non calcareous, very pale yellow.....	234.0	239.0
Sand, very fine to coarse.....	239.0	244.0
Silt, sandy very fine to fine, some interbedded very fine to fine sand, very sandy below 255 feet, very pale brown to brown.....	244.0	256.5
Silt, slightly clayey, slightly sandy very fine to medium, calcareous, light gray to white.....	256.5	270.0
Sand, very fine to medium, silt lenses between 274 and 275 feet and 278 to 282 feet,.....	270.0	285.0
Sand and gravel, medium sand to very coarse gravel, traces of reworked shale.....	285.0	302.3
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, weathered yellowish brown with light gray streaks to 309 feet then dark gray to black...	302.3	310.0



**Test-hole No. 230-42  
(1N-38W-13ABCC)  
Dundy County**

**Legal Description:** T1N, R38W, Sec 13, NE NW SW SW  
**Footages from Section Lines:** South 1200.0 ft; West 2635.0 ft  
**Latitude:** 40.057701 [40° 3' 27.724"]  
**Longitude:** -101.558582 [-102° 33' 30.895"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Benkelman  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3045.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Not measured, November 16, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	41.0
Gravel, fine; some clay.....	41.0	47.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	47.0	53.0

**Test-hole No. 231-42  
(1N-38W-2DDDC)  
Dundy County**

**Legal Description:** T1N, R38W, Sec 2, SE SE SE SW  
**Footages from Section Lines:** North 15.0 ft; West 528.0 ft  
**Latitude:** 40.075294 [40° 4' 31.059"]  
**Longitude:** -101.344921 [-102° 20' 41.717"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max SE  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3001.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** Not measured, November 16, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow; some silt.....	0.0	10.0
Clay, sandy, yellow.....	10.0	39.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	39.0	45.0

**Test-hole No. 232-42  
(2N-36W-17BCBB)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 17, NW SW NW NW  
**Footages from Section Lines:** South 1490.0 ft; East 7.0 ft  
**Latitude:** 40.144381 [40° 8' 39.773"]  
**Longitude:** -101.416612 [-102° 24' 59.804"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Rock Canyon  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2953.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 16 feet, December 18, 1942.  
**Geophysical Log(s):** No

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	18.0
Gravel, fine, and clay.....	18.0	28.0
Gravel, fine to medium, and clay.....	28.0	49.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	49.0	56.0

**Test-hole No. 233-42  
(2N-37W-12CDBA)  
Dundy County**

**Legal Description:** T2N, R37W, Sec 12, SW SE NW NE  
**Footages from Section Lines:** North 1200.0 ft; East 1850.0 ft  
**Latitude:** 40.152393 [40° 9' 8.615"]  
**Longitude:** -101.447879 [-102° 26' 52.363"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Rock Canyon  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2995.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 53 feet, December 18, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	9.0
Clay, sandy, dark.....	9.0	19.0
Clay, sandy, dark, some sand and lime fragments.....	19.0	29.0
Gravel, fine, some clay and lime fragments.....	29.0	49.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	49.0	55.0

**Test-hole No. 235-42  
(2N-36W-1CCBC)  
Dundy County**

**Legal Description:** T2N, R36W, Sec 1, SW SW NW SW  
**Footages from Section Lines:** North 950.0 ft; East 9.0 ft  
**Latitude:** 40.164359 [40° 9' 51.692"]  
**Longitude:** -101.343171 [-102° 20' 35.415"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Max NE  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 2930.0 ft  
**Source Elev:** Instrument Leveling  
**Depth to Water:** 8.2 feet, December 18, 1942.  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Clay, sandy, yellow.....	0.0	10.0
Clay, gray.....	10.0	20.0
Clay, gray.....	20.0	27.0
Gravel and clay, fine, medium.....	27.0	42.0
Gravel, fine, medium, coarse.....	42.0	45.0
Clay or shale, hard, yellow.....	45.0	53.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, dark.....	53.0	59.0

**Test-hole No. 23-B-74  
(3N-40W-1AAAA)  
Dundy County**

**Legal Description:** T3N, R40W, Sec 1, NE NE NE NE  
**Footages from Section Lines:** South 134.0 ft; West 134.0 ft  
**Latitude:** 40.263741 [40° 15' 49.466"]  
**Longitude:** -101.777471 [-102° 46' 38.894"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Reservoir Lake SE  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3409.0 ft  
**Source Elev:** Estimated from Map  
**Depth to Water:** 50.88  
**Geophysical Log(s):** Yes  
 Note: Recorder: Goeke, Neale

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Topsoil, silt, slightly sandy, dark brown, brown below 2.5 feet.....	0.0	3.5
Silt, slightly sandy, calcareous, light brown.....	3.5	8.0
Sand, very fine to medium some coarse, scattered limy nodules.....	8.0	9.0
Silt, moderately clayey and sandy very fine to fine, some limy streaks, very pale brown.....	9.0	22.0
Silt, sandy and slightly clayey, very clayey below 27.5 feet, calcareous, light gray, very pale brown below 33.5 feet.....	22.0	36.8
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Silt, sandy very fine to coarse, slightly clayey, calcareous, reddish brown.....	36.8	42.0
Silt, clayey and slightly sandy very fine to fine, marly, limy sandy lense 54 to 57 feet, reddish brown,.....	42.0	61.5
Sandstone, very fine to medium, limy, scattered rootlets, light gray.....	61.5	74.0
Sand and gravel, very fine sand to very coarse gravel, coarser below 75 feet.....	74.0	79.0
Silt, sandy very fine to fine, limy, grayish white...	79.0	80.0
Sandstone, very fine to medium, silty and clayey, scattered siltstone fragments, marly clayey silt lense 80 to 81.5 feet, some interbedded silty sands, very pale brown.....	80.0	91.0
Sandstone, fine to medium trace of coarse, slightly silty and clayey, few limestone and siltstone fragments, calcareous, interbedded silt lenses, light grayish white, reddish tint below 96 feet....	91.0	97.5
Silt, slightly sandy very fine to medium, very pale brown with reddish tint.....	97.5	105.0
Sand, very fine to coarse, slightly cemented 105 to		

107.8 feet, reddish to very pale brown.....	105.0	112.0
Sandstone, very fine to medium, silty, some siltstone lenses and limy cemented lenses, very pale brown with reddish tint.....	112.0	122.0
Sand, very fine to fine some medium grains, very silty, some siliceous materials, brown with reddish tint.....	122.0	126.5
Sand, very fine to coarse, silty, some limy lenses, grayish white with reddish tint.....	126.5	136.8
Sandstone, very fine to medium, silty, limy, thin silty lenses, grayish white.....	136.8	146.0
Sand, very fine to coarse, interbedded limy sandstone lenses, silty below 149 feet, very pale brown to white.....	146.0	154.0
Silt, slightly clayey, sandy very fine to coarse, reddish very pale brown.....	154.0	158.0
Sand, very fine to medium some coarse, limy, cemented below 165 feet.....	158.0	168.0
Silt, sandy very fine to fine, clayey, limy lenses, grayish white to 169 feet then reddish pale brown..	168.0	172.2
Sandstone, very fine to fine, slightly silty and sandy, limy, sandier below 177.8 feet.....	172.2	180.0
Sandstone, fine to medium, slightly silty, limy, very pale brown.....	180.0	189.0
Silt, sandy fine to medium, calcareous, grayish white.....	189.0	193.0
Sand, very fine to coarse, some thin stringers of sandstone, silty between 193 to 195 feet, 200 to 202 feet, 206 to 207 feet, and 214 to 216 feet.....	193.0	218.0
Sandstone, very fine to medium, calcareous, limy, very pale brown.....	218.0	220.0
Sand, very fine to medium, few thin silty lenses.....	220.0	227.5
Silt, very sandy very fine to fine, grayish white....	227.5	231.0
Sand, very fine to medium, some coarse grains, some very fine to medium sandstone lenses.....	231.0	244.0
Silt, very sandy very fine to medium, marly, light gray.....	244.0	249.0
Sand, very fine to medium, marly.....	249.0	254.0
Sand, fine to very coarse trace of fine gravel.....	254.0	260.0
Silt, sandy fine to coarse, slightly clayey, very pale brown.....	260.0	265.4
Sand, fine to coarse some fine gravel,, silt seam at 270 to 272 feet, limy and cemented below 289 feet..	265.4	290.0
Sandstone, very fine to medium, silty and limy, pale brown.....	290.0	295.0
Silt, sandy very fine to medium, calcareous and marly, light grayish white.....	295.0	310.0
Sandstone, very fine to fine, silty and lime cemented, very pale brown to light gray.....	310.0	311.0
Sand, fine to medium, slightly silty.....	311.0	314.5
Sand and gravel, very fine sand to fine gravel,		

scattered reworked shale fragments.....	314.5	323.9
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, weathered olive gray to yellow brown, grayish below 329 feet and black below 230 feet....	323.9	340.0



**Test-hole No. 24-B-74  
(3N-40W-5ABAA)  
Dundy County**

**Legal Description:** T3N, R40W, Sec 5, NE NW NE NE  
**Footages from Section Lines:** South 75.0 ft; West 1475.0 ft  
**Latitude:** 40.262658 [40° 15' 45.57"]  
**Longitude:** -101.858543 [-102° 51' 30.756"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Reservoir Lake SE  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3447.0 ft  
**Source Elev:** Estimated from Map  
**Depth to Water:** 27.76  
**Geophysical Log(s):** Yes  
 Note: Recorder: Goeke, Neale

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Sand, very fine to fine, slightly silty, yellowish brown to 2 feet then brown.....	0.0	4.0
Sand, very fine to medium, very silty, pale brown....	4.0	6.0
Silt, slightly sandy very fine, calcareous, few magnitite grains.....	6.0	11.0
Sand, very fine to medium, light brown.....	11.0	12.9
Silt, slightly sandy very fine, calcareous, some magnitite, very sandy below 21 feet, very pale brown to 16.8 then light gray.....	12.9	24.8
Sand, very fine to coarse.....	24.8	32.4
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Sandstone, very fine to fine, silty, limy, very pale brown.....	32.4	35.0
Silt, vey sandy very fine to fine, limy, white.....	35.0	36.3
Sand, to sandstone, fine to coarse, silty and clayey, silty lense below 44 feet, very pale brown.	36.3	46.0
Sand and gravel, coarse sand to very coarse gravel, silty clay lense 49 to 51 feet, slightly silty below 55 feet.....	46.0	53.0
Sandstone, very fine to fine, limy, very silty, grayish white to 60 feet then very pale brown and coarser.....	53.0	63.2
Sandstone, fine to very coarse, some siltstone lenses, light gray.....	63.2	67.0
Silt, sand and clayey, limy, very pale brown with pinkish tint.....	67.0	69.0
Sandstone, very fine to very coarse, limy, poorly cemented between 75 and 80 feet and marly below 80 feet, very pale brown.....	69.0	84.0
Silt, very sandy very fine to fine, calcareous, very pale brown.....	84.0	88.0
Sandstone, very fine to medium, silty and slightly		

clayey, grayish brown.....	88.0	92.8
Silt, very sandy very fine, slightly clayey, very pale brown.....	92.8	96.0
Sandstone, very fine to coarse, slightly silty, marly between 96 and 105 feet, very silty lenses 114 to 117 feet, 121 to 123 feet and 128 to 130 feet, seeds and siliceous fragments 105 to 115 feet, opaline fragments between 110 and 114 feet, reddish pale brown to 100 feet light gray white to 115 feet then light brown.....	96.0	136.0
Sand and gravel, fine sand to coarse gravel.....	136.0	141.3
Silt, sandy and slightly clayey, limy, light gray to white.....	141.3	147.0
Sand, very fine to very coarse.....	147.0	151.0
Silt, very sandy very fine to fine, slightly clayey, pale brown.....	151.0	152.0
Sand and gravel, fine sand to very coarse gravel.....	152.0	158.0
Silt, slightly clayey, interbedded very fine silty sands, some siltstone lenses, light gray to olive..	158.0	165.5
Sand and gravel, 40% fine to coarse sand, 60 % fine to very coarse gravel, thin sandstone seams to 172 feet, finer below 180.....	165.5	186.0
Sandstone, very fine to coarse trace fine gravels, limy and silty, very pale brown.....	186.0	193.0
Silt, sandy and slightly clayey, limy, light gray to white.....	193.0	195.0
Sand, very fine to coarse trace very coarse, some thin sandstone lenses, siliceous rootlets 200 to 205 feet.....	195.0	214.0
Silt, clayey and slightly sandy, limy, very fine to fine sandstone 217 to 219 feet gray white to olive.	214.0	240.5
Sand, very fine to coarse, scattered rootlets.....	240.5	249.0
Silt, sandy and slightly clayey, limy, olive gray....	249.0	254.5
Sand, fine to coarse,.....	254.5	257.3
Silt, sandy and slightly clayey, light gray to olive.	257.3	263.0
Sand and gravel, fine sand to fine gravel, coarser below 275 feet,, slightly silty to 280 feet, few shale fragments,.....	263.0	285.5
Sand, fine to medium some coarse, silty, thin silt seams.....	285.5	291.0
Sand, fine to very coarse, coarser below 295 feet, slightly silty, few shale fragments.....	291.0	297.6
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, weathered yellowish pale brown with iron staining, gray streaks below 305 feet and dark gray below 306 feet.....	297.6	310.0

**Test-hole No. 25-FC-52  
(4N-41W-1BBBB)  
Dundy County**

**Legal Description:** T4N, R41W, Sec 1, NW NW NW NW  
**Footages from Section Lines:** South 10.0 ft; West 50.0 ft  
**Latitude:** 40.348873 [40° 20' 55.942"]  
**Longitude:** -101.910373 [-102° 54' 37.344"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Reservoir Lake SW  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3488.0 ft  
**Source Elev:** Unknown  
**Depth to Water:** 17 ft (1952).  
**Geophysical Log(s):** No

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Soil, silty, and sand, very fine, brown.....	0.0	5.0
Clay, silty, soft, brown.....	5.0	8.0
Clay, sandy, hard, tan.....	8.0	20.0
Clay, very sandy, tan.....	20.0	22.0
Sand, very fine to medium, loose, tan.....	22.0	27.0
Caliche, sandy, soft, white.....	27.0	32.0
Clay, sandy, soft, brown.....	32.0	34.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Sand, very fine, silty, cemented, brown.....	34.0	37.0
Clay, sandy, hard, light gray.....	37.0	40.0
Sand, very fine, silty, slightly cemented, brown....	40.0	42.0
Clay, sandy, soft, tan to gray.....	42.0	45.0
Clay, sandy, soft, brown.....	45.0	56.5
Sand, very fine to coarse, silty, clayey, cemented, hard, brown, contains streaks of caliche.....	56.5	115.5
Chert, very hard, white.....	115.5	116.0
Sand, very fine to medium, silty, calcareous, hard, green.....	116.0	122.0
Sand, very fine to very coarse, silty, calcareous, hard, brown.....	122.0	139.0
Sand, very fine to very coarse, silty, calcareous, hard, brown; contains layers of caliche.....	139.0	144.0
Sand, very fine, to gravel, fine, silty, cemented....	144.0	152.0
Clay, sandy, soft, brown.....	152.0	157.0
Sand, very fine, to gravel, fine, loose.....	157.0	161.5
Caliche, hard, white.....	161.5	162.0
Sand, very fine, silty, cemented, hard, green.....	162.0	170.0
Clay, hard, green, contains siliceous layers.....	170.0	172.0
Clay, very silty, cemented in layers, hard, brown....	172.0	192.0
Sand, very fine, silty, cemented, contains brown hard layers of caliche.....	192.0	200.5
Sand, very fine, to gravel, fine, loose.....	200.5	202.0
Sand, fine, to gravel, fine, loose, cemented in		

streaks, green.....	202.0	210.0
Clay, sandy, silty, tan.....	210.0	229.0
Sand, very fine to coarse, silty, brown.....	229.0	232.0
Sand, very fine, to gravel, fine, green.....	232.0	242.0
Sand, fine, to gravel, fine, loose.....	242.0	244.5
Clay, soft, brown.....	244.5	245.5
Sand, fine, to gravel, medium, loose.....	245.5	250.0
Caliche and sand, tone, fine, lightly cemented.....	250.0	262.0
Caliche, hard, buff.....	262.0	272.0
Caliche, hard, white, and sandstone, very fine.....	272.0	274.0
Clay, sandy, hard, brown.....	274.0	284.5
Sand, medium, contains very fine to very coarse sand.	284.5	292.5
Sand, medium; contains very fine to very coarse sand and thin layers of caliche.....	292.5	295.5
Sand, medium, contains very fine to coarse sand.....	295.5	302.0
Sand, medium, contains very fine sand to fine gravel, cemented in thin zones.....	302.0	314.0
Clay, hard to soft, tan, gray, and yellow; contains some thin streaks of dense caliche.....	314.0	324.5
Sand, medium, to gravel, medium, loose.....	324.5	331.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Clay, plastic, yellow to light green, and shale, yellow.....	331.0	335.5
Shale, light blue gray.....	335.5	337.0

**Test-hole No. 4-CME-90  
(1N-39W-33AAAC)  
Dundy County**

**Legal Description:** T1N, R39W, Sec 33, NE NE NE SW  
**Footages from Section Lines:** South 400.0 ft; West 570.0 ft  
**Latitude:** 40.016769 [40° 1' 0.368"]  
**Longitude:** -101.722196 [-102° 43' 19.904"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Parks  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3316.0 ft  
**Source Elev:** Unknown  
**Depth to Water:** Not reached  
**Geophysical Log(s):** No

Note: Recorder: V. Souders, M Kuzila, M. Babcock, D. Hoover

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Topsoil, silt, organic, dark gray.....	0.0	3.5
Silt, very fine to coarse, calcareous below 11 feet, worm burrows to 14 feet, pale brown, pale yellowish brown between 19 and 29 feet,.....	3.5	36.5
Silt, very fine to coarse, few iron and manganese concretions and staining below 45.5 feet.....	36.5	53.0
Sand, very fine to medium.....	53.0	54.8
Silt, very fine to coarse, some iron and manganese staining, fossil root channels, pale brown to light yellowish brown.....	54.8	79.0
Silt, very fine to coarse, slightly clayey, few limy nodules between 84 and 86.7 feet and below 89 feet. light yellowish brown to pale brown below 86.7 feet.....	79.0	89.5
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, highly weathered, reworked to 93.5 feet, some iron staining, light yellowish gray to light olive gray below 94 feet.....	89.5	99.0

**Test-hole No. 5-CME-90  
(1N-39W-28DAAA)  
Dundy County**

**Legal Description:** T1N, R39W, Sec 28, SE NE NE NE  
**Footages from Section Lines:** South 200.0 ft; West 150.0 ft  
**Latitude:** 40.024451 [40° 1' 28.022"]  
**Longitude:** -101.720166 [-102° 43' 12.598"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Parks  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3210.0 ft  
**Source Elev:** Unknown  
**Depth to Water:** Not reached  
**Geophysical Log(s):** No  
 Note: Recorder: Babcock, Kuzila

	<b>Depth, in feet</b>	
	<b>From</b>	<b>To</b>
<b>Quaternary System:</b>		
Topsoil, silt, very fine, slightly sandy, fine very fine. some root/worm burrows. Light brown.....	0.0	14.0
Note: Bignell loess ?		
Silt, silt to very fine sand, some limy streaks, pale brown.....	14.0	19.0
Silt, very fine, grayish brown, some rootlets,.....	19.0	26.0
Silt, very fine with some very fine sand, limy areas, yellowish brown.....	26.0	29.0
Note: Bignell loess ?		
Silt, very fine some very fine sand, some limy areas, few manganese stains, few root channels, yellowish brown, limy zones below 49 feet.....	29.0	77.0
Silt, very fine to medium, clayey with some fine sand, scattered one inch gypsum crystals, root channels, manganese areas limy zones and nodules below 81 feet.....	77.0	83.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, weathered shale, some lime accumulation to 84 feet, platy, some iron stains, yellowish brown to olive gray to 84 feet then mottled yellowish brown and gray.....	83.0	89.0

**Test-hole No. 6-B-74  
(1N-37W-6BBB)  
Dundy County**

**Legal Description:** T1N, R37W, Sec 6, NW NW NW NW  
**Footages from Section Lines:** South 122.0 ft; East 6.0 ft  
**Latitude:** 40.090159 [40° 5' 24.571"]  
**Longitude:** -101.549026 [-102° 32' 56.494"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Benkelman  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3149.0 ft  
**Source Elev:** Estimated from Map  
**Depth to Water:** 39.75  
**Geophysical Log(s):** No  
 Note: Recorder: Goeke

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Road fill, silt, sand & clay.....	0.0	1.0
Silt, very to fine some very fine sand, slightly clayey, calcareous, brownish yellow to gray brown..	1.0	5.7
Silt, fine to very coarse, slightly sandy, sandier below 15 feet, medium yellow brown to brownish gray.....	5.7	20.0
Sand, very fine to fine, silty, moderately clayey, slightly calcareous, medium yellow brown.....	20.0	23.5
Note: 0 to 23 feet recent to Bignell (VHD)		
Silt, very fine to fine, some very fine sand, slightly calcareous, slightly clayey, sandier below 32 feet, light yellowish brown, limy and gray white below 38 feet.....	23.5	42.0
Note: 23 to 38 feet Late Wisconsin, 38 to 42 Pre-Wisconsin (VHD)		
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Silt, some very fine sand, very limy, indurated, light grayish white.....	42.0	42.5
Sand and gravel, fine to coarse sand, some fine to medium gravel, slightly silty and clayey, reddish tint.....	42.5	49.0
Clay, very silty, some very fine to fine sand, light grayish olive.....	49.0	49.3
Sand and gravel, fine to coarse sand some fine to coarse gravel, finer below 65 feet, reddish.....	49.3	69.5
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, limy streaks with iron and manganese staining, light yellow to olive, gray below 85 feet and light black below 96.....	69.5	100.0

**Test-hole No. 7-B-74  
(1N-38W-6BBBB)  
Dundy County**

**Legal Description:** T1N, R38W, Sec 6, NW NW NW NW  
**Footages from Section Lines:** South 122.0 ft; East 10.0 ft  
**Latitude:** 40.090204 [40° 5' 24.734"]  
**Longitude:** -101.662400 [-102° 39' 44.638"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Parks  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3235.0 ft  
**Source Elev:** Unknown  
**Depth to Water:** 27.4  
**Geophysical Log(s):** No  
**Note:** Recorder: Goeke

	Depth, in feet	From	To
<b>Quaternary System:</b>			
Topsoil, silt to very fine sand, slightly clayey, organic, dark brown.....	0.0		2.8
Sand, very fine to medium some coarse grains, very silty and slightly clayey.....	2.8		7.7
Silt, fine to very coarse, some very fine sand, light yellow brown,.....	7.7		12.5
Sand, very fine to fine, light brown tan.....	12.5		17.0
Silt, fine to coarse, slightly clayey, some magnite, light yellowish brown.....	17.0		21.0
Sand, very fine to fine some medium, silty.....	21.0		32.0
Silt, very fine to fine, slightly sandy, slightly calcareous, trace medium sand below 35 feet, limy nodules below 36 feet. some magnite, light yellow brown.....	32.0		45.0
Silt, very fine to coarse, very sandy-fine to coarse, some lithic sandstone and limy claystone below 50 feet,.....	45.0		55.0
Sand, fine to coarse with some fine to medium gravel, some lithic lime nodules, reddish tint.....	55.0		56.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>			
Silt, very fine to medium, sandy, slightly clayey, limy, scattered volcanic ash shards 60 to 65 feet, pale olive to light yellow brown below 75 feet.....	56.5		82.0
Siltstone, silt, slightly sandy, light brown.....	82.0		88.0
Sand & gravel, fine sand to fine gravel, some medium gravel, some lithic siltstone fragments, rare bone fragments below 90 feet.....	88.0		91.5
Silt, slightly clayey, pale olive.....	91.5		94.0
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>			
<b>Pierre Formation:</b>			
Shale, clay, weathered to 102.8 feet, some iron staining, some calcareous areas, yellowish brown,			



black below 102.8 feet..... 94.0 110.0

**Test-hole No. 8-B-74  
(1N-39W-6ABDB)  
Dundy County**

**Legal Description:** T1N, R39W, Sec 6, NE NW SE NW  
**Footages from Section Lines:** South 712.0 ft; West 1530.0 ft  
**Latitude:** 40.087790 [40° 5' 16.045"]  
**Longitude:** -101.764093 [-102° 45' 50.736"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Rock Creek Lake  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3235.0 ft  
**Source Elev:** Unknown  
**Depth to Water:** 8.22  
**Geophysical Log(s):** No  
 Note: Recorder: Goeke

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Roadway fill, silt, sand, clayey.....	0.0	1.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Silt, fine to coarse, slightly clayey, very fine sand below 3.2 feet, calcareous, light brown to white.....	1.0	5.0
Silt, medium to coarse, rare coarse gravel, some siltstone and very fine sandstone. pale yellowish to white.....	5.0	6.3
Silt, fine to coarse, very sandy some very fine to fine sandstone, rare gravel grains, calcareous, light brown.....	6.3	8.0
Sand and gravel, fine sand to very coarse gravel, reddish tint.....	8.0	15.2
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, weathered shale, yellowish gray, some iron and manganese staining, gray below 30 feet and grayish black below 35 feet.....	15.2	40.0

**Test-hole No. 9-B-74  
(2N-40W-32CCCC)  
Dundy County**

**Legal Description:** T2N, R40W, Sec 32, SW SW SW SW  
**Footages from Section Lines:** North 118.0 ft; East 8.0 ft  
**Latitude:** 40.089159 [40° 5' 20.973"]  
**Longitude:** -101.871314 [-102° 52' 16.729"]  
**Source Lat/Long:** GIS - Datum: NAD27  
**USGS Quad Map Name:** Rock Creek Lake  
**Nat. Res. District:** Upper Republican  
**Ground Elevation:** 3357.0 ft  
**Source Elev:** Unknown  
**Depth to Water:** Unknown  
**Geophysical Log(s):** No  
 Note: Recorder: Goeke

	Depth, in feet	
	From	To
<b>Quaternary System:</b>		
Road fill, silt, sand and gravel with some limy silt.	0.0	1.5
Silt, fine to coarse, slightly clayey, moderately sandy, dark brown.....	1.5	7.5
Silt, very fine to fine, some very fine sand, slightly clayey, light brownish gray to pale brown, darker brown below 10 feet.....	7.5	13.0
Note: Thin soil below 10 feet		
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
Silt, slightly clayey, some fine sand, pale brown with yellowish tint.....	13.0	18.0
Sand, very fine to fine, silty, some medium to coarse sand.....	18.0	20.5
Silt, sandy very fine to fine, trace medium sand, slightly clayey, limy between 25.5 and 27.3 feet, some coarse sand 27.3 to 28.2 feet, slightly calcareous,.....	20.5	29.0
Sand, silty, very fine to medium trace coarse, fine to coarse below 30 feet, reddish.....	29.0	35.5
Silt, very sandy, very fine to fine, slightly clayey, limy, some calcareous very fine sandstone seams, limy nodules below 38.3 feet, very pale brown to white.....	35.5	42.2
<b>Cretaceous System - Upper Cretaceous Series - Montana Group:</b>		
<b>Pierre Formation:</b>		
Shale, clay, weathered shale, some iron staining, yellowish brown with gray streaks, gray below 75 feet, grayish black below 78 feet.....	42.2	80.0