This report is incomplete.

The original, printed version had missing pages. We apologize for the inconvenience.

OFR-8425

Alberta
RESEARCH COUNCIL

SAND AND GRAVEL RESOURCES
OF
7 to 36-54-1-W5 and 1 to 6-55-1-W5

W.A.D. Edwards

April, 1980

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INTRODUCTION

The Alberta Research Council is presently conducting a province wide sand and gravel resources study for the Alberta Department of Energy and Natural Resources. In February, 1980 the Edmonton Regional Planning Commission requested stratigraphic information for the area of Tp54,R1,W5Mer. Because the Sand and Gravel Inventory is presently studying the resources in the Edmonton area it has been possible to gather information relevent to this request. The Department of Energy and Natural Resources has authorized the release of this information which has been compiled here in the form of a report.

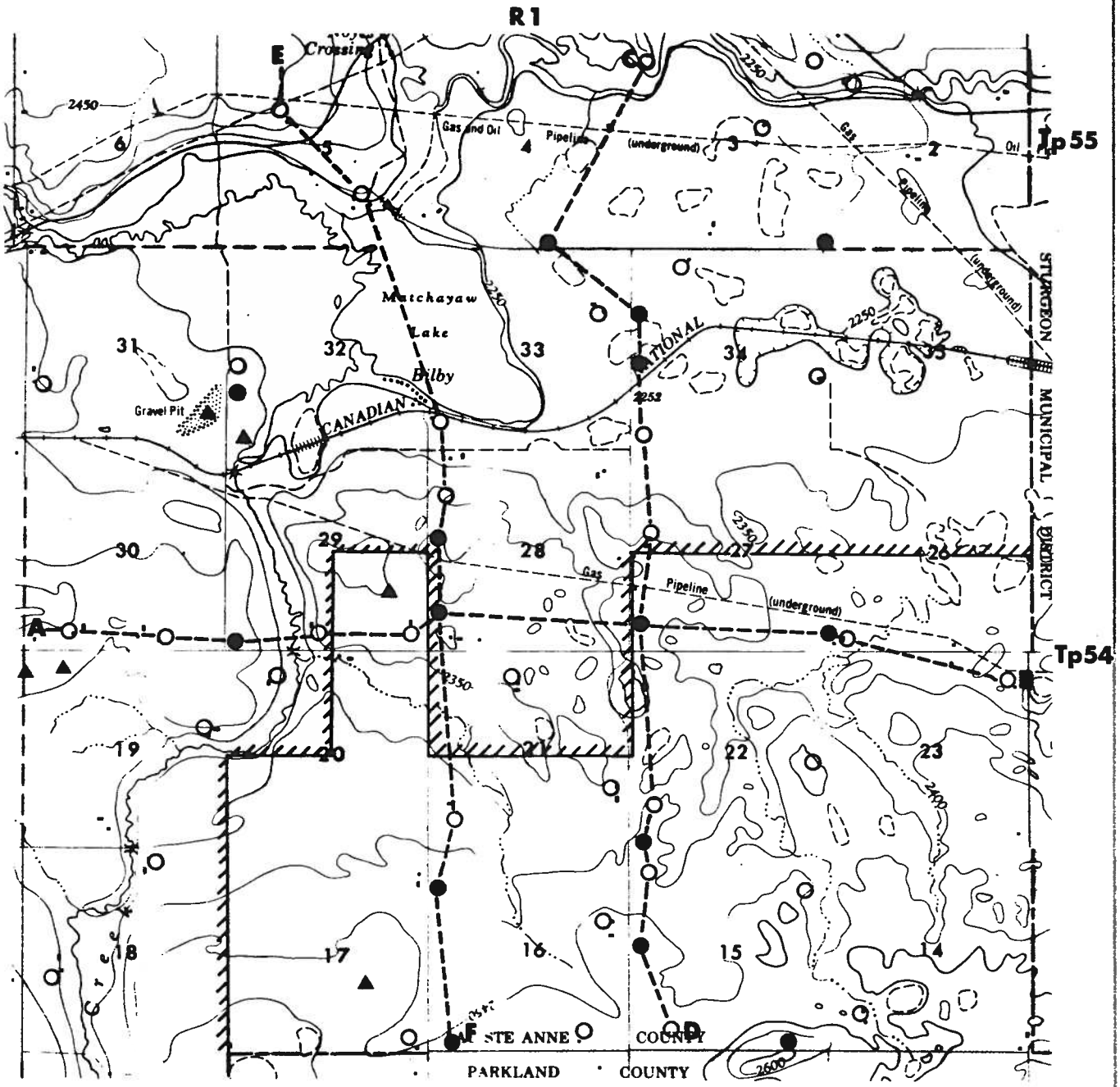
LOCATION AND PREVIOUS WORK

The area considered in this report is east of Onoway and includes sections 14 to 23 and 26 to 35, township 54 rangel and sections 2 to 6, township 55 range 1 west of the fifth meridian (Fig.1). The ERPC boundary for extractive resource conservation crosses this area.

Previous work in this area includes: ARC test hole drilling (see Fig.1-logs in pocket); water well logs on file at ARC (see Fig.1-logs in pocket); surficial geology map (Surficial Geology, Wabamun Lake, ARC 1979 by Andriashek, Fenton and Root), hydrogeological map (Hydrogeological Map, Wabamun Lake, ARC 1972-8, by Ozoray) and four submissions to the ERPC on the following areas: a) SE1/2-2-55-1-W5 and NE1/4-35-54-1-W5, b) NW and SE-33-54-1-W5, c) Sw3-55-1-W5, and d) SW-34-54-1-W5.

METHOD OF STUDY

The available subsurface data was supplemented with information from a drilling program conducted by the Sand and Gravel Inventory of the ARC on April 15 to 17, 1980. All the subsurface data was used to draw cross-sections (Figures 2,3 and 4) and to make a geological interpretation of the area. The interpretation



Legend

Extractive Resource Conservation Area (from Map 12, Edmonton Regional Plan, Vol. 2, March 1979) .....

A.R.C. test hole ..... ●

Sand and gravel pit ..... ▲

Water well ..... ○

Location of geologic section ..... A---B

Figure 1. Map of study area showing test hole locations.

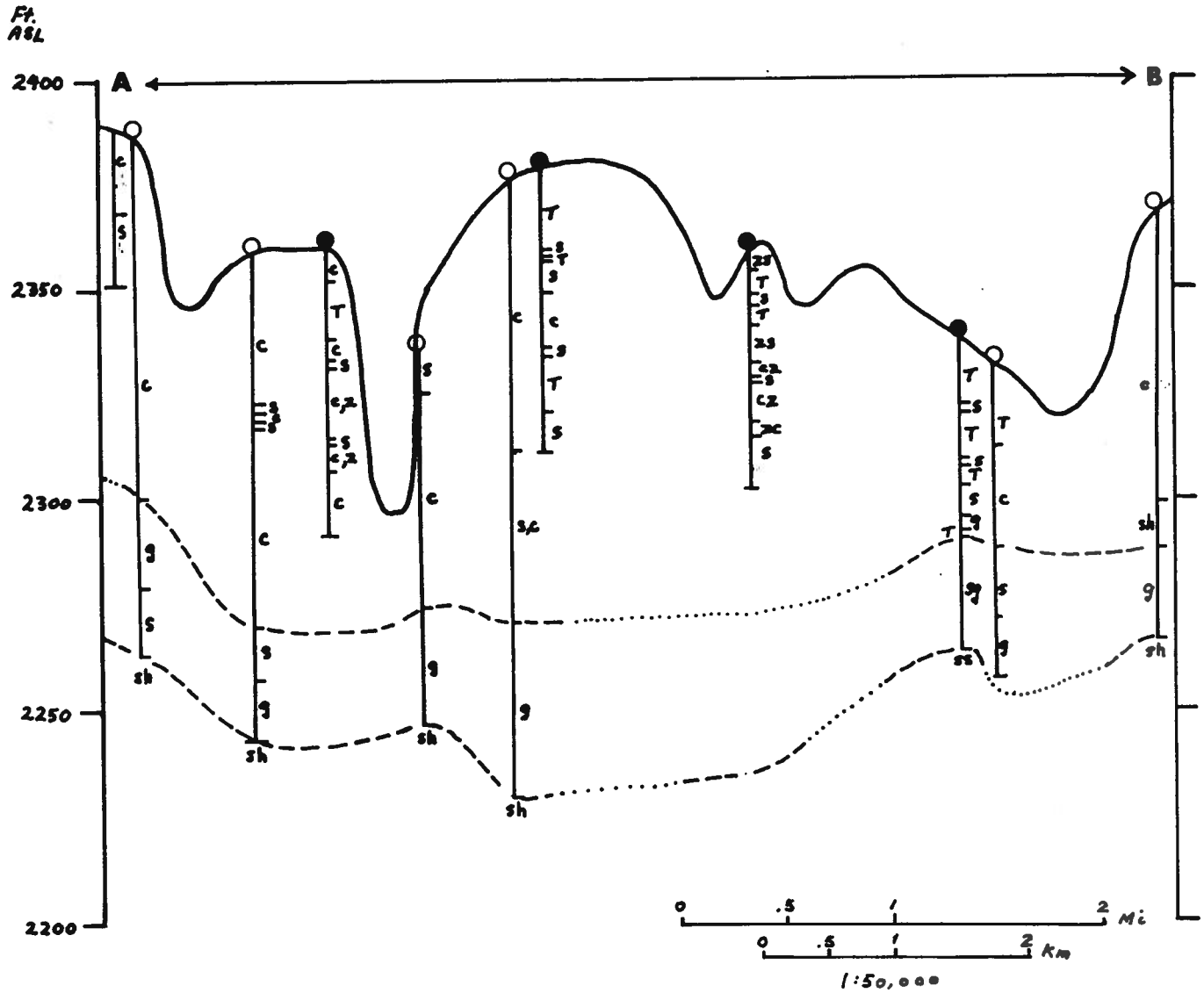
uses the surficial geology and hydrogeology maps referenced above and extends it through the use of the additional data now available.

GEOLOGY

Two topographically and genetically different zones dominate the study area. The northern zone, clearly displayed in Figure 3, is a low, relatively flat area occupying the Preglacial Onoway valley (Andriashek, Fenton and Root, ARC 1979). This valley is evident in the northern half of Figure 4. In general the stratigraphy in this northern zone is, top to bottom, clay (about 6m), clay till (3 to 9m) and fluvial fine to medium-grained sand (up to 30m) occassionally over sandy gravel. This stratigraphy is relatively consistent within this zone. The lower sand was deposited prior to glaciation by a major river flowing west to east through the Onoway valley. The sand is covered by till deposited during the last glaciation. The till is in turn covered by clay deposited in a post-glacial lake which occupied this part of the valley.

The southern zone is higher in elevation and hummocky in nature (Fig.3 and 4). The stratigraphy in this zone is much more complex than in the northern zone. Lenses or beds of varying composition, 1 to 6m thick, can generally be expected when a hole is drilled in this northern zone. This is shown in Figure 2,3 and 4 especially for the ARC test holes which were logged quite careful.

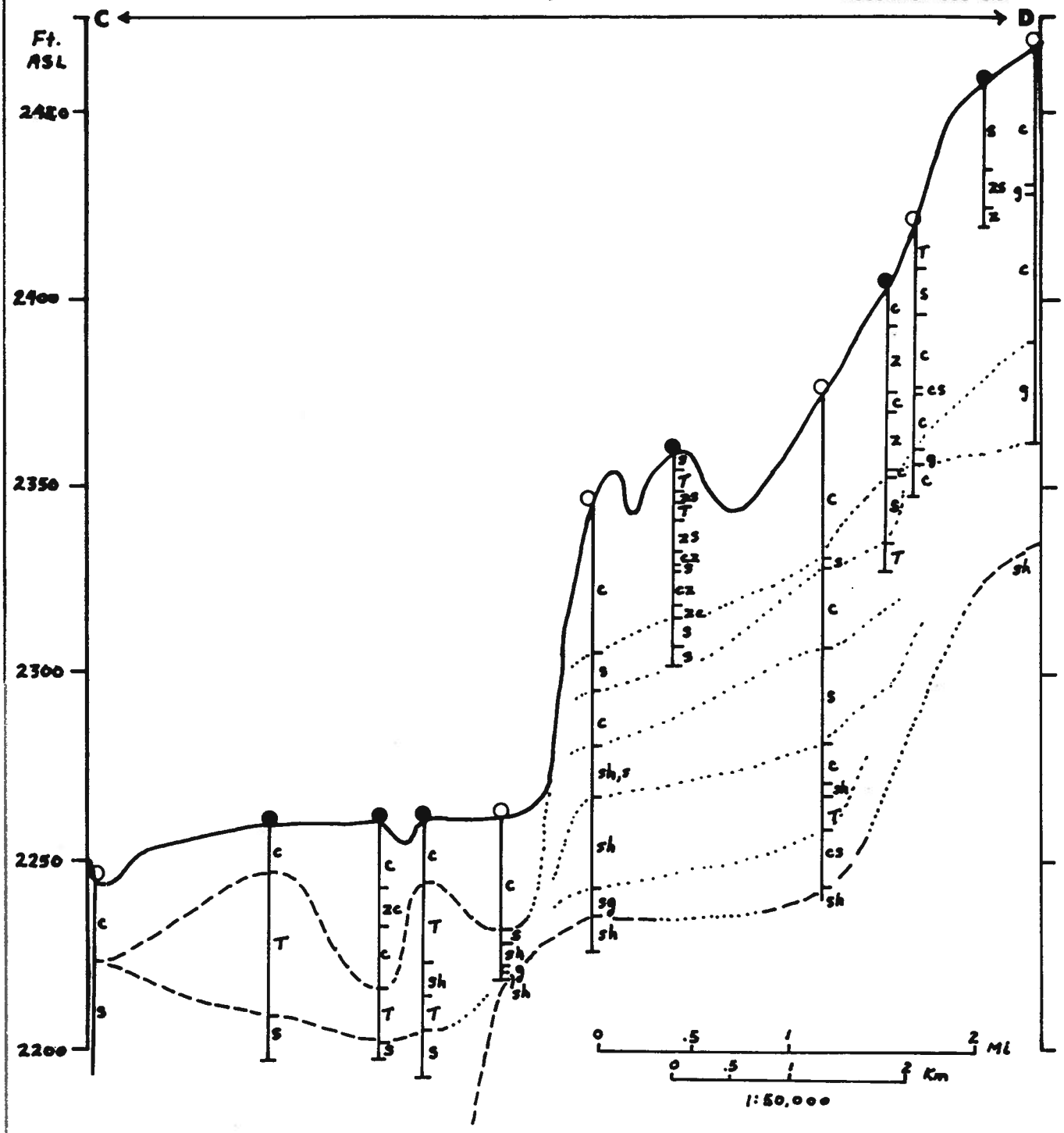
The geologic contacts drawn on the sections for this southern zone are problematical. However, they are useful in explaining the geologic process that is thought to have formed this zone. Glacial movement from the north eroded and carried various types of sediments, including sand and gravel. The type of movement was an upward or thrusting motion probably as a result of ice encountering the edge of the bedrock high shown on Figure3 and 4.



Legend

g	gravel	zc	silty clay
sg	sandy gravel	c	clay
gs	gravelly sand	T	till
s	sand	ss	sandstone
zs	silty sand	sh	shale
cs	clayey sand		approx. geologic contact
sz	sandy silt		assumed geologic contact
cz	clayey silt	●	A.R.C. test hole
z	silt	○	water well

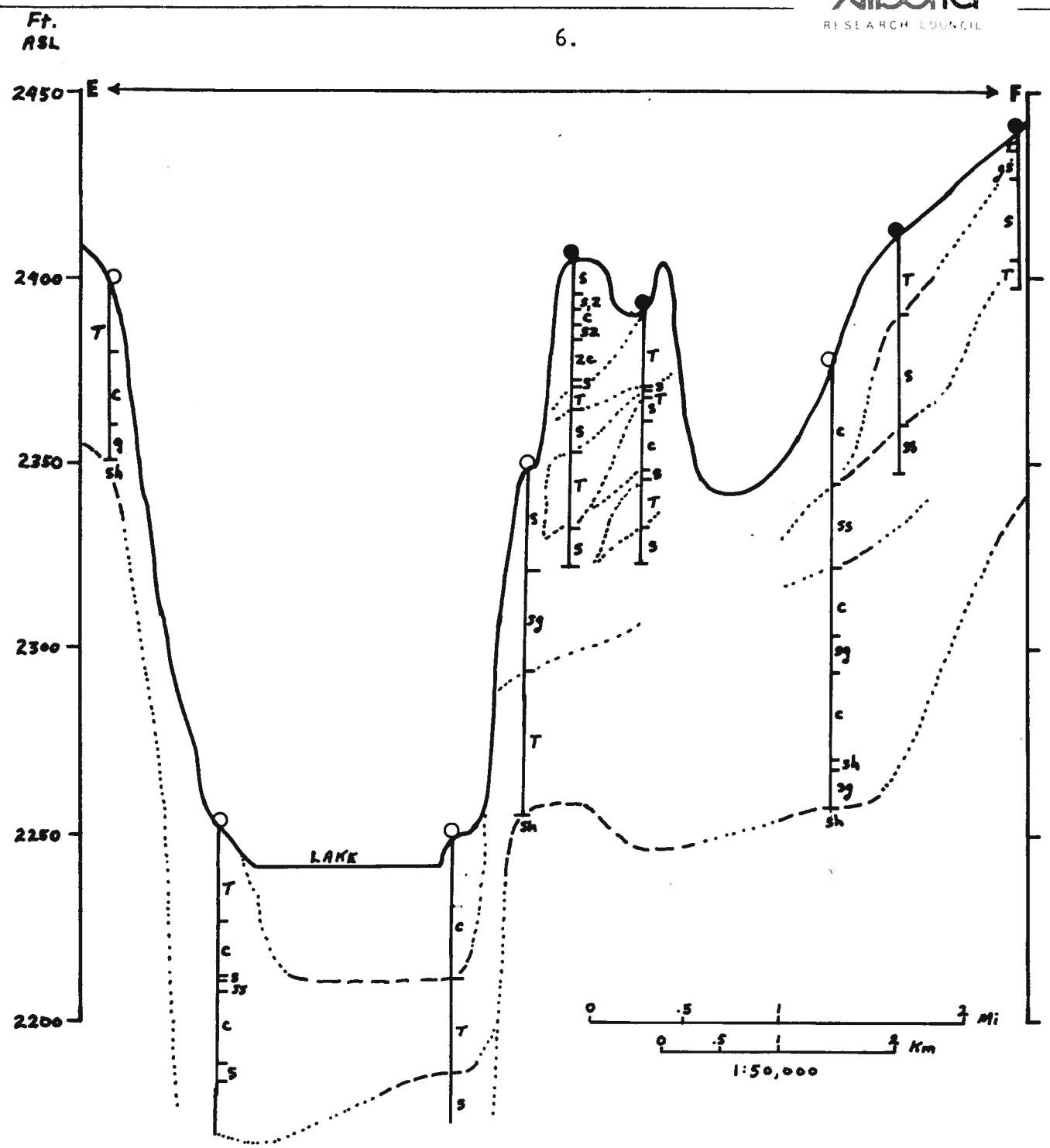
Figure 2. Geologic section A-B, see Figure 1 for location.



Legend

g	gravel	zc	silty clay
sg	sandy gravel	c	clay
gs	gravelly sand	T	till
s	sand	ss	sandstone
zs	silty sand	sh	shale
cs	clayey sand		approx. geologic contact
sz	sandy silt		assumed geologic contact
cz	clayey silt	●	A.R.C. test hole
z	silt	○	water well

Figure 3. Geologic section C-D, see Figure 1 for location.



Legend

g	gravel	zc	silty clay
sg	sandy gravel	c	clay
gs	gravelly sand	T	till
s	sand	ss	sandstone
zs	silty sand	sh	shale
cs	clayey sand		approx. geologic contact
sz	sandy silt		assumed geologic contact
cz	clayey silt	●	A.R.C. test hole
z	silt	○	water well

Figure 4. Geologic section E-F, see Figure 1 for location.

This thrusting tended to mix the various sediments - thus the complex logs, and also to give them a northern dip. Figure 2 is a section across the direction of thrusting and indicates that the deep sand and gravel formation is either in place or part of a very large thrust block. Where large thrust blocks of aggregate such as this, or pieces derived from them, outcrop they can form economic aggregate deposits. Examples of such deposits where extraction has taken place are the pits at NW19-54-1, SW4-54-1, and SE9-54-1. At these excavations the beds are contorted and steeply dipping and the gravel fractured due to the thrusting.

Another zone in the study area, 29 to 32-54-1, contains surface sand and gravel. The sediment here is genetically different from the two major zones. It is post-glacial outwash which was probably deposited by glacial meltwater issuing from the south. This granular material overlies the lacustrine clay/till/fluvial sand sequence of the Onoway channel.

SAND AND GRAVEL RESOURCES

Granular material occurs throughout much of the study area. A number of factors such as overburden thickness , water table and nature of the granular material determine whether the occurrence is economic.

The Preglacial sand of the Onoway valley is thick but is probably too deep (greater than 15 m), too fine (fine to medium sand) and too wet to be economic. Its value is probably as an aquifer rather than as an aggregate resource. The area of 33 to 35-54-1 and 2 to 4-55-1 is of low potential for economic extraction of aggregate.

The southern or thrust zone contains coarse-grained aggregate. The occurrences are relatively small and discontinuous but can have economic value. Detailed exploration would be necessary to pin-point all occurrences. In general, the known deposits outcrop and occur in ridges. In addition, some ice-contact

deposits (kames) also occur in this area - again in the form of hills. The area: sections 14 to 17, E½20 to 23, 26 to E½29, NW¼19, and SW¼30, township 54, range 1 has limited potential for aggregate extraction. Testing should be required before other forms of development to ensure that a large block of aggregate does not underlie the site at shallow depths.

The area of outwash should be assessed through air photo interpretation and shallow testing (backhoe or auger). The area of high potential includes: sections 18, 19, W½20, W½29, 30 to 32, township 54, range 1.

ACKNOWLEDGMENTS

The Department of Energy and Natural Resources provided the funds for this program. In addition I would like to thank P. Sham for the typing and printing of this report.

Mer. 5 Tp. 54 R. 1 Sec. 16 ¼ or LSD NE Identification No.

Co-ordinates Altitude 2455'

Map Sheet No. 83G/9E Contents LITHOLOG COMPLETION

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner Ed Hansen Address Onoway Date Nov. 197

Driller Cal & Norm's Drlg. Type of Rig R

Completed Depth of Well 220

Water-Bearing Intervals	Depth to Water	Well Construction	
From ..... to	.....	(a) Slotted casing	From ..... to .....
From ..... to	.....	(b) Open hole	From 142 to 2
From ..... to	.....	(c) Screen	From ..... to .....
From ..... to	.....	(d) Dug	
		(e) Bored	

Depth to water in Finished Well ..... Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test		

Test rate 9 igpm. for 90

Total Drawdown .....

Original available drawdown .....

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

LITHOLOGY	
1-70	cl
70-126	ss, grvl
126-211	sh
211-217	coal
217-220	sh

Total Solids ppm ..... epm .....

Conduct. at 25°C lab ..... field .....

pH lab ..... field .....

Cation: Anion Balance ..... %

Total Solids Balance ..... %

Comments: Mod Hard

Mer. 5 Tp. 54 R. 1 Sec. 16 ¼ or LSD SE Identification No. 2125C

Co-ordinates Altitude

Map Sheet No. 93G Contents CHEM ANALYSIS COMPLETION APPARENT T LITHOLOG

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

..... Observed by: .....

WELL AND BOREHOLE DATA

Owner R. BEHL Address ONOWAY Date Oct 69

Driller McGinn Type of Rig R

Completed Depth of Well 241

Water-Bearing Intervals		Depth to Water
From	to	.....
From 213	to 230	.....
From	to	.....
From	to	.....

Well Construction

(a) Slotted casing From ..... to 8

(b) Open hole From ..... to ...

(c) Screen From ..... to ...

(d) Dug

(e) Bored

Depth to water in Finished Well 115

AQUIFER TESTS

Test rate 6 igpm

Transmissivity:
- Apparent 139
- Bail Test .....
- Pump Test .....
- Recovery .....
- Equivalent .....

Original available drawdown 18

Q_{20}, from pump test .....
(estimated well yield)

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY June 73

	ppm		%
Total solids	523	Mg	13.95
Hardness	216	Ca	52.36
Ca	68	Ca+Mg	66.31
Mg	11	Na+K	33.68
Sulfates (SO_4)	16	Chlorides	2.16
Chlorides	5	CO_3+HCO_3	92.59
CO_3+HCO_3	.....	SO_4	5.13
Alkalinity	300		
Nitrate (NO_3)	.45		
Iron	2.0		
Fluorine	.12		

Comments: 920A = 1

LITHOLOGY		STRA
0 - 30	CL	
30 - 45	CL & ST	
45 - 75	CL - ST & SD	
75 - 90	GR	
90 - 125	CL & ST	
125 - 183	SH	
183 - 198	SH & SD	
198 - 213	SH	
213 - 230	SH & SD	
230 241	SH	

Mer. 5 Tp. 54 R. 1 Sec. 15 ¼ or LSD 5W Identification No.
Co-ordinates 83 G/9.E Contents APPARENT COMPLETION LITHOLOG Altitude 2480
Map Sheet No.

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner Mr. Charles Looker Address Stony Plain Date Nov. 74

Driller Gerald McGinn Type of Rig R.

Completed Depth of Well 211

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	.....
From ..... to	.....

Well Construction

(a) Slotted casing From ..... to .....
(b) Open hole From 145 to 211
(c) Screen From ..... to .....
(d) Dug
(e) Bored

Depth to water in Finished Well 125 Water Temp. ..... °F ..... °C

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	84	1

Test rate 3. igpm. for 150. mi
Total Drawdown 30
Original available drawdown 20
Storage Coeff. ..... at r_1 .....
..... at r_2 .....
..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

Total Solids ppm ..... epm .....
Conduct. at 25°C lab ..... field .....
pH lab ..... field .....
Cation: Anion Balance ..... %
Total Solids Balance ..... %

LITHOLOGY

0-40 cl
40-42 stone
42-82 cl
82-110 sd, grvl
110-135 cl
135-182 sh
182-184 coal
184-214 sh

Comments: SJK

Mer. 5 Tp. 54 R. 1 Sec. 15 ¼ or LSD NE Identification No.

Co-ordinates Altitude 2400'±

Map Sheet No. 83G/9E Contents LITHOLOG COMPLETION APPLICANT T

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner T. Hughes. Address Oneway. Date Aug. 197

Driller Cal & Norma. Type of Rig R

Completed Depth of Well 240

Water-Bearing Intervals	Depth to Water	Well Construction	
From ..... to	.....	(a) Slotted casing	From 200 to 24
From ..... to	.....	(b) Open hole	From ..... to .....
From ..... to	.....	(c) Screen	From ..... to .....
From ..... to	.....	(d) Dug	
		(e) Bored	

Depth to water in Finished Well 106 Water Temp. ..... °F ..... °C

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	239	10.65

Test rate 10 igpm. for 120 m

Total Drawdown 34

Original available drawdown 94

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

Total Solids	ppm	epm
Conduct. at 25°C	lab	field
pH	lab	field
Cation: Anion Balance		%
Total Solids Balance		%

LITHOLOGY

0-4	sd
4-19	cl
19-60	sd
60-87	sd, rks
87-110	sh
110-114	bent.
114-154	sh
154-159	coal
159-240	sh

Comments:

Mer. 5 Tp. 54 R. 1 Sec. 15 ¼ or LSD NW Identification No.
Co-ordinates Altitude 2400'e
Map Sheet No. 83G/NE Contents LITHOLOG COMPLETION APPARENT T

FIELD OBSERVATIONS:

Type of observation ..... Date .....
Comments: .....
.....
.....
..... Observed by: .....

WELL AND BOREHOLE DATA

Owner A. Pedersen ... Address Onoway ..... Date Sept. 1978
Driller Summeis Drlg. ..... Type of Rig .....
Completed Depth of Well .....67.....

Water-Bearing Intervals	Depth to Water	Well Construction	
From ..... to	.....	(a) Slotted casing	From 58 to 60
From ..... to	.....	(b) Open hole	From ..... to .....
From ..... to	.....	(c) Screen	From 17 to 17
From ..... to	.....	(d) Dug	
		(e) Bored	

Depth to water in Finished Well ...30... Water Temp. .....°F ..... °C

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test	.....	.....
Bail Test	.....	.....
Recovery Test	.....	.....
Apparent-Yield Test	...103.....	...1...

Test rate ...3.5. igpm. for ...60.. min
Total Drawdown .....25.....
Original available drawdown ...28....
Storage Coeff. ..... at r_1 .....
..... at r_2 .....
..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium	.....	.....
Magnesium	.....	.....
Sodium	.....	.....
Potassium	.....	.....
Iron	.....	.....
Nitrate (NO_3^-)	.....	.....
Chloride	.....	.....
Sulfate ($SO_4^=$)	.....	.....
Fluoride	.....	.....
Carbonate ($CO_3^=$)	.....	.....
Bicarbonate (HCO_3^-)	.....	.....
Silica (H_4SiO_4)	.....	.....
Hardness (as($CaCO_3$)	.....	.....
Alkalinity (as $CaCO_3$)	.....	.....

LITHOLOGY

0-6 cl, bldrs
6-18 sd
18-38 cl
38-39 cl, sd
39-54 cl
54-58 grvl
58-60 cl
60-67 cl

Total Solids ppm.....epm.....
Conduct. at 25°C lab .....field.....
pH lab .....field.....
Cation: Anion Balance .....%.....
Total Solids Balance .....%.....

Comments:

Mer. 5 Tp. 54 R. 1 Sec. 14 ¼ or LSD 5-W Identification No.

Co-ordinates Altitude 2544

Map Sheet No. 83G/9E Contents APPARENT T LITHOLOG

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner D. Hartwig Address Stony Plain Date 1973

Driller McGinn Type of Rig R

Completed Depth of Well 104

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	.....
From ..... to	.....

Well Construction

(a) Slotted casing From ..... to .....
(b) Open hole From ..... to .....
(c) Screen From ..... to .....
(d) Dug
(e) Bored

Depth to water in Finished Well 30 Water Temp. ..... °F ..... °

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	198	

Test rate 3.5 igpm. for 165 m

Total Drawdown 15

Original available drawdown .....

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

LITHOLOGY	
0-5	cl
5-12	sd
12-55	cl, stones
55-68	sd
68-104	cl
104-	sh

Total Solids ppm ..... epm .....

Conduct. at 25°C lab ..... field .....

pH lab ..... field .....

Cation: Anion Balance ..... %

Total Solids Balance ..... %

Comments: Hard.

A.R.C. - GRAVEL INVENTORY - FIELD LOG OF TEST HOLE

Location: Tp 54 Rg 1 W 5 Mer. Sec. 28 LSD or 1/4 4

NTS 83G-9 UTM Easting 691600 Northing 5952700

Details 1 mi south of Bilby; on minor ridge.

Time: Start 9:05 Finish 10:25

Test Hole No. R80-ED-6

Driller Ken Pearson

Type of Drill D-70

Geologist or Technician D. Edwards

Date Apr 16, 80 Associated Station —

Surface Elev 2380 Source UTS

DEPTH FROM	DEPTH TO	MATERIAL	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE #	DESCRIPTION
0	2	fill				
2	8	clay till				dk yell-brn; clay till, dry, dense, mod stones 5-8%, oxid
8	20	clay till				grey brn, still oxid; clay till, moist, lo stones, some grit, pliable
20	21	sand				med sand lense, dry; peppery, yell-brn
21	22	sd-clay till				lense, yellow-brn, some grit
23	30	sand				yell-brn, dry; no stones, med sand, loose
30	43	clay till				grey, clay till, lo stones, lo grit & sand. (different from upper till)
43	45	sand				med sd lense, no stones
45	58	sd clay till				yell-brown; sdy-clay to clay-sd till; or till w/ fine sd laminations; lo stones (3%); oxid
58	68	sand				loose dry, fn-med sand; grey-brown, (pepper); a few pebbles (small)

1 - 3 ✓ 13 ✓ 28-33 ✓ 43-48 ✓
17-19 ✓ 33-39 ✓ 48-51
1 ✓ 19-23 ✓ 39-43 ✓ 51-58
23-28 ✓

A.R.C. - GRAVEL INVENTORY - FIELD LOG OF TEST HOLE

Location: Tp 54 Rg 1 W 5 Mer. Sec. 7 LSD or 1/4 1

NTS 83 G 9 UTM Easting 694700 Northing 5952600

Details 1 mi S, 2 mi E of Belloy; 0.1 mi N of intersection

Time: Start 4:15 Finish 6:00 5:50

Test Hole No. R80-EV-5

Driller Ken Pearson

Type of Drill P-70

Geologist or Technician O.L.

Date Apr 15, 80 Associated Station —

Surface Elev 2325 Source NTS

DEPTH FROM	DEPTH TO	MATERIAL	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE #	DESCRIPTION
0	3	fill				
3	5	organic				
5	18	sdy clay till				gell-brown, moist, firm, oxid, mod. stones; coal pieces; oxid
18	20	sand				very wet, sand lens, sorpy
20	31	sdy clay till				lt brown, oxid, gritty, firm
31	33	sand				fn sand, sorpy, lens in till
33	37	sdy clay till				grey, unoxid; lo stones, some grit
37	45	sand				grey, fn sand, sorpy, with lo % small pebbles (5%)
45	48	gully sd.				very well, sorp; med sd with 20% pebbles, up to 1", well-r gty;
48	49	till lens				
49	55	sd gvl.				cleaner, med sd, well-r gty, up to 2", gvl 50%; just moist
55	76	sdy gvl.				wet, grey, med sd, up well-r gty, clasts to 1½"; gvl. 30-40%; several broken clasts seen.
76	78	bedrock				firm; lt grey; silty fn sandstone.

A.R.C. - GRAVEL INVENTORY - FIELD LOG OF TEST HOLE

Location: Tp 55 Rg 1 W 5 Mer. Sec. 4 LSD or 1/4 2

NTS 83G9 UTM Easting 692300 Northing 5955600

Details 1 mi E of Sturgeon R. bridge at Matchayan L

Time: Start 2:35 Finish 3:30 3:40

Test Hole No. R80-EV-4

Driller Kim Pearson

Type of Drill P-70

Geologist or Technician L.L.

Date Apr 15, 80 Associated Station —

Surface Elev 2260 Source NTS

DEPTH FROM	DEPTH TO	MATERIAL	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE #	DESCRIPTION
0	12	clay				brown, lacustrine clay; dense dry, oxid
12	18	sdy clay till				~~[illegible]~~ yell-brown; moist, soft, lo stones, sani grit
18	51	sdy clay till				grey, unoxid, clay to sdy clay till; soft to, lo stones
51	63	sand				grey, very wet, med sand, no pebbles, salt & pepper

A.R.C. - GRAVEL INVENTORY - FIELD LOG OF TEST HOLE

Location: Tp 54 Rg 1 W 5 Mer. Sec. 34 LSD or 1/4 12

NTS 83B-9 UTM Easting 693100 Northing 5955200

Details east of Matchayaw L.; ½ mi N of CNR crossing

Time: Start 1:10 2:10 Finish 2:20

Test Hole No. R80-ED-3

Driller Ken Pearson

Type of Drill P-70

Geologist or Technician D.E.

Date Apr. 15, 80 Associated Station —

Surface Elev. 2260 Source NTS

DEPTH FROM	DEPTH TO	MATERIAL	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE #	DESCRIPTION
0	11	silt/clay				bra-to lt. bra; dense, laminated clay, clay
11	18	clay				gray; firm clay; not as laminated; unoxid
18	28	silty-clay				brn; soft, silty-clay, oxid, moist
28	32	clay				gray, clay, dense, with organics - thin lines of bra material; may be wood level - is wet
32	38	clay				gray, unoxid, dense
38	45	clay				gray " "
45	59	till				gray, unoxid, dense, lo stone. 5% fr sand, sorty - no recovery; very wet
59	63	sand				

A.R.C. - GRAVEL INVENTORY - FIELD LOG OF TEST HOLE

Location: Tp 54 Rg 1 W 5 Mer. Sec. 34 LSD or 1/4 8

NTS 83 G 9 UTM Easting 693100 Northing 5954800

Details ½ mi east Mathias Lake; 0.2 km N of CNR crossing

12:35 fin. hole

Time: Start 11:10 Finish 12:45

Test Hole No. REDED-2

Driller Ken Parsons

Type of Drill P-70

Geologist or Technician C.S.

Date Aug 15 Associated Station —

Surface Elev. 2260 Source GPS

DEPTH FROM	DEPTH TO	MATERIAL	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE #	DESCRIPTION
0	16	clay				yell-brown, moist, pliable; laminated silt-clay;
16	31	sdy-clay till				grey-brown, lo. stone 5%, loose, moist till; round
31	38	sdy-clay till				dk grey-mottled, dry, lo stone, sand grit; becoming
~~38~~	~~46~~	~~shale bed~~				firm to drill
38	46	shale bed				grey w/ green blotches, turn black — shale,
						firm
46	50	sdy-clay till				brown, wet, firm, molasses (well is artesian)
						round
46	55	sdy clay till				grey, gritty, clay till, firm, moist
55	60	sandy				wet fn sd — flows off auger,
						JE80-1 -25 mg, bill (thrust) in part

A.R.C. - GRAVEL INVENTORY - FIELD LOG OF TEST HOLE

Location: Tp 54 Rg 1 W 5 Mer. Sec. 27 LSD or 1/4 4

NTS 83G9 UTM Easting 693200 Northing 5952600

Details 1 mi S, 5 mi E, [illegible] of Onoway (0.2 mi N of intersection) 10.40 [illegible]

Time: Start 9:30 Finish 10:45

Test Hole No. [illegible]

Driller [illegible]

Type of Drill P.C.

Geologist or Technician [illegible]

Date [illegible] Associated Station –

Surface Elev 2370 Source NTS

DEPTH FROM	DEPTH TO	MATERIAL	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE #	DESCRIPTION
0	4	[illegible]				
4	6	silty clay				[illegible], dry
6	12	till				dk grey brn, clay, [illegible], [illegible]
12	14	silty cl				dk brn, moist
14	19	till				dk grey mottled, clay till, mod st 5%
19	20	silty cl				dk grey, mottled, silty 20%, [illegible]
20	21	clay-silt				dk grey, mottled, dry
21	32	fn sand				lt grey, dry
32	40	clay-clay silt				dk grey, firm, dry, slightly moist 6%
	42					sd – 25, clay 30, silt 45%
~~40~~						
42	45	silty clay				grey-brn, moist, silt 40, clay 60%, no stones
45	53	fn sd				yell-brn, dry, dusty (159), ~~[illegible]~~ fn, loose
						- gets wet @ 50'
53	58	med sd				wet, loose, med gr., salt & pepper sand, no pebbles

A.R.C. - GRAVEL INVENTORY - FIELD LOG OF TEST HOLE

Location: Tp 54 Rg 1 W 5 Mer. Sec. 32 LSD or 1/4 5

NTS 83 E 9 UTM Easting 689900 Northing 5954400

Details 1 mi. W of Billy; ½ mi. N of CNR crossing on N end of gvl pits

Test Hole No. R80 EC-9

Driller Ken Pearson

Type of Drill P-70

Geologist or Technician D. Edwards

Date Apr. 16 80 Associated Station —

Surface Elev 2260 Source NTS

Time: Start 2:50 Finish 4:30

DEPTH FROM	DEPTH TO	MATERIAL	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE #	DESCRIPTION
0	8	med sand				yell-brn, med-crs sd, (outwash)
8	18	fn sand				yell-brn, fn sand
18	28 230	dirty sand				yell-brn, very dirty (15%) sand to gravelly sand (gvl up to 20%); pebbles to 1½"; gets wet @ 28'
30	40	sdy clay till				grey, unoxid, sdy clay till; gritty; mod stones 10%
40	41	sand				fn sand lens; wet, grey
41	50	sdy clay till				grey, unoxid, sdy clay till, ~~slt~~ gritty; mod to hi stones 10-15%
50	78	sand				grey, fn sand, peppery, wet, some in very clean, some slightly dirty; PG.

A.R.C. - GRAVEL INVENTORY - FIELD LOG OF TEST HOLE

Location: Tp 54 Rg 1 W5 Mer. Sec. 29 LSD or 1/4 4

NTS 83F9 UTM Easting 690000 Northing 5952300

Details 1½ mi S, 1 mi W of Billby; at mi W of intersection

Time: Start 1:00 Finish 2:45 (2:30)

Test Hole No. R80-E0-8

Driller Ken Pearson

Type of Drill P-70

Geologist or Technician D. Edwards

Date Apr. 16, 80 Associated Station —

Surface Elev 2360 Source NTS

DEPTH FROM	DEPTH TO	MATERIAL	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE #	DESCRIPTION
0	2	peat				
2	6	clay				soft, grey-green clay
6	8	clay				brown, firm, clay
8	14	~~silty~~ clay till				yell-lbn, gritty clay till, mod stones 5-10%
14	21 (28)	gritty clay till				grey, unoxid, gritty clay till, dense, mod stones 10%
21	26	clay				grey clay
26	27	silty-sand				sorpy (v. wet), grey, silty (dirty) fn sand
27	45 (43)	clay and silt				grey, unoxid, laminated
45	46	sand				sorpy, grey, fn sand w/ silt
46	53 (48, 57)	clay and silt				grey, unoxid laminated silt & clay
53	68 (58)	clay				grey, dense, clay, w/ occasional silt fn sd lenses

Mer. 5 Tp. 54 R. 1 Sec. 21 ¼ or LSD SE (8) Identification No.

Co-ordinates Altitude 2425

Map Sheet No. 83G/16 Contents LITHOLOG COMPLETION APPARENT 7

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner J. Cerny Address Onoway Date June -

Driller McGinn Type of Rig R

Completed Depth of Well 316

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	.....
From ..... to	.....

Well Construction		
(a) Slotted casing	From 142	to 31
(b) Open hole	From	to .....
(c) Screen	From	to .....
(d) Dug		
(e) Bored		

Depth to water in Finished Well 120 Water Temp. ..... °F .....

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test	.....	.....
Bail Test	.....	.....
Recovery Test	.....	.....
Apparent-Yield Test	120	7

Test rate 5 igpm. for 150

Total Drawdown 35

Original available drawdown 122

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium	.....	.....
Magnesium	.....	.....
Sodium	.....	.....
Potassium	.....	.....
Iron	.....	.....
Nitrate (NO_3^-)	.....	.....
Chloride	.....	.....
Sulfate ($SO_4^=$)	.....	.....
Fluoride	.....	.....
Carbonate ($CO_3^=$)	.....	.....
Bicarbonate (HCO_3^-)	.....	.....
Silica (H_4SiO_4)	.....	.....
Hardness (as($CaCO_3$)	.....	
Alkalinity (as $CaCO_3$)	.....	

Total Solids	ppm	epm .....
Conduct. at 25°C	lab	field .....
pH	lab	field .....
Cation: Anion Balance		..... %
Total Solids Balance		..... %

LITHOLOGY

0-42	cl
42-44	sd
44-65	cl
65-92	sd
92-102	cl
102-105	sh
105-114	cl + stones
114-130	cl + sd
130-134	sh
134-139	cl
139-156	sh + coal
156-159	coal
159-236	sh
236-239	coal
239-272	sh
272-297	sh + coal
297-314	sh
314-319	sh + coal

Comments: .....

Mer. 5 Tp. 54 R. 1 Sec. 20 ¼ or LSD NW Identification No.

Co-ordinates Altitude 2320'

Map Sheet No. 83G/9E Contents LITHOLOG COMPLETION APPARENT T

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner E. Spreen Address Oneway Date Nov/

Driller G. McGinn Type of Rig R

Completed Depth of Well 317

Water-Bearing Intervals	Depth to Water	Well Construction	
From ..... to	.....	(a) Slotted casing	From ..... to .....
From ..... to	.....	(b) Open hole	From 107 to 3
From ..... to	.....	(c) Screen	From ..... to .....
From ..... to	.....	(d) Dug	
		(e) Bored	

Depth to water in Finished Well 54 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	5	.1

Test rate 1 igpm. for 285

Total Drawdown 163

Original available drawdown 55

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

LITHOLOGY	
0-50	cl
50-56	sd
56-90	gravl, sd
90-150	sh
150-182	sh, sd
182-199	sh
199-210	sh, sd
210-260	sh
260-270	sh, sd
270-283	sh
283-300	sh, sd
300-317	sh

	ppm	epm
Total Solids		
Conduct. at 25°C	lab	field
pH	lab	field
Cation: Anion Balance		%
Total Solids Balance		%

Comments:

Mer. 5 Tp. 54 R. 1 Sec. 19 ¼ or LSD NE Identification No.

Co-ordinates Altitude 2350

Map Sheet No. 83-G/NE Contents LITHOLOGY, Well Diagram APPARENT T

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner Wayne Phillips Address Onoway Date 8/196

Driller L. McGinn, Box 434, Stony Plain Type of Rig Rotary

Completed Depth of Well 406

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	.....
From ..... to	.....

Well Construction

(a) Slotted casing From ..... to ...

(b) Open hole From 196 to 4

(c) Screen From ..... to ...

(d) Dug

(e) Bored

Depth to water in Finished Well 83 (2267)

AQUIFER TESTS

Test rate S. ½ igpm

6h45', 137 ft d.d. pressure

Transmissivity

- Apparent 4
- Bail Test .....
- Pump Test .....
- Recovery .....
- Equivalent .....

Original available drawdown .....

Q_{20}, from pump test .....

(estimated well yield)

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY

	ppm		%
Total solids	.....	Mg	.....
Hardness	.....	Ca	.....
Ca	.....	Ca+Mg	.....
Mg	.....	Na+K	.....
Sulfates (SO_4)	.....	Chlorides	.....
Chlorides	.....	CO_3+HCO_3	.....
CO_3+HCO_3	.....	SO_4	.....
Alkalinity	.....		
Nitrate (NO_3)	.....		
Iron	.....		
Fluorine	.....		

Comments: .....

LITHOLOGY

		STRAT
0-15	Yellow clay	
15-75	Blue "	
75-105	Gravel	
105-109	Blue clay	
109-125	Grey shale	
125-162	" " & brown	
162-169	Green "	
169-190	Grey "	
190-216	" "	
216-225	" " w. sand	
225-228	Brown "	
228-242	Grey " w. sand	
242-266	Brown " w. coal	
266-286	Grey "	
286-302	" " w. sand	
302-327	" " & brown	
327-332	" " w. sand	
332-365	" "	
365-378	Brown "	
378-392	[illegible]	

Mer. 5 Tp. 54 R. 1 Sec. 18 ¼ or LSD SW Identification No. 235C

Co-ordinates Altitude

Map Sheet No. 83 G/9 E Contents LITHOLOG WATER LEVEL COMPLETION

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner W. Waddell Address Box 60 - Onoway Date 69

Driller G. McGinn Type of Rig rotary

Completed Depth of Well 151

Water-Bearing Intervals		Depth to Water
From	to	.....
From 132	to 144	.....
From	to	.....
From	to	..... sand & shale

Well Construction		
(a) Slotted casing	From	to .....
(b) Open hole	From 116	to 15
(c) Screen	From	to .....
(d) Dug		
(e) Bored		

Depth to water in Finished Well 60 (2290)

AQUIFER TESTS

Test rate 7 igpm

Transmissivity: Apparent ..... Bail Test ..... Pump Test ..... Recovery ..... Equivalent .....

Original available drawdown .....

Q_{20}, from pump test ..... (estimated well yield)

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY

	ppm		%
Total solids		Mg	
Hardness		Ca	
Ca		Ca+Mg	
Mg		Na+K	
Sulfates (SO_4)		Chlorides	
Chlorides		CO_3+HCO_3	
CO_3+HCO_3		SO_4	
Alkalinity			
Nitrate (NO_3)			
Iron			
Fluorine			

Comments: .....

LITHOLOGY

		STRAT
0 - 53	CL	
53 - 94	SH	
94 - 95	COAL	
95 - 111	SH	
111 - 112	COAL	
112 - 132	SH	
132 - 144	SH & SD	
144 - 151	SH	

02

Mer. 5 Tp. 54 R. 1 Sec. 18 ¼ or LSD NE Identification No.

Co-ordinates Altitude 2370'

Map Sheet No. 83G/16 Contents COMPLETION LITHOLOG

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner A. Kettle Address Onoway Date Oct/78

Driller Mar Wayne Type of Rig R

Completed Depth of Well 180

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	.....
From ..... to	.....

Well Construction		
(a) Slotted casing	From 61	to 18
(b) Open hole	From	to .....
(c) Screen	From	to .....
(d) Dug		
(e) Bored		

Depth to water in Finished Well ..... Water Temp. ..... °F ..... °

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test		

Test rate 2 igpm. for 240 m

Total Drawdown .....

Original available drawdown .....

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

LITHOLOGY	
0-21	cl
21-34	till
34-36	sd, gr
36-41	till
41-89	sh
89-92	coal
92-139	sh
139-144	ss
144-156	sh
156-161	ss
161-174	sh
174-176	ss
176-180	sh

Total Solids	ppm	epm	
Conduct. at 25°C	lab	field	
pH	lab	field	
Cation: Anion Balance			%
Total Solids Balance			%

Comments:

Mer. 5 Tp. 54 R. 1 Sec. 17 ¼ or LSD SE Identification No.

Co-ordinates Altitude

Map Sheet No. 83G Contents LITHOLOGY COMPLETION

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner H. WALDOWSKI Address CONWAY Date 1972

Driller McGinn Type of Rig .....

Completed Depth of Well 184

Water-Bearing Intervals	Depth to Water
From ..... to	~~124~~
From ..... to	
From ..... to	
From ..... to	

Well Construction

(a) Slotted casing From ..... to .....

(b) Open hole From 141 to 1

(c) Screen From ..... to .....

(d) Dug

(e) Bored

Depth to water in Finished Well 80

AQUIFER TESTS

Test rate 2.5 igpm

Transmissivity: Apparent ..... Bail Test ..... Pump Test ..... Recovery ..... Equivalent .....

Original available drawdown .....

Q_{20}, from pump test ..... (estimated well yield)

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY

	ppm		%
Total solids		Mg	
Hardness		Ca	
Ca		Ca+Mg	
Mg		Na+K	
Sulfates (SO_4)		Chlorides	
Chlorides		CO_3+HCO_3	
CO_3+HCO_3		SO_4	
Alkalinity			
Nitrate (NO_3)			
Iron			
Fluorine			

Comments: .....

LITHOLOGY	STRAT
0-98 sd gr cl	
98-184 sh coal	

Mer. 5 Tp. 55 R. 1 Sec. 3 ¼ or LSD NW Identification No.

Co-ordinates Altitude 2250'

Map Sheet No. 83G/16 Contents LITHOLOG APPARENT T COMPLETION

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner P. Brady Address Onoway Date April

Driller McGinn Type of Rig R

Completed Depth of Well 93

Water-Bearing Intervals		Depth to Water
From	to	.....
From	to	.....
From	to	.....
From	to	.....

Well Construction

(a) Slotted casing From ..... to .....

(b) Open hole From ..... to .....

(c) Screen From 54 to .....

(d) Dug

(e) Bored

Depth to water in Finished Well 10 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	588	21

Test rate 14 igpm. for 150

Total Drawdown 20

Original available drawdown 74

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY

	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

Total Solids ppm ..... epm .....

Conduct. at 25°C lab ..... field .....

pH lab ..... field .....

Cation: Anion Balance ..... %

Total Solids ...

LITHOLOGY

0-28 cl

28-96 sd, coal

96- gravel

Comments:

Mer. 5 Tp. 54 R. 1 Sec. 34 ¼ or LSD SE (8) Identification No.
Co-ordinates Altitude 2260'
Map Sheet No. 83G/9E Contents APPARENT T LITHOLOG COMPLETION

FIELD OBSERVATIONS:

Type of observation ..... Date .....
Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner T. Hook Address Onoway Date June 7
Driller Mar-Wayne Type of Rig R
Completed Depth of Well 123

Water-Bearing Intervals	Depth to Water	Well Construction	
From ..... to	.....	(a) Slotted casing	From ..... to .....
From ..... to	.....	(b) Open hole	From ..... to .....
From ..... to	.....	(c) Screen	From 119 to 12[illegible]
From ..... to	.....	(d) Dug	
		(e) Bored	

Depth to water in Finished Well 59 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	378	10

Test rate 18 igpm artesian for 180
Total Drawdown 41
Original available drawdown 56
Storage Coeff. ..... at r_1 .....
..... at r_2 .....
..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

LITHOLOGY	
0-19	cl + rK
19-37	sd + rK
37-58	cl + sd
58-79	cl + coal
79-115	sd
115-123	sd + gr

Total Solids ppm ..... epm .....
Conduct. at 25°C lab ..... field .....
pH lab ..... field .....
Cation: Anion Balance ..... %
Total Solids Balance ..... %

Comments: Hard.

Mer. 5 Tp. 54 R. 1 Sec. 33 ¼ or LSD SW Identification No.
Co-ordinates Altitude 2240'
Map Sheet No. 83G/9E Contents LITHOLOG COMPLETION APPARENT T

FIELD OBSERVATIONS:

Type of observation ..... Date .....
Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner L. Susiak Address Onaway Date Apr. 7
Driller Reklow Type of Rig R
Completed Depth of Well 131

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	.....
From ..... to	.....

Well Construction

(a) Slotted casing From ..... to .....
(b) Open hole From ..... to .....
(c) Screen From 96 to 1
(d) Dug
(e) Bored

Depth to water in Finished Well 24 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	203	7

Test rate 5 igpm. for 120
Total Drawdown 20
Original available drawdown 72
Storage Coeff. ..... at r_1
..... at r_2
..... at r_3

CHEMISTRY	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

LITHOLOGY	
0 - 25	cl rk
25 - 28	gr + pebbles
28 - 40	cl
40 - 44	sd
44 - 45	ss
45 - 64	cl + coal
64 - 68	sd
68 - 93	coal
93 - 98	sd + coal
98 - 99	ss
99 - 113	coal + sd
113 - 115	gr + sd
115 - 119	cl + rk
119 - 120	gr
120	cl

Total Solids	ppm	epm	
Conduct. at 25°C	lab	field	
pH	lab	field	
Cation: Anion Balance			%
Total Solids Balance			%

Comments: Hard.

Mer. 5 Tp. 54 R. 1 Sec. 33 ¼ or LSD NE Identification No.

Co-ordinates Altitude 2265'c

Map Sheet No. 83 G/96 Contents COMPLETION LITHOLOG APPARENT T CHEM ANALYSIS

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner J. Van Leeuwen Address Onoway Date Mar.

Driller Mar-Wayne Drilling Type of Rig R

Completed Depth of Well 120

Water-Bearing Intervals		Depth to Water
From	to	.....
From 105	to 120	.....
From	to	.....
From	to	.....

Well Construction

(a) Slotted casing From ..... to .....
(b) Open hole From ..... to .....
(c) Screen From 113 to 11
(d) Dug
(e) Bored

Depth to water in Finished Well 28 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	387	14

Test rate 20 igpm. for 120 n

Total Drawdown 42

Original available drawdown 77

Storage Coeff. ..... at r_1 .....
..... at r_2 .....
..... at r_3 .....

CHEMISTRY 19.5.77	ppm	epm %
Calcium	69	37
Magnesium	39	35
Sodium	58	27
Potassium	3.7	1
Iron	.74	-
Nitrate (NO_3^-)	<.45	-
Chloride	<1	-
Sulfate ($SO_4^=$)	71	18
Fluoride	.10	.1
Carbonate ($CO_3^=$)	-	
Bicarbonate (HCO_3^-)	414	82
Silica (H_4SiO_4)	13.9	
Hardness (as($CaCO_3$)	332	
Alkalinity (as $CaCO_3$)	340	

LITHOLOGY

0-16 cl.
16-61 Till
61-105 sd.
105-120 Sd, Grvl.

Total Solids	ppm 446	epm	
Conduct. at 25°C	lab 800	field	
pH	lab 8.3	field	
Cation: Anion Balance		11.08 %	
Total Solids Balance		1.11 %	

Comments: Chem doesn't balance

Mer. 5 Tp. 54 R. 1 Sec. 32 ¼ or LSD SE Identification No.

Co-ordinates Altitude 2250

Map Sheet No. 83G/9 E Contents COMPLETION CHEM. ANALYSIS LITHOLOG

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner A. Noble Address Onoway Date July

Driller Caribou Type of Rig R

Completed Depth of Well 97

Water-Bearing Intervals	Depth to Water	Well Construction	
From ..... to	.....	(a) Slotted casing	From ..... to .....
From ..... to	.....	(b) Open hole	From ..... to .....
From ..... to	.....	(c) Screen	From 85 to .....
From ..... to	.....	(d) Dug	
		(e) Bored	

Depth to water in Finished Well 14.5 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test		

Test rate ..... igpm. for .....

Total Drawdown .....

Original available drawdown .....

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY 12.9.73	ppm	epm %
Calcium	35	17
Magnesium	34	27
Sodium	135	56
Potassium	3.3	1
Iron	2.4	–
Nitrate (NO_3^-)	2.45	–
Chloride	3	1
Sulfate ($SO_4^=$)	101	20
Fluoride	.06	.03
Carbonate ($CO_3^=$)		5
Bicarbonate (HCO_3^-)	510	79
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)	225	
Alkalinity (as $CaCO_3$)	418	

LITHOLOGY	
0-4	sd
4-21	cl
21-38	sd, cl
38-57	grvl, sd
57-59	grvl
59-92	grvl, sd
92-97	mudst

Total Solids	ppm 568	epm	
Conduct. at 25°C	lab 1120	field	
pH	lab 7.5	field	
Cation: Anion Balance		.14 %	
Total Solids Balance		1.00 %	

Comments:

Mer. 5 Tp. 54 R. 1 Sec. 31 ¼ or LSD 5 Identification No.

Co-ordinates Altitude 23 a.o.

Map Sheet No. 83G/12E Contents APPARENT T

COMPLETION LITHOLOG

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner ..... Address Onoway Date July

Driller Coralta Type of Rig .....

Completed Depth of Well 289

Water-Bearing Intervals	Depth to Water
From ..... to	
From 189.5 to 289	
From ..... to	
From ..... to	

Well Construction		
(a) Slotted casing	From 190	to 28
(b) Open hole	From	to .....
(c) Screen	From	to .....
(d) Dug		
(e) Bored		

Depth to water in Finished Well 60 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	17	1

Test rate 5 igpm. for 90

Total Drawdown 229

Original available drawdown 129

Storage Coeff. ..... at r_1 .....

at r_2 .....

at r_3 .....

CHEMISTRY	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

LITHOLOGY	
0-25	cl, bldrs
25-28	sd
28-60	cl
60-65	sd
65-95	cl
95-160	sd
160-175	cl
175-181	sd
181-192	sh
192-195	ss
195-238	sh, ss
238-243	ss
243-272	sh, ss
272-276	coal
276-289	sh

Total Solids	ppm	epm	
Conduct. at 25°C	lab	field	
pH	lab	field	
Cation: Anion Balance			%
Total Solids Balance			%

Comments:

Mer. 5 Tp. 54 R. 1 Sec. 30 ¼ or LSD SE Identification No.

Co-ordinates Altitude

Map Sheet No. 83 S Contents LITHOLOG COMPLETION APPARENT T

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner H. Wardowski Address Onaway Date June

Driller McGinn Type of Rig R

Completed Depth of Well 118

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	.....
From ..... to	.....

Well Construction

(a) Slotted casing From ..... to

(b) Open hole From ..... to

(c) Screen From 104 to

(d) Dug

(e) Bored

Depth to water in Finished Well 85

AQUIFER TESTS

Test rate 5 igpm 1 HRS

Transmissivity:
- Apparent 1115
- Bail Test .....
- Pump Test .....
- Recovery .....
- Equivalent .....

Original available drawdown 19

Q_{20}, from pump test .....
(estimated well yield)

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY

	ppm		%
Total solids		Mg	
Hardness		Ca	
Ca		Ca+Mg	
Mg		Na+K	
Sulfates (SO_4)		Chlorides	
Chlorides		CO_3+HCO_3	
CO_3+HCO_3		SO_4	
Alkalinity			
Nitrate (NO_3)			
Iron			
Fluorine			

Comments: Q20 1.5 10
Hard.

LITHOLOGY

		STR
0 - 36	CL	
36 - 37	SD	
37 - 38	CL	
38 - 39	SD	
39 - 89	CL	
89 - 112	SD	
112 - 115	CL	
115 - 118	SH	

Mer. 5 Tp. 54 R. 1 Sec. 30 ¼ or LSD SW Identification No.
Co-ordinates Altitude 2380
Map Sheet No. 83-G/9E Contents LITHOLOG APPARENT T COMPLETION

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner R. Spicer Address Cuoway Date Dec 69

Driller G. McGinn Type of Rig rotary

Completed Depth of Well 136

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	.....
From ..... to	..... sand

Well Construction

(a) Slotted casing From ..... to ..

(b) Open hole From 120 to 1

(c) Screen From ..... to ..

(d) Dug

(e) Bored

Depth to water in Finished Well 70 (2310)

AQUIFER TESTS

Test rate 7 igpm /3hr

3'48' 1 55 d.d.

Transmissivity
- Apparent 6200 6191
- Bail Test .....
- Pump Test .....
- Recovery .....
- Equivalent .....

Original available drawdown 40

Q_{20}, from pump test .....

(estimated well yield) (105)

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY

	ppm		%
Total solids	.....	Mg	.....
Hardness	.....	Ca	.....
Ca	.....	Ca+Mg	.....
Mg	.....	Na+K	.....
Sulfates (SO_4)	.....	Chlorides	.....
Chlorides	.....	CO_3+HCO_3	.....
CO_3+HCO_3	.....	SO_4	.....
Alkalinity	.....		
Nitrate (NO_3)	.....		
Iron	.....		
Fluorine	.....		

Comments: Q_{20A} = 117 Hard.

LITHOLOGY		STRA
0 - 85	CL	
85 - 105	GR	
105 - 108	SD/CL	
108 - 122	SD	
122 - 136	SH	

Mer. 5 Tp. 54 R. 1 Sec. 29 ¼ or LSD SE Identification No.

Co-ordinates Altitude 3300

Map Sheet No. 83G/9E Contents COMPLETION CHEM ANALYSIS APPARENT T LITHOLOG

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner R. Heron Address Onway Date Oct/6

Driller McGinn Type of Rig R

Completed Depth of Well 254

Water-Bearing Intervals	Depth to Water	Well Construction	
From ..... to	.....	(a) Slotted casing	From ..... to .....
From ..... to	.....	(b) Open hole	From 175 to 2
From ..... to	.....	(c) Screen	From ..... to .....
From ..... to	.....	(d) Dug	
		(e) Bored	

Depth to water in Finished Well 115 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	60	2

Test rate 2.5 igpm. for 150

Total Drawdown 3.5

Original available drawdown 6.0

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium		5
Magnesium		
Sodium		95
Potassium		
Iron	.35	
Nitrate (NO_3^-)	2.45	
Chloride	2	1
Sulfate ($SO_4^=$)	40	7
Fluoride	.96	
Carbonate ($CO_3^=$)		92
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)	30	
Alkalinity (as $CaCO_3$)	622	

LITHOLOGY	
0-65	cl
65-115	sd, cl
115-145	gravel, sd
145-149	cl
149-174	sh
174-182	sh, sd
182-193	sh
193-201	sh, sd
201-238	sh
238-250	sh, sd
250-254	sh

Total Solids	ppm 708	epm	
Conduct. at 25°C	lab	field	
pH	lab	field	
Cation: Anion Balance			%
Total Solids Balance			%

Comments: Sod. 36.5 G.G.

Mer. 5 Tp. 54 R. 1 Sec. 29 ¼ or LSD 54 Identification No.

Co-ordinates Altitude 2330

Map Sheet No. 83G/9E Contents COMPLETION LITHOLOG

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner C. Coates Address Onoway Date July 1

Driller McGinn Type of Rig R

Completed Depth of Well 87

Water-Bearing Intervals	Depth to Water	Well Construction	
From ..... to		(a) Slotted casing	From ..... to .....
From ..... to		(b) Open hole	From ..... to .....
From 60 to 87		(c) Screen	From ..... to .....
From ..... to		(d) Dug	
		(e) Bored	

Depth to water in Finished Well 57 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test		

Test rate 5 igpm. for 240

Total Drawdown .....

Original available drawdown .....

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

Total Solids	ppm	epm
Conduct. at 25°C	lab	field
pH	lab	field
Cation: Anion Balance		%
Total Solids Balance		%

LITHOLOGY

0-9 Sd

9-60 cl

60-87 grvl

Comments: Hard

Mer. 5 Tp. 54 R. 1 Sec. 28 ¼ or LSD NW Identification No.

Co-ordinates Altitude 2400

Map Sheet No. 83G/16 Contents COMPLETION LITHOLOGY APPARENT T Comments

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner R. Noble Address anaway Date may 1

Driller Big Iron Type of Rig R

Completed Depth of Well 170

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	.....
From ..... to	.....

Well Construction		
(a) Slotted casing	From 150 to 17	
(b) Open hole	From ..... to	
(c) Screen	From ..... to	
(d) Dug		
(e) Bored		

Depth to water in Finished Well 22 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	6.9	41

Test rate 12 igpm. for 60

Total Drawdown 128

Original available drawdown 128

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY 17-9-94	ppm	epm %
Calcium	13	5
Magnesium	41	–
Sodium	300	95
Potassium	.9	.2
Iron	.9	–
Nitrate (NO_3^-)	2.45	–
Chloride	30	6
Sulfate ($SO_4^=$)	31	5
Fluoride	1.94	1
Carbonate ($CO_3^=$)		88
Bicarbonate (HCO_3^-)	717	
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)	36	
Alkalinity (as $CaCO_3$)	588	

LITHOLOGY	
0-20	sd
20-47	sd, gravel
47-84	rk & cl
84-150	sh
150-170	ss

Total Solids ppm 735 epm .....

Conduct. at 25°C lab 1210 field .....

pH lab 8.2 field .....

Cation: Anion Balance 2.65 %

Total Solids Balance 1.03 %

Comments:

Mer. 5 Tp. 54 R. 1 Sec. 27 ¼ or LSD NW Identification No.
Co-ordinates Altitude 2290'
Map Sheet No. 83-G-/96 Contents LITHOLOG CHEM ANALYSIS APPARENT T

FIELD OBSERVATIONS:

Type of observation ..... Date .....
Comments: .....
.....
.....
..... Observed by: .....

WELL AND BOREHOLE DATA

Owner J. Cerny ..... Address Conway ..... Date Oct-79
Driller Gerald McGinn ..... Type of Rig R
Completed Depth of Well 114'

Water-Bearing Intervals	Depth to Water	Well Construction	
From ..... to	.....	(a) Slotted casing	From ..... to .....
From ..... to	.....	(b) Open hole	From ..... to .....
From ..... to	.....	(c) Screen	From 105 to 114
From ..... to	.....	(d) Dug	
		(e) Bored	

Depth to water in Finished Well 92' Water Temp. .....°F ..... °C

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test	.....	.....
Bail Test	.....	.....
Recovery Test	.....	.....
Apparent-Yield Test	838.5	5

Test rate 3 igpm. for 150 min.
Total Drawdown 3
Original available drawdown 13
Storage Coeff. ..... at r_1 .....
..... at r_2 .....
..... at r_3 .....

CHEMISTRY 25-10-79

	ppm	epm %
Calcium	146	45
Magnesium	38	20
Sodium	139	35
Potassium	3.2	1
Iron	.46	.1
Nitrate (NO_3)	<.22	–
Chloride	<1	–
Sulfate (SO_4)	336	44
Fluoride	.18	.1
Carbonate (CO_3)	–	–
Bicarbonate (HCO_3)	541	56
Silica (H_4SiO_4)	16.8	
Hardness (as($CaCO_3$)	519	
Alkalinity (as $CaCO_3$)	444	

LITHOLOGY

0-40	cl
40-50	sd
50-65	cl
65-79	sd. sh
79-103	sh
103-110	sd, gr
110-120	sh

Total Solids ppm 920 epm
Conduct. at 25°C lab 1367 field
pH lab 8 field
Cation: Anion Balance 2.11 %
Total Solids Balance 1.8 %

Comments:

Mer. 5 Tp. 54 R. 1 Sec. 26 ¼ or LSD SW Identification No.

Co-ordinates Altitude

Map Sheet No. 836 Contents LITHOLOG COMPLETION APPARENT T

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner G. Cole Address Edmonton Date May. 74

Driller McGinn Type of Rig R

Completed Depth of Well 60

Water-Bearing Intervals	Depth to Water	Well Construction	
From ..... to	.....	(a) Slotted casing	From ..... to .....
From ..... to	.....	(b) Open hole	From ..... to .....
From ..... to	.....	(c) Screen	From 56 to 60
From ..... to	.....	(d) Dug	
		(e) Bored	

Depth to water in Finished Well 40 Water Temp. ..... °F .....

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test	.....	.....
Bail Test	.....	.....
Recovery Test	.....	.....
Apparent-Yield Test	708	5

Test rate 5 igpm. for 165

Total Drawdown 6

Original available drawdown 16

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium	.....	.....
Magnesium	.....	.....
Sodium	.....	.....
Potassium	.....	.....
Iron	.....	.....
Nitrate (NO_3^-)	.....	.....
Chloride	.....	.....
Sulfate ($SO_4^=$)	.....	.....
Fluoride	.....	.....
Carbonate ($CO_3^=$)	.....	.....
Bicarbonate (HCO_3^-)	.....	.....
Silica (H_4SiO_4)	.....	.....
Hardness (as($CaCO_3$)	.....	
Alkalinity (as $CaCO_3$)	.....	

LITHOLOGY	
0-20	cl rust
20-45	cl
45-60	sd
60-75	gr

Total Solids ppm ..... epm .....

Conduct. at 25°C lab ..... field .....

pH lab ..... field .....

Cation: Anion Balance ..... %

Total Solids Balance ..... %

Comments: .....

Mer. 5 Tp. 54 R. 1 Sec. 23 ¼ or LSD NE Identification No.

Co-ordinates Altitude 2400'±

Map Sheet No. 83 G/9c Contents APPARENT T LITHOLOG COMPLITION CHEM-ANALYSIS

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner Sharon Service Address Stony Plain Date Mar/

Driller Gerald McGinn Orlg. Type of Rig R

Completed Depth of Well 271

Water-Bearing Intervals		Depth to Water
From	to	
From 228	to 229	
From	to	
From	to	

Well Construction		
(a) Slotted casing	From 120	to 2
(b) Open hole	From	to
(c) Screen	From	to
(d) Dug		
(e) Bored		

Depth to water in Finished Well 75 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	25	2

Test rate 3 igpm. for 150

Total Drawdown 100

Original available drawdown 153

Storage Coeff. ..... at r_1

..... at r_2

..... at r_3

CHEMISTRY 1.4.77	ppm	epm %
Calcium	6	2
Magnesium	<1	-
Sodium	317	98
Potassium	.6	.1
Iron	.44	-
Nitrate (NO_3^-)	<.45	-
Chloride	19	4
Sulfate ($SO_4^=$)	112	16
Fluoride	.13	-
Carbonate ($CO_3^=$)	10	2
Bicarbonate (HCO_3^-)	685	78
Silica (H_4SiO_4)	11.3	.
Hardness (as($CaCO_3$)	18	
Alkalinity (as $CaCO_3$)	578	

LITHOLOGY	
0-70	Cl.
70-80	Sh.
80-90	Grvl + Cl.
90-102	Sd + Grvl.
102-228	Sh.
228-229	Coal.
229-253	Sh.
253-255	Coal.
255-274	Sh.

Total Solids ppm 802 epm

Conduct. at 25°C lab 1350 field

pH lab 8.4 field

Cation: Anion Balance 2.36%

Total Solids Balance .98 %

Comments:

Mer. 5 Tp. 54 R. 1 Sec. 22 ¼ or LSD 5E Identification No.
Co-ordinates Altitude 2.4.e
Map Sheet No. 83G 16 Contents LITHOLOG COMPLETION APPARENT T.

FIELD OBSERVATIONS:

Type of observation ..... Date .....
Comments: .....
.....
.....
..... Observed by: .....

WELL AND BOREHOLE DATA

Owner Bill Huges ..... Address Calahoo ..... Date May 197
Driller Mar-Wayne Drlg ..... Type of Rig R .....
Completed Depth of Well ..... 87 .....

Water-Bearing Intervals	Depth to Water	Well Construction	
From ..... to	.....	(a) Slotted casing	From ..... to ...
From ..... to	.....	(b) Open hole	From ..... to ...
From ..... to	.....	(c) Screen	From 83 to 8
From ..... to	.....	(d) Dug	
		(e) Bored	

Depth to water in Finished Well ..51..... Water Temp. .....°F .....

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test	.....	.....
Bail Test	.....	.....
Recovery Test	.....	.....
Apparent-Yield Test	...280.....	...4...

Test rate ....10. igpm? for ..120.. n
Total Drawdown .....29.....
Original available drawdown ..32...
Storage Coeff. ..... at r_1 ....
..... at r_2 ....
..... at r_3 ....

CHEMISTRY	ppm	epm %
Calcium	.....	.....
Magnesium	.....	.....
Sodium	.....	.....
Potassium	.....	.....
Iron	.....	.....
Nitrate (NO_3^-)	.....	.....
Chloride	.....	.....
Sulfate ($SO_4^=$)	.....	.....
Fluoride	.....	.....
Carbonate ($CO_3^=$)	.....	.....
Bicarbonate (HCO_3^-)	.....	.....
Silica (H_4SiO_4)	.....	.....
Hardness (as($CaCO_3$)	.....	.....
Alkalinity (as $CaCO_3$)	.....	.....

LITHOLOGY	
0-9	cl
9-13	sd
13-42	cl
42-51	sd
51-53	cl
53-80	sd
80-86	sd, grvl
86-87	grvl

Total Solids ppm.....epm.....
Conduct. at 25°C lab .....field.....
pH lab .....field.....
Cation: Anion Balance .....%
Total Solids Balance .....%

Comments:

Mer. 5 Tp. 54 R. 1 Sec. 22 ¼ or LSD SW Identification No.

Co-ordinates 835/25 Contents APPARENT T LITHOLOG Altitude 2420

Map Sheet No. COMPLETION

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner Dave Beech Address Onoway Date Aug 21

Driller Cal & Norms Type of Rig R

Completed Depth of Well 270

Water-Bearing Intervals	Depth to Water	Well Construction	
From ..... to	.....	(a) Slotted casing	From 230 to 2[illegible]
From ..... to	.....	(b) Open hole	From ..... to .....
From ..... to	.....	(c) Screen	From ..... to .....
From ..... to	.....	(d) Dug	
		(e) Bored	

Depth to water in Finished Well 80 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	79	6

Test rate 6 igpm. for 360

Total Drawdown 65

Original available drawdown 150

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY	ppm	epm	%
Calcium			
Magnesium			
Sodium			
Potassium			
Iron			
Nitrate (NO_3^-)			
Chloride			
Sulfate ($SO_4^=$)			
Fluoride			
Carbonate ($CO_3^=$)			
Bicarbonate (HCO_3^-)			
Silica (H_4SiO_4)			
Hardness (as($CaCO_3$)			
Alkalinity (as $CaCO_3$)			

Total Solids	ppm	epm
Conduct. at 25°C	lab	field
pH	lab	field
Cation: Anion Balance		%
Total Solids Balance		%

LITHOLOGY

0-12	cl
12-60	cl
60-120	cl
120-144	grvl
144-153	sh
153-156	cl
156-192	sh
192-209	sh
209-231	sh
231-235	cl
235-247	sh
247-270	sh

Comments:

Mer. 5 Tp. 54 R. 1 Sec. 21 ¼ or LSD NW Identification No.
Co-ordinates Altitude 2350
Map Sheet No. 83 G/9 E Contents LITHOLOG COMPLETION CHEM ANALYSIS

FIELD OBSERVATIONS:

Type of observation ..... Date .....
Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner C. Meyers Address Onoway Date Aug 6
Driller McGinn Type of Rig R
Completed Depth of Well 406

Water-Bearing Intervals	Depth to Water	Well Construction	
From ..... to	.....	(a) Slotted casing	From ..... to .....
From 221 to 406	.....	(b) Open hole	From 221 to 4
From ..... to	.....	(c) Screen	From ..... to .....
From ..... to	.....	(d) Dug	
		(e) Bored	

Depth to water in Finished Well 78 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test		

Test rate 2.5 igpm. for 10.5
Total Drawdown .....
Original available drawdown .....
Storage Coeff. ..... at r_1 .....
..... at r_2 .....
..... at r_3 .....

CHEMISTRY May 64	ppm	epm %
Calcium		
Magnesium		0
Sodium		
Potassium		100
Iron	4.05	-
Nitrate (NO_3^-)	4.45	-
Chloride	40	9
Sulfate ($SO_4^=$)	25	5
Fluoride	1.4	
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		86
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)	45	
Alkalinity (as $CaCO_3$)	335	

LITHOLOGY	
0-39	cl
39-85	sd
85-120	gvl, sd
120-227	sh
227-242	sh, sd
242-261	sh
261-270	sh, sd
270-302	sh
302-312	sh, coal
312-339	sh
339-359	sh, sd
359-394	sh
394-406	sh, sd

Total Solids	ppm 728	epm	
Conduct. at 25°C	lab	field	
pH	lab	field	
Cation: Anion Balance			%
Total Solids Balance			%

Comments: .....

Mer. 5 Tp. 64 R. 1 Sec. 21 ¼ or LSD SW Identification No.

Co-ordinates Altitude 2485

Map Sheet No. 83G/16 Contents LITHOLOGY COMPLETION APPARENT T

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner Ron Coats Address Onoway Date Mar 17

Driller G. McGinn Type of Rig R

Completed Depth of Well 300

Water-Bearing Intervals		Depth to Water	Well Construction		
From	to		(a) Slotted casing	From 128	to 3
From 128	to 300	sh, coal	(b) Open hole	From	to
From	to		(c) Screen	From	to
From	to		(d) Dug		
			(e) Bored		

Depth to water in Finished Well 100 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	66	.87

Test rate 3 igpm. for 210

Total Drawdown 40

Original available drawdown 28

Storage Coeff. ..... at r_1

..... at r_2

..... at r_3

CHEMISTRY	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

Total Solids	ppm	epm	
Conduct. at 25°C	lab	field	
pH	lab	field	
Cation: Anion Balance			%
Total Solids Balance			%

LITHOLOGY

0-30	cl
30-53	ss
53-71	cl
71-87	sd, grvl
87-104	cl
104-112	sh
112-116	grvl, sd
116-128	sh
128-130	coal
130-304	sh

Comments:

A.R.C. - GRAVEL INVENTORY - FIELD LOG OF TEST HOLE

Location: Tp 54 Rg 1 W 5 Mer. Sec. 28 LSD or 1/4 12

NTS 83F9 UTM Easting 691600 Northing 5953200

Details ½ mi S of Billy; on edge of high ridge

Time: Start 10:45 Finish 12:20 (12:10)

Test Hole No. R80-EO-7

Driller Ken Pearson

Type of Drill P-70

Geologist or Technician D. Edwards

Date Apr 16, 80 Associated Station OE80-1

Surface Elev 2400 Source NTS

DEPTH FROM	DEPTH TO	MATERIAL	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE #	DESCRIPTION
0	4	sand				yellow brn; fn sand, no pebbles
4	8	fn sd-silt				yell brn; laminated v fn sd & silt
8	12	clay				grey; thinly laminated clay
12	16	fn sd-silt				yellow-brn; v. fn sd & silt
16	28	silty-clay				dk yell-brn; silty clay
28	29	sand				yell-brn; fn sd
29	35	sdy-clay till				grey-brown, oxid; sdy-clay till; lo stones 3%
35	47	sand				yell-brn; fn sand, lose dry; clean; no pebbles
~~86~~	~~88~~	~~till~~				
	4					
4						
47	50	clay till				yell-brn, oxid, clay to sd-clay till w/ few stones; sd lenses
50	68	sdy clay till				grey, unoxid, clay till; some grit, lo stones, gets gritter w/ depth
68	78	sand				~~yell~~ grey brn; salt & pepper, fn sd, no stones, dry
						photo OE80-1-25,26 rig in front of 3 m gel & sd cut; qtz chats are cleared

A.R.C. - GRAVEL INVENTORY - FIELD LOG OF TEST HOLE

Location: Tp 54 Rg 1 W 5 Mer. Sec. 22 LSD or 1/4 4

NTS 83 B 9 UTM Easting 693300 Northing 5951000

Details hummocky area ; 3 mi E and 2.1 mi N of Heatherdown

Time: Start 9:30 Finish 10:55 (10:45)

Test Hole No. 1980-ED-10

Driller Ken Pearson

Type of Drill P-70

Geologist or Technician D. Edwards

Date Apr 17, 80 Associated Station —

Surface Elev. 2410 Source NTS

DEPTH FROM	DEPTH TO	MATERIAL	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE #	DESCRIPTION
0	2	fill				
2	8	clay				brown, laminated clay
8	16	silt ~~silty~~				yell-bn, laminated, silt, ~~clay~~
16	25	v.f.sd; silt				yell-bn, soft, v.f. sd, silt
25	30	clay				grey clay, soft, moist, pliable
30	33	v.f.sd, silt				grey, soft, moist
33	48	silty clay				grey, soft, moist, silty clay, has some v.f.sd as well — no stones and soft or would be till-like
48	48	f. sand				grey, sorpy, v.f. sand
48	49	clay				grey, unoxid clay
49	64	sand				white grey, unoxid, med, clean sand, hi qtz, not peppery
64	66					white grey, unoxid, med to f sand w/ occasionally grey clay lenses or ~~the clay~~ blobs
66	73					grey, unoxid, gritty clay till; very dense
						steel stuck 10 ft

A.R.C. - GRAVEL INVENTORY - FIELD LOG OF TEST HOLE

Location: Tp 54 Rg 1 W 5 Mer. Sec. 16 LSD or 1/4 13

NTS 83B9 UTM Easting 691700 Northing 5950500

Details 2½ mi S of Pelly; on W edge of bi land before low (valley)

Time: Start 11:05 Finish 12:05 (11:55)

Test Hole No. R80-EC-11

Driller Ken Pearson

Type of Drill P-70

Geologist or Technician D. Edmunds

Date Apr 12, 80 Associated Station —

Surface Elev 2425 Source GTS

DEPTH FROM	DEPTH TO	MATERIAL	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE #	DESCRIPTION
0	2	fill				
2	20	sdy clay till				yell-brn; sdy clay till; mod stones <0%
20	50	sand				yellt-brn; fn sand; mostly qtz; soapy overall yell-brn colour but sand is actually whitish; clean
50	58	bedrock siltstone				grey green; slightly soapy
58	63	" sandstone				grey fn-gn sandstone.

A.R.C. - GRAVEL INVENTORY - FIELD LOG OF TEST HOLE

Location: Tp 54 Rg 01 W 05 Mer. Sec. 16 LSD or 1/4 4

NTS 83 C/9 UTM Easting 691900 Northing 5949200

Details

Test Hole No. R79-ED-41

Driller MOBILE (B. TAARNS)

Type of Drill B-61

Geologist or Technician DE

Date 26/8/79 Associated Station

Surface Elev 2455 Source TOPO

Time: Start 10:10 Finish 10:40

DEPTH FROM	DEPTH TO	MATERIAL	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE #	DESCRIPTION
0	11	till				brown; c-till; soft
11	18	slg				dirty; poorly sorted gally sd. (glaciofluvial); pebbles sub-ang;
18	38	sand	30	30	A	very wet; fn to crs; glaciofluvial; see DC
38	41	sand				as above.
41	48	c-till				grey; clay till; very low in stones (almost clay), very compact;

A.R.C. GRAVEL INVENTORY - FIELD LOG OF TEST HOLE

Location: Tp 54 Rg 01 W 05 Mer. Sec. 15 LSD or 1/4 ~~15~~ 1

NTS 83 G/9 UTM Easting ____ Northing ____

Details ROAD ACCESS

Test Hole No. R79-E0-40

Driller MOBILE - B Tarnow

Type of Drill 3.61

Geologist or Technician D.E.

Date 26/8/79 Associated Station ____

Surface Elev 2590 Source TOPO

Time: Start 9:35 Finish 9:55

DEPTH FROM	DEPTH TO	MATERIAL	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE #	DESCRIPTION
0	23	clay (sh)				brown clay; w/ yellow grains (sulfur); some
23	25	clay (sh?)				shale pieces (shale)
25	28	sand (ss?)				yellow-brown; thinly laminated, fine sand
						(sandstone)

A.R.C. - GRAVEL INVENTORY - FIELD LOG OF TEST HOLE

Location: Tp 54 Rg 01 W 05 Mer. Sec. 15 LSD or 1/4 12

NTS 83 G/9 UTM Easting 693400 Northing 5950050

Details

Test Hole No. R79-ED-39

Driller Ben Tarnas

Type of Drill B-61

Geologist or Technician D.L.

Date 26/8/79 Associated Station

Surface Elev 2460 Source TOPO

Time: Start 9:00 Finish 9:25

DEPTH FROM	DEPTH TO	MATERIAL	SAMPLE DEPTH FROM	SAMPLE DEPTH TO	SAMPLE #	DESCRIPTION
0	8	sand				fg grained; lt brown
8	18	sand	10	10	A	fg grained, lt brown, w/ some silt } glaciofluvial sand (delta?)
18	23	sand				as above
23	28	silt & sand				lt brown; silty sand
28	33	sandy silt				brown, dirty sand & to sandy silt
33	38	silt			C	brown, wet silt

Mer. 5 Tp. 55 R. 1 Sec. 5 ¼ or LSD NW NW Identification No. 2420e

Map Sheet No. 83G/9e Co-ordinates Contents CHEM ANALYSIS LITHOLOG COMPLETION APPARENT T PUMP TEST Altitude

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner A. Schlichenmayer Address Onoway Date Jan. 76

Driller McGinn Type of Rig .....

Completed Depth of Well 271

Water-Bearing Intervals		Depth to Water
From	to	.....
From	to	sh, sst
From	to	.....
From	to	.....

Well Construction		
(a) Slotted casing	From 145	to 271
(b) Open hole	From	to .....
(c) Screen	From	to .....
(d) Dug		
(e) Bored		

Depth to water in Finished Well 136.5 Water Temp. ..... °F ..... °C

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test	1830	.....
Bail Test	.....	.....
Recovery Test	.....	.....
Apparent-Yield Test	2196	9

Test rate 10 10 igpm. for 1440 1440 mi

Total Drawdown 5 6

Original available drawdown 9

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY 19.2.76	ppm	epm %
Calcium	11.	4.
Magnesium	<1.	–
Sodium	308.	96.
Potassium	.6	.1
Iron	.1	–
Nitrate (NO_3^-)	<.45	–
Chloride	4.	1.
Sulfate ($SO_4^=$)	<1.	–
Fluoride	2.	–
Carbonate ($CO_3^=$)	12.	3.
Bicarbonate (HCO_3^-)	793.	96.
Silica (H_4SiO_4)	.....	.....
Hardness (as($CaCO_3$)	26.	
Alkalinity (as $CaCO_3$)	671.	

LITHOLOGY	
0-20	cl + st.
20-40	cl
40-49	st
49-51	coal
51-107	sh
107-120	?
120-140	sh
140-142	coal + sd
142-196	sh
196-197	ss
197-228	sh + coal
228-274	sh

Total Solids	ppm	736.	epm	.....
Conduct. at 25°C	lab	1110.	field	.....
pH	lab	8.6	field	.....
Cation: Anion Balance			3.18	%
Total Solids Balance			1.01	%

Comments: .....

Mer. 5 Tp. 55 R. 1 Sec. 5 ¼ or LSD 5E Identification No.

Co-ordinates Altitude 2250

Map Sheet No. 83G/14 Contents COMPLETION CHEM. ANALYSIS LITHOLOG APPARENT T

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner A. Schlickenmayer Address Onoway Date Jun

Driller McGinn Type of Rig R

Completed Depth of Well 105

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	.....
From ..... to	.....

Well Construction		
(a) Slotted casing	From	to .....
(b) Open hole	From	to .....
(c) Screen	From 61	to .....
(d) Dug		
(e) Bored		

Depth to water in Finished Well 10 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	1626	

Test rate 30 igpm. for 120

Total Drawdown 15

Original available drawdown .....

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium	25	11
Magnesium	12	8
Sodium	221	81
Potassium	2.1	1
Iron	4.05	–
Nitrate (NO_3^-)		.2
Chloride	4	1
Sulfate ($SO_4^=$)	73	12
Fluoride	.39	–
Carbonate ($CO_3^=$)	0	}
Bicarbonate (HCO_3^-)	528	} 87
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)	113	
Alkalinity (as $CaCO_3$)	528	

LITHOLOGY
0-5.5 Sd+cl
5.5-105 Sd, coal

Total Solids ppm 670 epm .....

Conduct. at 25°C lab ..... field .....

pH lab 8.3 field .....

Cation: Anion Balance ..... %

Total Solids Balance ..... %

Comments:

Mer. 5 Tp. 55 R. 1 Sec. 3 ¼ or LSD 16 Identification No. 2280

Co-ordinates Altitude

Map Sheet No. 83-G/9E Contents LITHOLOGY COMPLETION

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

..... Observed by: .....

WELL AND BOREHOLE DATA

Owner Becherstaff Address ..... Date Aug/1966

Driller Talbert, Darwell Type of Rig hyd. rotary

Completed Depth of Well 140

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	.....
From ..... to	.....

Well Construction

(a) Slotted casing From ..... to .....

(b) Open hole From 95 to 1

(c) Screen From ..... to .....

(d) Dug

(e) Bored

Depth to water in Finished Well 30 (3250)

AQUIFER TESTS

Test rate 4 igpm

Shows

Transmissivity { Apparent ..... / Bail Test ..... / Pump Test ..... / Recovery ..... / Equivalent ..... }

Original available drawdown .....

Q_{20}, from pump test .....

(estimated well yield)

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY

	ppm		%
Total solids		Mg	
Hardness		Ca	
Ca		Ca+Mg	
Mg		Na+K	
Sulfates (SO_4)		Chlorides	
Chlorides		CO_3+HCO_3	
CO_3+HCO_3		SO_4	
Alkalinity			
Nitrate (NO_3)			
Iron			
Fluorine			

Comments: .....

LITHOLOGY

		STRAT
0-5	clay	
5-8	sand	
8-70	clay	
70-76	sand	
76-86	clay	
86-94	sand	
94-120	shale	
120-140	sandstone	

Mer. 5 Tp. 55 R. 1 Sec. 3 ¼ or LSD NE Identification No.

Co-ordinates Altitude 22 926

Map Sheet No. 83G/16 Contents LITHOLOG COMPLETION APPARENT T

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner Chris Stare Address Onoway Date Mar/

Driller G. McGinn Type of Rig R

Completed Depth of Well 109

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	sd
From ..... to	.....

Well Construction		
(a) Slotted casing	From	to .....
(b) Open hole	From	to .....
(c) Screen	From 105	to ...
(d) Dug		
(e) Bored		

Depth to water in Finished Well 45 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	595	14

Test rate 7 igpm? for 185

Total Drawdown 10

Original available drawdown 50

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

Total Solids	ppm	epm	
Conduct. at 25°C	lab	field	
pH	lab	field	
Cation: Anion Balance			%
Total Solids Balance			%

LITHOLOGY

0-60 cl

60-105 sd

Comments:

Mer. 5 Tp. 55 R. 1 Sec. 2 ¼ or LSD NW Identification No.

Co-ordinates Altitude 2300

Map Sheet No. 83G/12E Contents APPARENT-T LITHOLOG

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner G. Blanchard Address Onoway Date Aug/

Driller Mar-Wayne Type of Rig R

Completed Depth of Well 100

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	.....
From ..... to	.....

Well Construction		
(a) Slotted casing	From	to .....
(b) Open hole	From	to .....
(c) Screen	From	to .....
(d) Dug		
(e) Bored		

Depth to water in Finished Well 25 Water Temp. ..... °F .....

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test	.....	.....
Bail Test	.....	.....
Recovery Test	.....	.....
Apparent-Yield Test	369	7

Test rate 15 igpm (Gals) for 180

Total Drawdown 35

Original available drawdown 39

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium	.....	.....
Magnesium	.....	.....
Sodium	.....	.....
Potassium	.....	.....
Iron	.....	.....
Nitrate (NO_3^-)	.....	.....
Chloride	.....	.....
Sulfate ($SO_4^=$)	.....	.....
Fluoride	.....	.....
Carbonate ($CO_3^=$)	.....	.....
Bicarbonate (HCO_3^-)	.....	.....
Silica (H_4SiO_4)	.....	.....
Hardness (as($CaCO_3$)	.....	
Alkalinity (as $CaCO_3$)	.....	

LITHOLOGY	
0-9	cl, rk
9-11	grvl
11-21	cl, rk
21-26	cl
26-31	coal
31-51	till
51-52	coal
52-83	Sh
83-90	cl
90-100	Sh

Total Solids	ppm	epm	
Conduct. at 25°C	lab	field	
pH	lab	field	
Cation: Anion Balance		..... %	
Total Solids Balance		..... %	

Comments: McLeod

Mer. 5 Tp. 54 R. 1 Sec. 34 ¼ or LSD SW Identification No.

Co-ordinates Altitude 2278'e

Map Sheet No. 83G/16 Contents COMPLETION APPARENT T LITHOLOG

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner Sigma Lands Address Edmonton Date Nov

Driller Grove Type of Rig R

Completed Depth of Well 43

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	.....
From ..... to	.....

Well Construction		
(a) Slotted casing	From	to .....
(b) Open hole	From	to .....
(c) Screen	From 39	to 4
(d) Dug		
(e) Bored		

Depth to water in Finished Well 12'6¾" Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	196	2

Test rate 5 igpm. for 600

Total Drawdown 25.44

Original available drawdown 26.44

Storage Coeff. ..... at r_1 .....

..... at r_2 .....

..... at r_3 .....

CHEMISTRY	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

LITHOLOGY	
0-30	clay
30-34	sand
34-38	sh
38-40	coal
40-42	c
42-43	sh

Total Solids	ppm	epm	
Conduct. at 25°C	lab	field	
pH	lab	field	
Cation: Anion Balance			%
Total Solids Balance			%

Comments:

Mer. 5 Tp. 54 R. 1 Sec. 34 ¼ or LSD NW Identification No.
Co-ordinates Altitude 2220
Map Sheet No. 83G/16 Contents COMPLETION APPARENT T LITHOLOG

FIELD OBSERVATIONS:

Type of observation ..... Date .....

Comments: .....

Observed by: .....

WELL AND BOREHOLE DATA

Owner G. Kulak Address Onoway Date 1971

Driller McGinn Type of Rig R

Completed Depth of Well 120

Water-Bearing Intervals	Depth to Water
From ..... to	.....
From ..... to	.....
From ..... to	.....
From ..... to	.....

Well Construction		
(a) Slotted casing	From	to .....
(b) Open hole	From	to .....
(c) Screen	From 93	to 9[illegible]
(d) Dug		
(e) Bored		

Depth to water in Finished Well 45 Water Temp. ..... °F

AQUIFER TESTS

Type	Transmissivity	Q_{20}
Pump Test		
Bail Test		
Recovery Test		
Apparent-Yield Test	259	✓

Test rate 10 igpm for 270 m
Total Drawdown 35
Original available drawdown 48
Storage Coeff. ..... at r_1
..... at r_2
..... at r_3

CHEMISTRY	ppm	epm %
Calcium		
Magnesium		
Sodium		
Potassium		
Iron		
Nitrate (NO_3^-)		
Chloride		
Sulfate ($SO_4^=$)		
Fluoride		
Carbonate ($CO_3^=$)		
Bicarbonate (HCO_3^-)		
Silica (H_4SiO_4)		
Hardness (as($CaCO_3$)		
Alkalinity (as $CaCO_3$)		

Total Solids	ppm	epm
Conduct. at 25°C	lab	field
pH	lab	field
Cation: Anion Balance		%
Total Solids Balance		%

LITHOLOGY
0-64 cl
64-120 sd

Comments: Hard.