#23317

SAMPLE NO.	DEPTH From	DEPTH To	THICKNESS	DESCRIPTION OF BEDS — KIND OF ROCK, COLOR, HARD OR SOFT, WATER, ETC.
		2		Fill
	2	4		Top Soil Black
	4	7		Yellow Tan Clay
	7	15		Sand & Gravel Fine to Coarse Yellow Br. Mixed Br.
	15	21		Sand Very Little Gravel
I-28-74	21	22½		Yellow Sandy Clay Some Gravel
	22½	92½		Sand & Gravel Boulders
	92½	35		Yellow Br Sandy Clay
	35	42		" " & Gray Some Gravel Mixed
	42	51		Bl-Br Till
	51	58		Sandy Gravel (Gray) Some Till Bl-Br
	58	63	Boulders	Bl-Br Till
D 3" 7	63-65	66½		Limestone Br to Tan
Core	66½	73	Fluid Lost	" " Some Brown Some Shale Fillings
5-1-74	73	83	" "	Lime Stone Gray-Tan to Tan & Br
	83	93		L.S. Br-Tan
	93	97		" " & Gray Sand Breaks at Bottom

#23317

#23317

#23317

SAMPLE NO.	DEPTH From	DEPTH To	THICKNESS	DESCRIPTION OF BEDS — KIND OF ROCK, COLOR, HARD OR SOFT, WATER, ETC.
	97	103		SANDY CAL BRN + GRAY (BRECCIA) LIMESTONE
	103	113		CAL BL. L.S. (BRECCIA) + L.T.
	113	116	SOME	
3-5-74	116	119.8	FLUID LOSS	BL. HARD LIMESTONE
	119.8	119.7		BL " " DARKER
	119.7	130		SOME BROWN PRY. DOLO. BL. COURSE TO MED GRAINED BROWN FINE GRAINED AT BOTTOM
	130	140		" " "
	140	141.2		" "
	141.2	150	QUTZ AT 143	CAL. BLACK CHERT GRAINS BL-GR ARG. SOME SHALEY DOLO + GRAY PRY.
	150	154		" "
	154	160		PORSE COURSE GRAINED DOLO BL-GR TO TAN [redacted] GREEN STAIN
	160	170		COURSE GRAINED SOME GREEN SHALE DOLO BL-GR. SOME TAN PORSE
	170	180		40 TO 50% → SHALE " " + GRAY-GREEN + GREEN
	180	185		" "
	185	193		LESS SHALE "
3-6-74	193	203		TRACE OF SHALE DOLO BL-GR. PORSE
	203	213		" "

#23317

SAMPLE NO.	DEPTH From	DEPTH To	THICKNESS	DESCRIPTION OF BEDS — KIND OF ROCK, COLOR, HARD OR SOFT, WATER, ETC.
	213	223	6" Crevice at 214 →	Lost Fluid. Pyr. Bl-Gr Dolo - Some Green Shale
6 74	223	233		" " Broken Porous "
5	233	243		" Trace Shale "
1	243	263		" "
	263	273		Bl-Gr. to Tan + Bl-Gr. Pyr. Calc White Chert 10%
	273	283		Bl-Gr Dolo. + Tan Med. Grained Less Porous No Chert
3-9-74	Trouble in Hole		(Started Reaming) 25'	
3-8-74	Reaming	from 82 -	182 Lost Fluid	
3-11-74	"	" 182	242	
3-12-74	Reaming	+ Drilling	5"	
	283	295	(Air)	Some Shale Green Bl Gr. Dolo Some Grained
	295	321.5		Tan Dolo Coarse Grained Some Shale
3-13-74	321.5	331.5	Core	Tan Dolo Coarse Grained + Porous Some Med Grained + Pyr.
	331.5	342 [illegible]		" " Chert Started at 345
	342	352		" " "
	352	358		" " [illegible]
	358	363		Gray-Green Shale Silty Some Pyr.

#23317

STATE HYGIENIC LABORATORY, DES MOINES BRANCH

The University of Iowa
405 STATE OFFICE & LAB BLDG, E 7th & COURT
DES MOINES, IOWA 50309

LAB NO. 9363

MINERAL ANALYSIS

MINERAL NO. 10568

REPORTED 30 MAY 1974

TOWN Iowa City COUNTY Johnson
OWNER OF SUPPLY
COLLECTOR'S NAME USGS
DATE COLLECTED 10 April 1974 Date Received: 29 April 1974
REPORT TO U S Geological Survey
16 West Jefferson
Iowa City, Iowa 52240

FIELD DATA

SOURCE
SAMPLING POINT 109' to 169' Packer Test

WELL DATA
NAME OR NUMBER 79-06W-16 DDAD
CONSTRUCTION DATE 1974 DEPTH 363'
PUMPED 7 HRS AT 20 GPM

WAS SAMPLE FREE OF TURBIDITY WHEN COLLECTED? Yes
TEMPERATURE °XX 55° FALKALINITY (mg/l $CaCO_3$)P T pH
IS A POLYPHOSPHATE BEING USED? No DATE OF PREVIOUS SAMPLE None

LABORATORY ANALYSIS
(MILLIGRAMS PER LITER)

SPECIFIC CONDUCTANCE AT 25° C		1200 micromhos		SILICA (SiO_2)	9.6
TOTAL RESIDUE	799	TOTAL IRON (Fe)	1.5		
FILTRABLE RESIDUE	799	SOLUBLE IRON (Fe)	1.5		
ALKALINITY AS $CaCO_3$ P	None	T 318	pH 7.3	DATE	29 April 1974
HARDNESS AS $CaCO_3$	570	mg/l 33.3	gpg		

POSITIVE IONS		NEGATIVE IONS		TRACE METALS		RADIOACTIVITY pCi/L	
POTASSIUM (K^+)	7.4	NITRATE (NO_3^-)	<0.1	ARSENIC			
SODIUM (Na^+)	65	FLUORIDE (F^-)	0.3	BARIUM		GROSS ALPHA	2.4
CALCIUM (Ca^{++})	130	CHLORIDE (Cl^-)	5	CADMIUM		GROSS BETA	17
MAGNESIUM (Mg^{++})	60	SULFATE (SO_4^{--})	390	CHROMIUM			
MANGANESE (Mn^{++})	0.02	BICARBONATE (HCO_3^-)	388	COPPER		90 STRONTIUM	<0.49
		CARBONATE (CO_3^{--})	None	LEAD			
				ZINC			

No metals analysis.

ANALYST

Ryan, LAF

R. L. MORRIS, Ph.D.
ASSOCIATE DIRECTOR AND
PRINCIPAL CHEMIST

2155

dm

STATE HYGIENIC LABORATORY, DES MOINES BRANCH

The University of Iowa
406 STATE OFFICE & LAB BLDG, E 7th & COURT
DES MOINES, IOWA 50309

LAB NO. 9365

MINERAL ANALYSIS

MINERAL NO. 10570

REPORTED 30 MAY 1974

TOWN Iowa City COUNTY Johnson
OWNER OF SUPPLY
COLLECTOR'S NAME USGS
DATE COLLECTED 17 April 1974 Date Received: 29 April 1974
REPORT TO U S Geological Survey
16 West Jefferson
Iowa City, Iowa 52240

FIELD DATA

SOURCE
SAMPLING POINT 235 - 295 Packer Test

WELL DATA
NAME OR NUMBER 79-06W-16 DDAD
CONSTRUCTION DATE 1964 DEPTH 363'
PUMPED 7 HRS AT 10 GPM

WAS SAMPLE FREE OF TURBIDITY WHEN COLLECTED? Yes
TEMPERATURE °C 55°F ALKALINITY (mg/l $CaCO_3$) P T pH
IS A POLYPHOSPHATE BEING USED? No DATE OF PREVIOUS SAMPLE None

LABORATORY ANALYSIS
(MILLIGRAMS PER LITER)

SPECIFIC CONDUCTANCE AT 25° C	1300 micromhos			SILICA (SiO_2)	8.0
TOTAL RESIDUE	1030	TOTAL IRON (Fe)	0.66		
FILTRABLE RESIDUE	1030	SOLUBLE IRON (Fe)	0.66		
ALKALINITY AS $CaCO_3$ P	None	T 314	pH 7.3	DATE	29 April 1974
HARDNESS AS $CaCO_3$	570	mg/l 33.3	gpg		

POSITIVE IONS		NEGATIVE IONS		TRACE METALS		RADIOACTIVITY pCi/L	
POTASSIUM (K^+)	8.3	NITRATE (NO_3^-)	<0.1	ARSENIC			
SODIUM (Na^+)	92	FLUORIDE (F^-)	0.3	BARIUM		GROSS ALPHA	2.8
CALCIUM (Ca^{++})	140	CHLORIDE (Cl^-)	7	CADMIUM		GROSS BETA	19
MAGNESIUM (Mg^{++})	63	SULFATE (SO_4^{--})	470	CHROMIUM			
MANGANESE (Mn^{++})	<0.01	BICARBONATE (HCO_3^-)	383	COPPER		90 STRONTIUM	<0.49
		CARBONATE (CO_3^{--})	None	LEAD			
				ZINC			

No metals analysis.

ANALYST
Ryan, LAF

R. L. MORRIS, Ph.D.
ASSOCIATE DIRECTOR AND
PRINCIPAL CHEMIST

2155

STATE HYGIENIC LABORATORY, DES MOINES BRANCH

The University of Iowa
405 STATE OFFICE & LAB BLDG, E 7th & COURT
DES MOINES, IOWA 50309

LAB NO. 9366

MINERAL ANALYSIS

MINERAL NO. 10571

REPORTED 30 MAY 1974

TOWN Iowa City COUNTY Johnson
OWNER OF SUPPLY
COLLECTOR'S NAME USGS
DATE COLLECTED 22 April 1974 Date Received: 29 April 1974
REPORT TO U S Geological Survey
16 West Jefferson
Iowa City, Iowa 52240

FIELD DATA

SOURCE 079-06W-16 DDAD
SAMPLING POINT 187' - 212- Packer Test

WELL DATA
NAME OR NUMBER 79-06W-16 DDAD
CONSTRUCTION DATE 1974 DEPTH 363'
PUMPED 3 HRS AT 30 GPM

WAS SAMPLE FREE OF TURBIDITY WHEN COLLECTED? Yes
TEMPERATURE °C 11 ALKALINITY (mg/l $CaCO_3$) P T pH
IS A POLYPHOSPHATE BEING USED? No DATE OF PREVIOUS SAMPLE None
Sample contained much gas when collected. Looked like soda pop.

LABORATORY ANALYSIS
(MILLIGRAMS PER LITER)

SPECIFIC CONDUCTANCE AT 25° C 1200 micromhos
TOTAL RESIDUE 896
FILTRABLE RESIDUE 896
ALKALINITY AS $CaCO_3$ P None
HARDNESS AS $CaCO_3$ 550
TOTAL IRON (Fe) 0.92
SOLUBLE IRON (Fe) 0.92
T 312 pH 7.3 DATE 29 April 1974
mg/l 32.1 gpg
SILICA (SiO_2) 9.4

POSITIVE IONS		NEGATIVE IONS		TRACE METALS	
POTASSIUM (K^+)	6.9	NITRATE (NO_3^-)	< 0.1	ARSENIC	
SODIUM (Na^+)	70	FLUORIDE (F^-)	0.3	BARIUM	
CALCIUM (Ca^{++})	130	CHLORIDE (Cl^-)	6	CADMIUM	
MAGNESIUM (Mg^{++})	59	SULFATE (SO_4^{--})	400	CHROMIUM	
MANGANESE (Mn^{++})	0.01	BICARBONATE (HCO_3^-)	381	COPPER	
		CARBONATE (CO_3^{--})	None	LEAD	
				ZINC	

RADIOACTIVITY pCi/L
GROSS ALPHA 4.3
226 RADIUM 1.9
GROSS BETA 16

No metals analysis.

R. L. MORRIS, Ph.D.
ASSOCIATE DIRECTOR AND
PRINCIPAL CHEMIST

ANALYST
Ryan, LAF

2155

dm

STATE HYGIENIC LABORATORY, DES MOINES BRANCH

The University of Iowa
405 STATE OFFICE & LAB BLDG, E 7th & COURT
DES MOINES, IOWA 50309

LAB NO. 9367

MINERAL ANALYSIS

MINERAL NO. 10572

REPORTED 30 MAY 1974

TOWN Iowa City COUNTY Johnson
OWNER OF SUPPLY
COLLECTOR'S NAME USGS
DATE COLLECTED 23 April 1974 Date Received: 29 April 1974
REPORT TO U S Geological Survey
16 West Jefferson
Iowa City, Iowa 52240

FIELD DATA

SOURCE 079-06W-16 DDAD
SAMPLING POINT 66' - 111' Packer Test

WELL DATA
NAME OR NUMBER 79-06W-16-DDAD
CONSTRUCTION DATE 1974 DEPTH 363'
PUMPED 2 HRS AT 21 GPM

WAS SAMPLE FREE OF TURBIDITY WHEN COLLECTED? Yes
TEMPERATURE °C 54°F ALKALINITY (mg/l $CaCO_3$)P T pH
IS A POLYPHOSPHATE BEING USED? No DATE OF PREVIOUS SAMPLE None

LABORATORY ANALYSIS
(MILLIGRAMS PER LITER)

SPECIFIC CONDUCTANCE AT 25° C 1100 micromhos
TOTAL RESIDUE 836
FILTRABLE RESIDUE 836
ALKALINITY AS $CaCO_3$ P None
HARDNESS AS $CaCO_3$ 560

TOTAL IRON (Fe) 2.8
SOLUBLE IRON (Fe) 2.8
T 312 pH 7.4
mg/l 32.7 gpg

SILICA (SiO_2) 13
DATE 29 April 1974

POSITIVE IONS		NEGATIVE IONS		TRACE METALS	
POTASSIUM (K^+)	6.5	NITRATE (NO_3^-)	< 0.1	ARSENIC	
SODIUM (Na^+)	70	FLUORIDE (F^-)	0.25	BARIUM	
CALCIUM (Ca^{++})	140	CHLORIDE (Cl^-)	6	CADMIUM	
MAGNESIUM (Mg^{++})	58	SULFATE (SO_4^-)	400	CHROMIUM	
MANGANESE (Mn^{++})	0.09	BICARBONATE (HCO_3^-)	381	COPPER	
		CARBONATE (CO_3^-)	None	LEAD	
				ZINC	

RADIOACTIVITY pCi/L
GROSS ALPHA 0.6
GROSS BETA 11
90 STRONTIUM < 0.49

Slightly turbid with numerous sandy particles on receipt in lab.

No metals analysis.

ANALYST

Ryan, LAF

R. L. MORRIS, Ph.D.
ASSOCIATE DIRECTOR AND
PRINCIPAL CHEMIST

2155

dm

Driller's No. _____ W-Number 23317 Location 079-06W-16DDAD-1

Name WAREHOUSE TEST HOLE, JOHNSON County Iowa

Status: Incomplete _____ 19__; Complete 3-13 1974; Destroyed _____ 19__

Total Depth 363, 3-13 1974; _____, _____ 19__; Started Feb 27 1974

Cuttings from 0 to 66.5 Core from 66.5 to 283.2
from 283.2 to 322 from 322 to 363
from _____ to _____ from _____ to _____

Hole diameter 7 3/8 in from 0 ' to 66.5 '; 3 in from 322 ' to 363 '
5 in from 66.5 ' to 322 '; ____ in from ____ ' to ____ '

Casing 6 in from +1.3 ' to 66.5 ' Type WELDED Steel
____ in from ____ ' to ____ ' Type _____
____ in from ____ ' to ____ ' Type _____

Formation tops, indicate source; D, driller; I, inital pick; F, final study

Pleistocene	63 ' thick, top at 0 '		Bertram	____ ' thick, top at ____ '			
Rapid Solon	33.7 ' thick, top at 63 '		Siluran	204.1 ' thick, top at 153.9 '			
Davenport	21.1 ' thick, top at 96.7 '	D	Maquoketa	____ ' thick, top at 358 '			
Spring Grove	23.4 ' thick, top at 117.8 '	D	Gower	18.1 ' thick, top at 153.9 '			
Kenwood	12.7 ' thick, top at 141.2 '	D	Hopkinton	173 ' thick, top at 172 '			
Otis	____ ' thick, top at ____ '		Cedarville	30 ' thick, top at 258 ' - 288			
Coggon	____ ' thick, top at ____ '		Kankakee	13 ' thick, top at 345 '			

5-26-76

Spoon samples from ____ to ____; from ____ to ____; from ____ to ____
from ____ to ____; from ____ to ____; from ____ to ____
from ____ to ____; from ____ to ____; from ____ to ____

Geophysical logs; include remarks, temporary casing or drillstem if any, and an evaluation of the quality of the log.

S. P.	from 66.5 ' to 360 '	Good	
Resistivity	from 66.5 ' to 360 '	Good	
Conductivity	from 10 ' to 360 '	Good	
Temperature	from 10 ' to 360 '	FAIR	
Caliper	from 66.5 ' to 363 '	Good	
Flow Meter	from 18 ' to 300 '	Good no pump Run; 40-300, pumping 20, 40, 84 gpm	
Natural Gamma	from 4 ' to 283 '	Good; 4-358 Good 2 logs through core tube.	
Gamma Gamma	from 4 ' to 358 '	Good.	
Neutron	from 4 ' to 358 '	Good	

flowmeter main water @ 214' Hopkinton

Permeable zones from 63 ' to TD '; from 214 ' to 214.5 '; from ____ ' to ____ '
from 282 ' to 283 '; from ____ ' to ____ '; from ____ ' to ____ '

Description of measuring point Top of casing
located 1.3 feet above L.S.D.

M.P. Altitude 653.3 L.S.D. Altitude 652 Source of alt. data 7½ Topo

Water Level below M.P. 10.50 ft., on MAR 6 1974; 15.9 ft., below L.S.D. on 8-2-74 19__
10.20 ft., on MAR 11 1974; _____ ft., on _____ 19__

Cuttings studied by _____, Core studied by _____

File location _____

WAREHOUSE HOLE

PROJECT NAME CARBONATE HYDROLOGY COUNTY Johnson IGS TEST HOLE 079-06W-16DDAD

ELEVATION 652' DRILLER EVANS FIELD GEOLOGIST BUNKER BEDROCK DEPTH 63

FORMATION DEPTHS C.V. (63-96.9) WAPSi (Dav 96.7-117.8) S.G. (117.8-141.2) KEN (141.2-153.9) S.L (153.9-358) MAQ (358-363)

CORED INTERVAL(S) ~~DAV (96.9)~~ 66.5-283.2; 322-363 TD 363 SWL

OTHER LOGS Nat G; G-G; Neutron; SP & R; Caliper

DEPTH FROM	DEPTH TO	CORE #	DRILLING TIME FROM	DRILLING TIME TO	LITHOLOGIC DESCRIPTION	REMARKS
0	2				N.S Fill, Broken Ls.	Feb 27, 1974
2	4				Soil, dusky brn	
4	7				Till, yel brn	
7	11				Sd & Gravel, m-c.	←
11	15				"	←
15	21				" , Finer	←
21	21.5				Clay, lt brn	
21.5	22.5				Sd & Gravel, v.c.	←
22.5	25				Clay, v. silty, ~~[illegible]~~ yel gr	
25	35				"	
35	42				Clay, yel gr ~~[illegible]~~ interbedded w/ol gr clay, ~~[illegible]~~ sd & Gravel stks	
42	51				Till, lt ol gr	
51	56				Sd & Gravel, gray, c-v.c.	←
56	61				Till, lt ol gr	
61	63				"	
63	~~66.5~~				Ls, pale yel brn	
	66.5				Set 66.5' of 6" Flush CASING	
66.5	73	1	3:21	4:35	Ls, BRN & GR MIXED, V. Fossil. Ferous ↕ ←	Feb 28, 1974
73	82.7	2			Ls, pale yel brn & lt ol gr, v. Fossil. Ferous, f, ↕ ←	MAR 1, 1974
82.7	92.3	3			Ls, yel gr, f, Fractured, clay Filled Fractures ↕ ←	
92.3	101.7	4			aa To 94.8 Breccia, C.V. & DAV mixed To 96.9, DAV. Breccia TD	
					101.7, Ls, pale yel brn, v.f-f. dense	

IGS TEST HOLE 079-06W-16 DDAD

DEPTH FROM	DEPTH TO	CORE #	DRILLING TIME FROM	DRILLING TIME TO	LITHOLOGIC DESCRIPTION	REMARKS
101.7	111.2	5			aa.	
111.2						
					SWL 15.00 - 2.22 = 12.78 - 1.5 = 11.28	MARCH 5, 1974
	120.6	6			S.S. Top 117.8 Ls, pale [redacted] yel brn, f, dol	
120.6	130.2	7			Dol, yel org., csc SACC, vuggy	←
130.2	140.2	8			Dol, aa, grading to Dol, yel org, m	←
140.2	150	9			Dol, aa To 141.2, Dol, lt olgr, v. arg, sdy, silty, CHT, wh, cryptoxline.	
150	159.8	10			Dol, aa To 153.9, Dol, yel gr & lt olgr mixed, csc, numerous gr grn sh partings., vuggy, scatt crin molds.	
159.8	169.4	11			Dol, lt olgr, v. vuggy, numerous gr grn clay Filled vugs & partings	
169.4	179.1	12			aa, sh, gr grn, sdy	
179.1	188.4	13			aa	
188.4					SWL 15.00 - 3.00 = 12.00 - 1.5 = 10.50	MARCH 6, 1973
	198.1	14			Dol, lt olgr, csc, vuggy, scatt crin molds.	
198.1	207.8	15	203.2 9:34	10:08	aa	
207.8	217.8	16	213 10:15		aa	←
					Cavity 214 - 214.5	
217.8	228.2	17			CAVITIES.	←
228.2	237.6	18			aa.	
	247.3	19			aa	
	256.8	20			aa.	
	266.4	21			Dol, becoming lighter, vugs gtz lined, CHT, wh, T. ≈ 2'-4'	
	276.0	22			Dol, yel gr.	
					RUN 9PER, Nat. 6., BEGIN TO REAM.	MARCH 7, 1974
					CONTINUE REAMING.	MARCH 8, 1974
					CONTINUE REAMING, SWL 11.70 - 1.5 = 10.2, RIH W/	MARCH 11, 1974
					REAM BY AIR	MARCH 12, 1974
283	290				Dol, yel gr	

IGS TEST HOLE 079-06W-16DAAD

DEPTH FROM	DEPTH TO	CORE #	DRILLING TIME FROM	DRILLING TIME TO	LITHOLOGIC DESCRIPTION	REMARKS
290	295				aa	
295	300				aa	
300	310				aa	
310	320				aa	
320	322				aa	
					BEGIN CORING.	MARCH 13, 1974
~~3??~~						
321.5	331.2	24			CORE DROPPED COMING OUT OF CORE BARREL Top piece & BOT. piece Good.	
331.2	340.6	25				
	350.2	26			Dol, yel gr, m-c, ~~[illegible]~~ mott/w lt gr Dol. numerous gr grn shale partings, CHT wh, S-sub TRIA NODULAR, 1st appearance 344.9	
	360.0	27			aa To 358' sh, Gr Grn, silty	
	363.	28				
					Run Nat-G, G-G, Neutron inside Core tubing	MARCH 14, 1974
					Run Caliper	

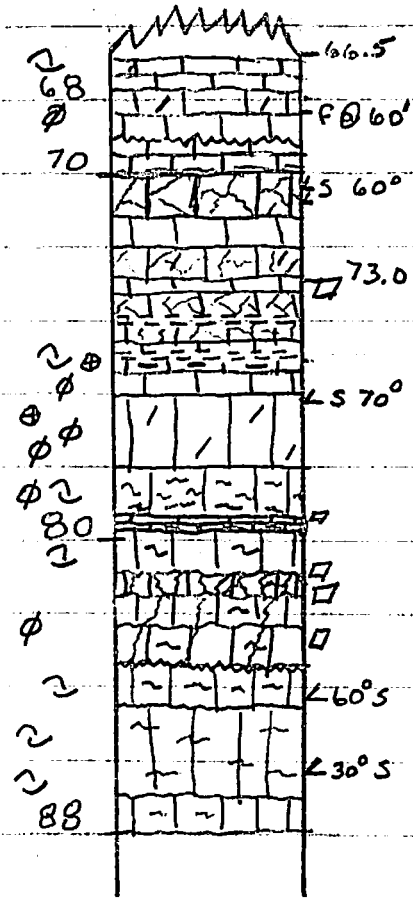
TGS - #3
Warehouse, Iowa City 079 - 06W - 16DDAD TD - 363'

Cored 66.5 - 283.2
Cuttings 283.2 - 321.5
Cored 321.5 - 363.0

W - 23317

Box #	Interval	Box #	Interval
1	66.5 — 73.0	15	198.1 — 207.8
2	73.0 — 82.7	16	207.8 — 217.8
3	82.7 — 92.3	17	217.8 — 228.2
4	92.3 — 101.7	18	228.2 — 237.6
5	101.7 — 111.2	19	237.6 — 247.3
6	111.2 — 120.6	20	247.3 — 256.8
7	120.6 — 130.2	21	258.8 — 266.4
8	130.2 — 140.2	22	266.4 — 276.0
9	140.2 — 150.0	23	276.0 — 283.2
10	150.0 — 159.8	24	321.5 — 331.2
11	159.8 — 169.4	25	331.2 — 340.6
12	169.4 — 179.1	26	340.6 — 350.2
13	179.1 — 188.4	27	350.2 — 360.0
14	188.4 — 198.1	28	360.0 — 363.0

Bedrock @ 63' Cuttings 0 - 66.5



Ls, pale yel brn to lt ol gr, f-med, mot w/dk fos. frags, dolo in zones, numerous clayey partings, thinly bedded to highly fractured, bedding dipping ± 20° most fracs clay filled. 66.5 - 73.0

Ls, v. pale yel brn, f, mot w/dk fos. frags, clay seams @ 74.0' & 74.9' ± 0.1' thick, lt ol gr - brn gr 73.0 - 74.9

Ls, dk ol gr, f-med, bk fos frags, s/ltly arg. 74.9 - 75.2

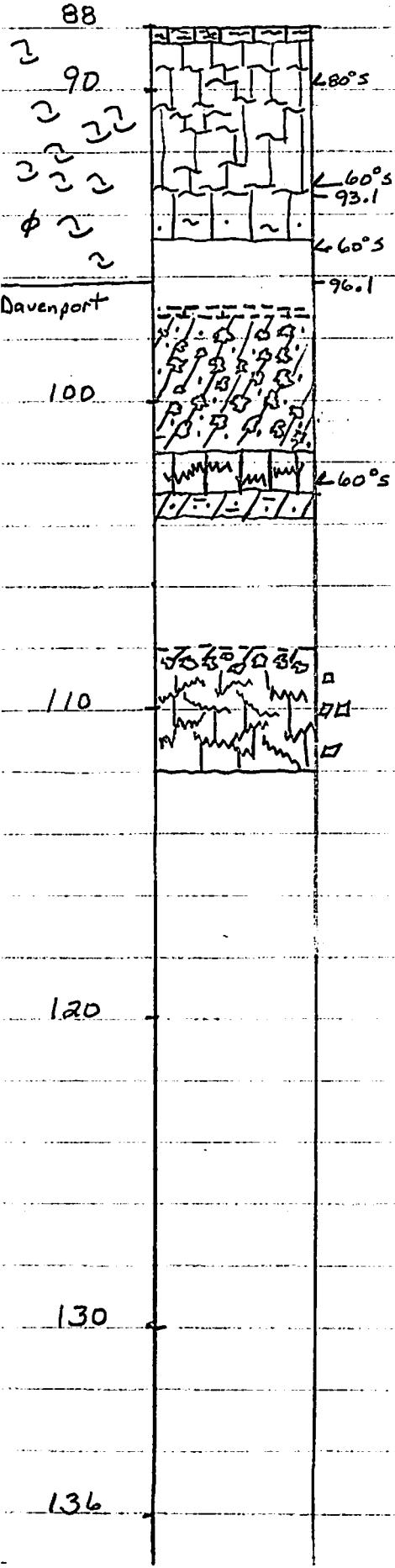
Ls, pale yel brn, f-v.f, dense, hard, numerous fos frags, s/ltly dolo 75.2 - 77.9

Ls, pale yel brn, f-med, wavy carb lam & partings, mod. fossil. f.; Ls, pale yel brn, f, dense, s/ltly vuggy, calcite filled, 79.4 - 79.6; Ls, aa 77.9 - 79.8

Ls, pale yel brn, f, scatt carb partings, brecciated in zones, clay along fracture planes, some calcite fracture fillings 79.8 - 83.4

Ls, v. pale yel brn, f-med, scatt wavy carb partings, v. fossil. f. to pale yel brn 83.4 - 93.1

#3 Cont.



Very carbonaceous

Ls, pale yel brn, med-v.f., few scatt carb partings, traces of G, rare traces of v.f. sd 93.1 - 94.8

Breccia, Ls, aa + Ls, pale-dk yel brn, f-v.f-L., dense; in a matrix of Ls, lt ol gr, f; arg, w/embedded sd + bk cht grains; Breccia grading to Ls, dk yel brn, L, @ 96.1 (Top Davenport); shale break @ 97, calc, dk ol gr 94.8 - 97.0

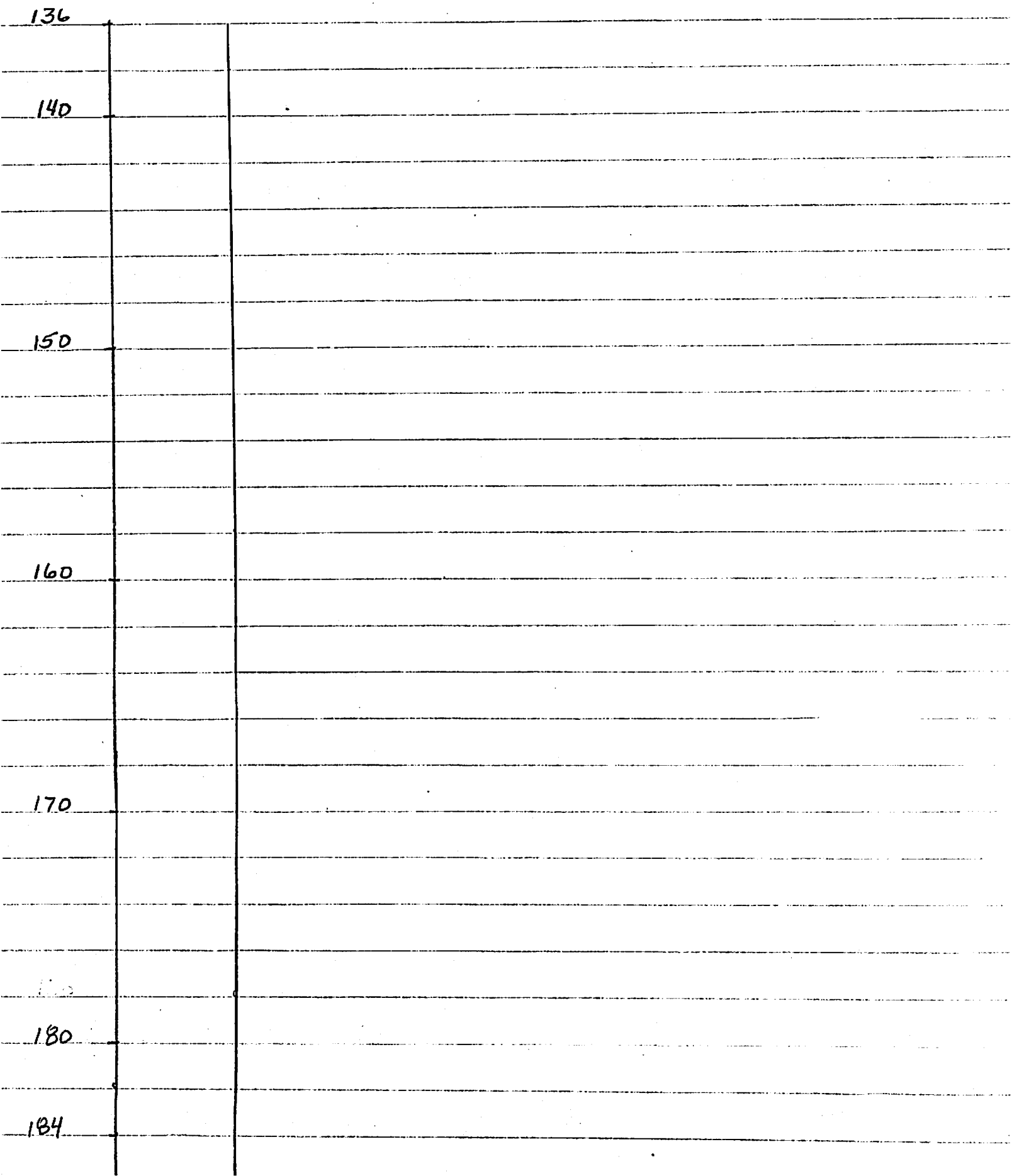
Breccia, micro, Ls, v. lt yel gr, f; Dol, v. pale yel brn, sub-sacc; in a matrix of Dol lt yel gr, sdy, silty, v. arg; a block of Ls, pale yel brn, v.f.-L, v. sl sty, from 101.7 - 103; 97.0 - 103.7

Breccia, macro pieces of Ls, pale yel brn, L, & Dol, mod. yel brn, med, in a macro matrix of the same, and matrix as above, numerous sty among breccia pieces; thin shale parting @ 108, Breccia to 108.6, no bedding break. 103.7 - 108.6

Ls, pale yel brn, v.f.-L, v. sty., incip fracs w/calcite filling massive calcite filling @ 110' 108.6 - 120

Ls, pale yel brn - dk yel brn, v.f.-L, w/wavy carb partings,

#3 Cont.



#3 Cont.

184

190

200

210

220

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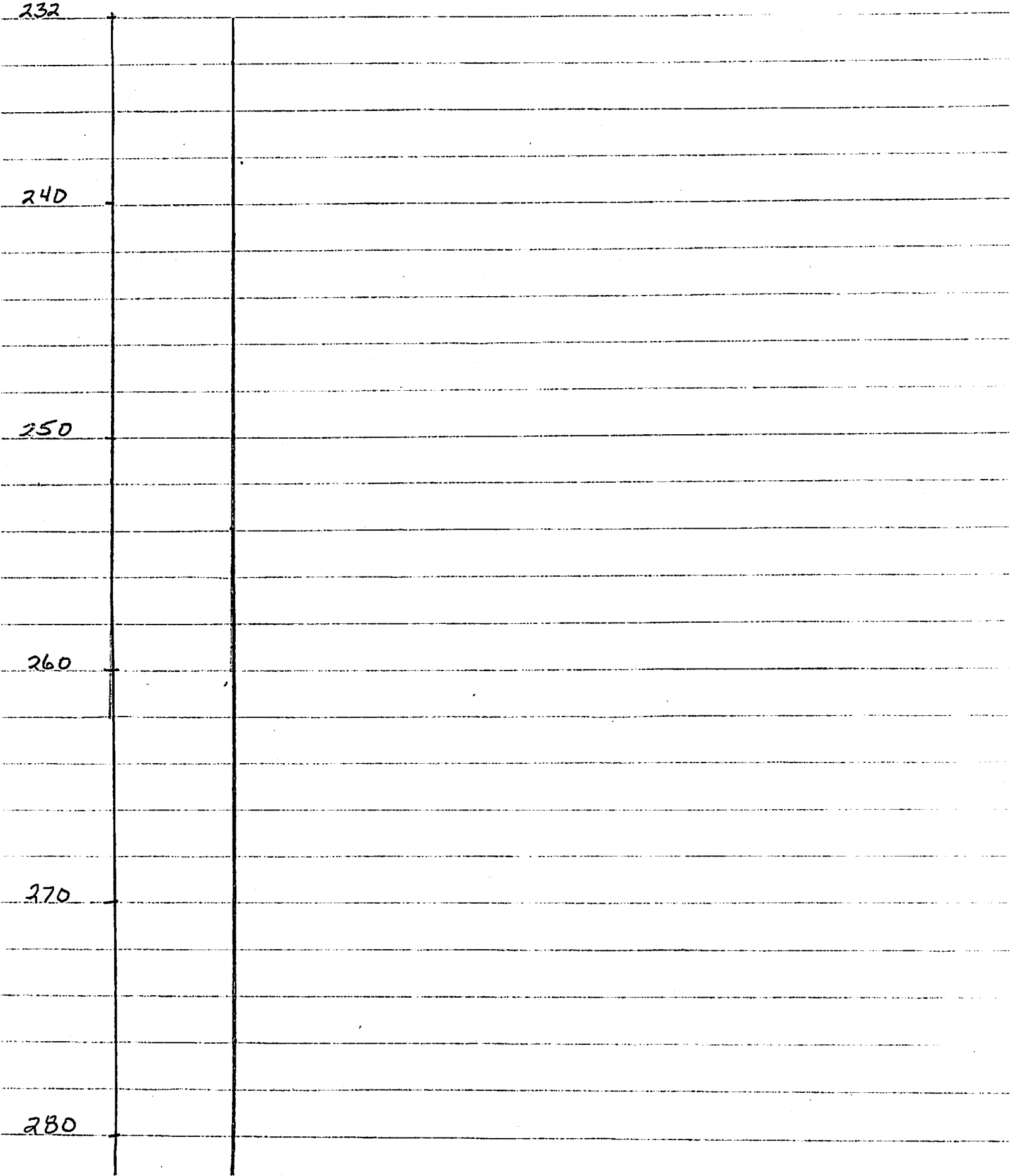
232

#3 Cont.



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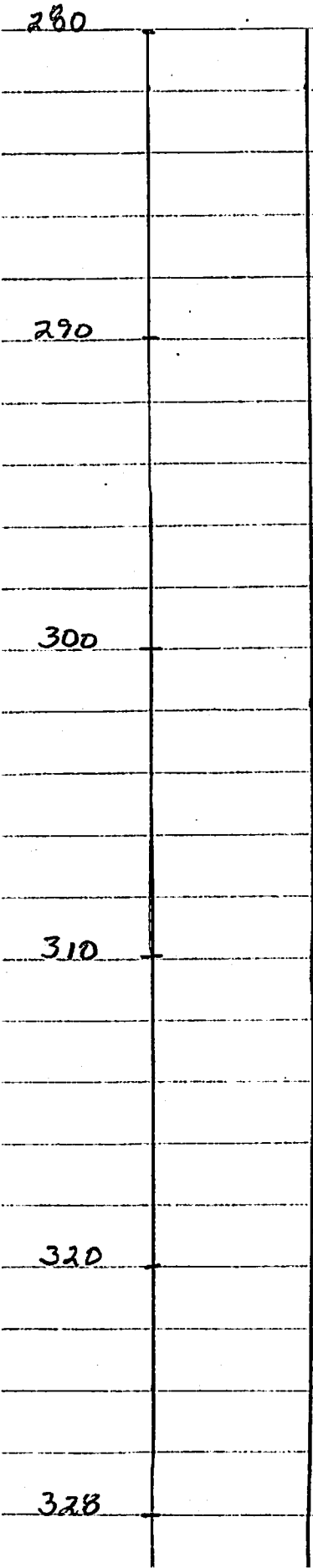

#3 cont.

330

340

350

360

370

Warehouse Well -- Summary of flow in borehole data

3-6-74	By	Temp - Cond	No flow ?
3-21-74	"	" "	Upward flow
4-24-74	By	flow-meter	Downward flow
9-6-74	"	" "	Strong Downward Flow
1-24-75	"	" "	Possibly small upward flow
4-7-75	"	" "	Small upward flow

Warehouse Well Pumping

Interval	thick	gpm	dd	time (min)
67-114	47	14.3	23.8	54
67-358	291	81.1	5.9	78
110-169	59	14.3	37	90
110-169	59	21.4	58.9	63
110-169	59	20.2	52	334
169-229	60	81.9	5.8	70
169-229	60	86	10.4	450
234-358	124	14.3	194	100
234-294	60	13.5	191	271
167-192	25	1.5	139	16
187-212	25	33	105	187
67-111	44	20.8	10.2	117
67-358	291	41.5	2.1	71

Warehouse well 079-06w-16 DDAD

Zone	Pumping rate	Drawdown		Sp. Cap.	
66-114	11.1	19.55	1.76	.57	Ave.
	8.3	18.25	2.20	.46	.53
	14.3	25.80	1.8	.55	
66-332+-	15.8	.49	.031	35.2	
	35.3	1.25	.0354	28.2	
	81.1	5.61	.0692	14.5	
109-168	14.3	34.65	2.42	.41	
109-168	22	58.9		.37	
109-168	20	52.0		.38	
168-228	88.3	10.4	0.1178	8.5	
234-294	14	199		.07	
167-192	1.5	139		.01	
187-212	32.5	105		.31	
66-111	21	12.5	.595	1.68	
66-332	84	5.15	.061	16.3	

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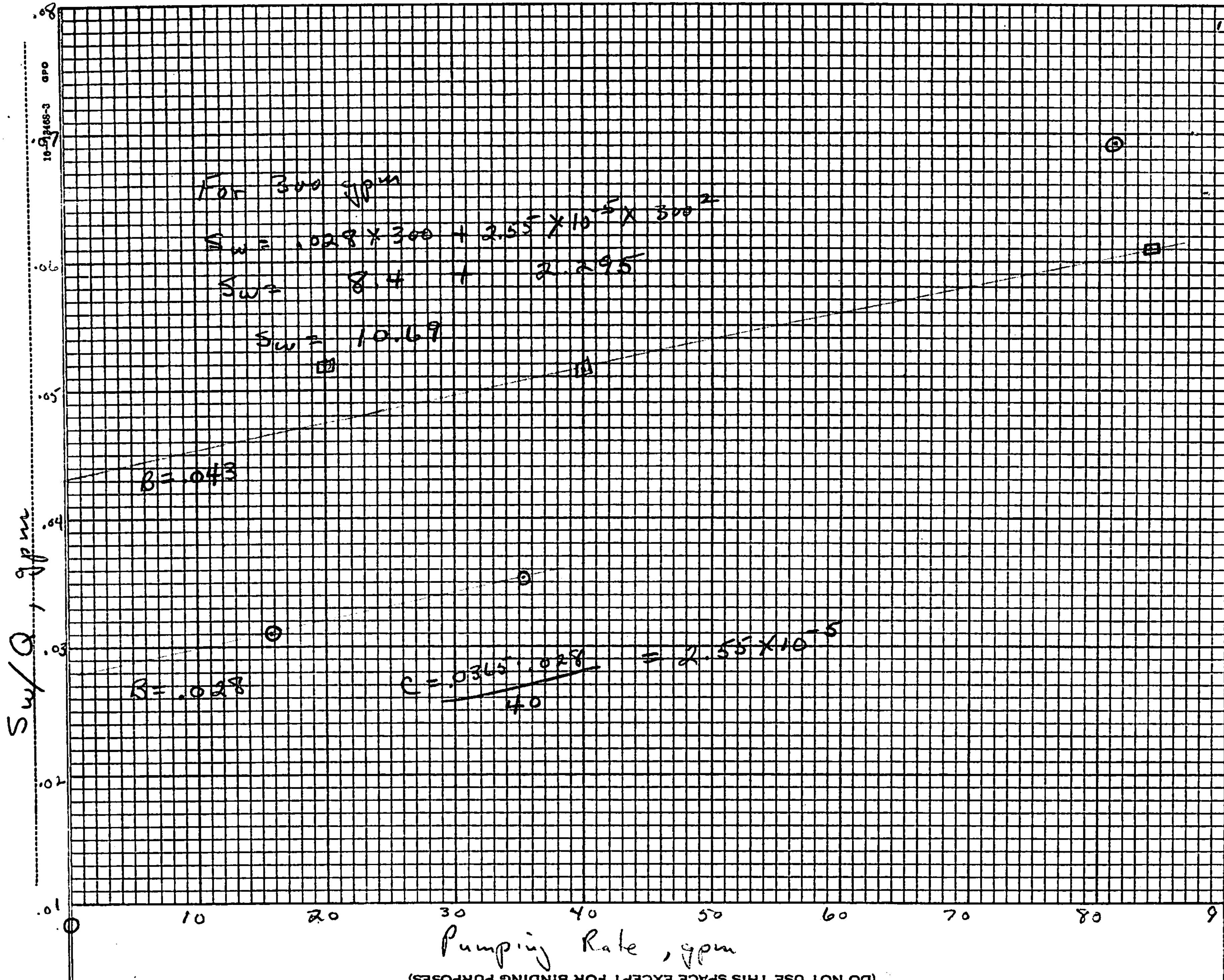
WATER RESOURCES DIVISION

Station Number ....



(DO NOT USE THIS SPACE EXCEPT FOR BINDING PURPOSES)

Sheet No. .... of .... sheets. Prepared by .... Date .... Checked by .... Date ....

9-218-A (Rev. 7-67)

For 84 gpm

$S_w = (.028 \times 84) + (2.55 \times 10^{-5} \times 84^2)$

$S_w = 2.352 + .018$

$S_w = 2.37$ feet

$C = \frac{.0515 \times .043}{40} = \frac{.0022}{40} = .000055$

$S_w = .043 \times 84 + .000055 \times 84^2$

$S_w = 3.61 + .38808$

$S_w = 4.00$

Well Warehouse 079-06W-16 DDAD Date 4-1-74

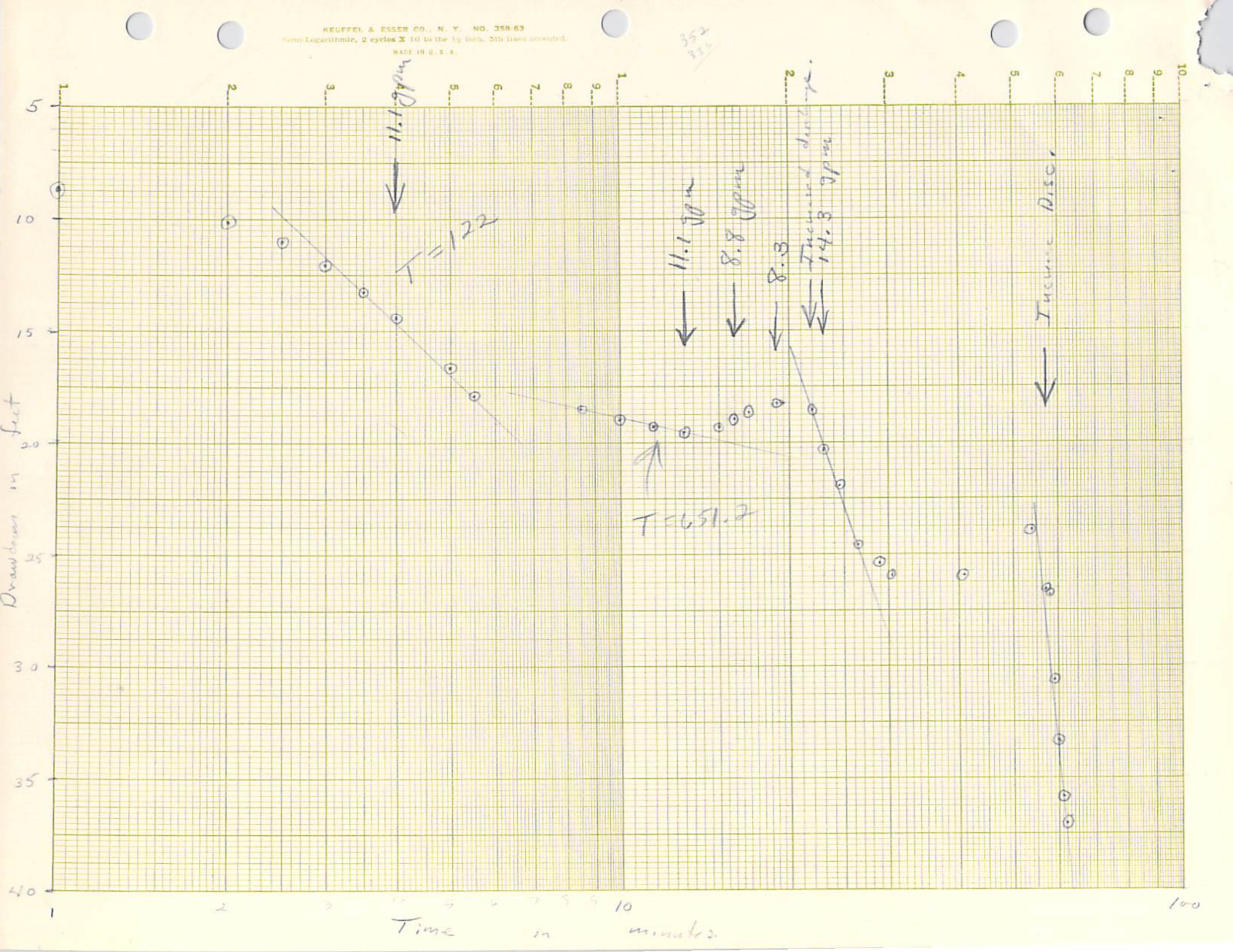
Packer settings: Upper _____; Lower 114

Airline setting: Upper _____; Middle _____; Lower ~~115~~ 114

Measuring Point Top of casing

Time	Electric line Above Upper Packer	Airline Between Packers	Airline Below Lower Packer	Water meter Reading	Discharge gpm	Remarks
14:50	Tag 15 - 3.14 = 11.86		44 #			
3:35	Electric line 11.90		= (12.36)			Pump on 3:36
3:37	20.85					
3:38	21.94		46 # = (7.94)			
3:38.5	22.90		42 # = (16.98)			
3:39	24.00					
3:39.5	25.20					
3:40	26.3		#		5 gal/27 sec	= 11.1 gpm
3:41	28.55		40			
3:42.5	29.8					
3:44.5	30.4					
3:46	30.9		30			
3:47.5	31.15					
3:49	31.45		28		5 gal/27 sec	11.1 gpm
3:51	31.2					
3:52	30.85				5 gal/34 sec	8.8 gpm
3:53	30.60					
3:54	30.15				5 / 36	8.3 gpm
3:58	30.45				3:58	Increase Disc
3:59	32.24				5 / 21	14.3 gpm
4:00.5	34.70					
4:02.5	36.50					
4:05	37.35					
4:06.5	37.70					
4:17	37.70					
4:30	35.75					
4:33	37.2				4:33	Increase Disc
4:34	40.1					
4:35	42.6					
4:36	45.25					
4:37	47.75					
4:38	49.00					

Much sediment pump became plugged.



Well Warehouse Date 4-8-74 Page 1 of ____

Feet below land surface to: Upper Packer ____ Lower Packer ____ Pump intake 49'

Airline setting in feet below measuring point: Green ____ Yellow ____

Measuring point is Top of Casing and is .25 feet above land surface

Time	Electric Line or Tape		Green Airline		Yellow Airline		Water Meter or Orifice Bucket Read	Discharge gpm	Remarks
	Reading	W.L.	Read	W.L.	Read	W.L.			
2:20	13 T - 9.5 2.20	10.55							
2:25	1.05 Elec.	10.8							
2:27	1.54	11.29					2.5"	5 gal in 19" = 15.8 GPM	Pump on 2:26
2:29	1.54	11.29					5"	5 gal in 15" = 20 GPM	
2:31									
2:33	1.63	11.38							Increase to 12"
2:34	1.90	11.65							
2:37	1.95	11.7							
2:40							11"	5 gal in 11" = 27.3 GPM	
2:41	2.20	11.95							
2:43							16"	5 gal in 8.5" = 35.3 GPM	
2:45	2.30	12.05						5 gal	
2:49							18"	5 gal in 8" = 37.5 GPM	
2:50	4.93	14.68							Increase Disc
2:51	5.30	15.05							
2:52	5.43	15.18						5 gal in 3.8" = 78.9 GPM	
2:54	5.65	15.4							
3:45	6.66	16.41						5 gal in 3.7" = 81.1 GPM	
									Shut Pump off 3:46
RECOVERY									
3:47	2.68	12.43							
3:48	2.52	12.27							

9-818-A
(Rev. 7-67)

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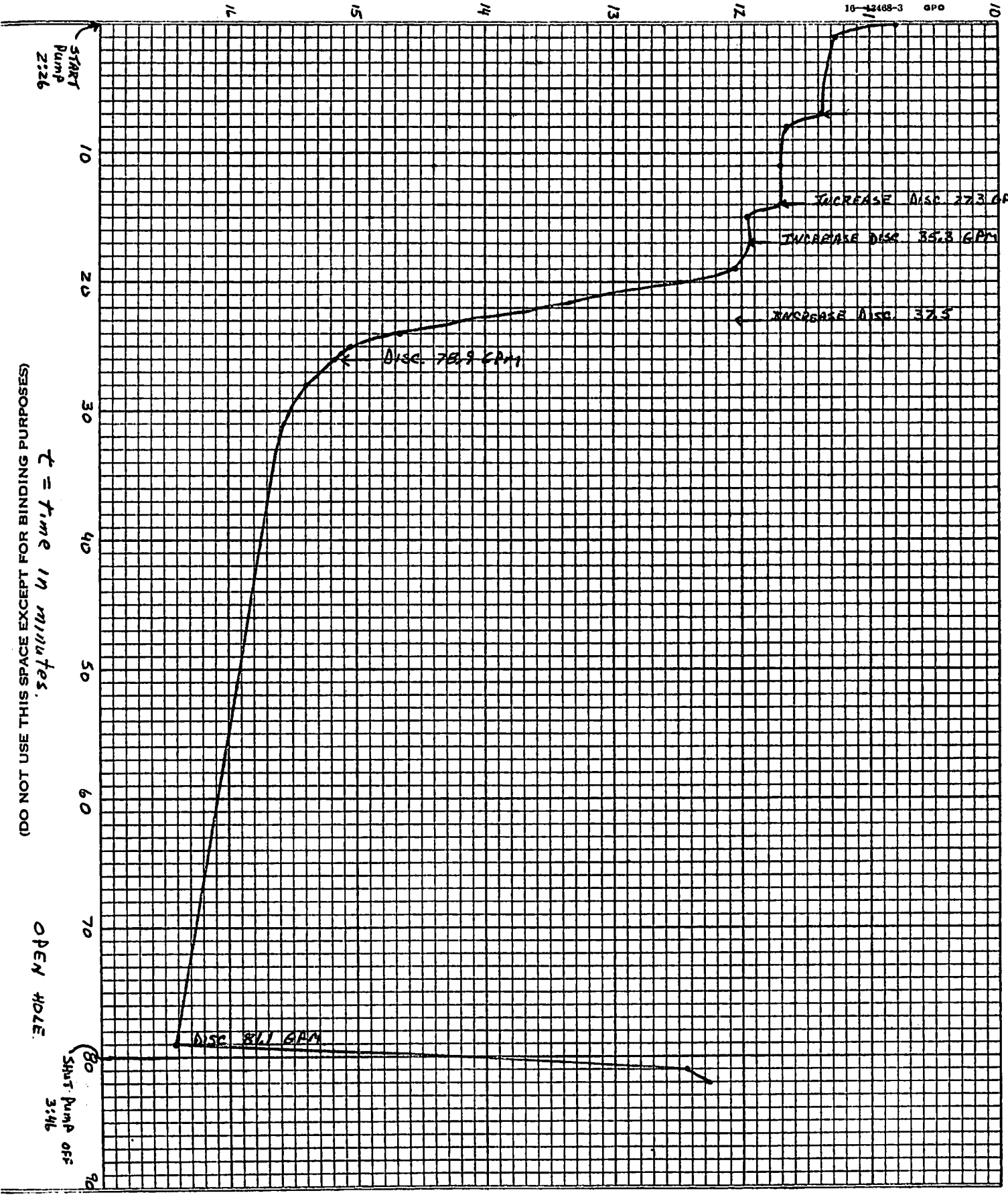
Station Number .....

DEPTH TO WATER IN FEET BELOW LAND SURFACE.



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Well Warehouse Date 4-9-74 Page 1 of ____

Feet below land surface to: Upper Packer 109.5 Lower Packer 168.5 Pump intake 114.5

Airline setting in feet below measuring point: Green 110 Yellow 169

Measuring point is Mark on Sp. Line and is .50 feet above land surface

Time	Electric Line or Tape		Green Airline		Yellow Airline		Water Meter or Orifice Bucket Read	Discharge gpm	Remarks
	Reading	W.L.	Read	W.L.	Read	W.L.			
3:06	12 - 0.94	11.06 (10.56)							
3:10			44#	8.36 (10.56)	69#	9.61 (10.56)			
3:14	12 - 1.07	10.93 (10.43)							
3:15	12 - 0.92	11.08 (10.58)							
3:16	12 - 0.90	11.10 (10.60)							
3:19	12 - 0.90	11.10 (10.60)							Packers Inflated
3:23	12 - 0.44	11.56 (11.06)							
3:25	12 - 0.40	11.60 (11.10)	43#	10.67 (10.17)	69#				
3:27	12 - 0.40	11.60 (11.10)							
3:30									Pump on
3:31			28#	45.32 (47.52)					
3:32	12 - 0.36	11.64 (11.14)					5 gal in 26"	11.5 GPM	
3:33			33#	33.77	69#				
3:35	12 - 0.32	11.68 (11.14)		35.77					
3:42				42.9					Throttle Disc.
3:43			30#	40.7					
3:45	12 - 0.26	11.74 (11.24)	27#	47.63 (44.83)			2.5"	=15	
3:50	13 - 1.21	11.79 (11.29)	27#	"	69#		2.75"	=16	
3:55							5 gal in 20" = 2.5" = 15		
4:01	13 - 1.13	11.87 (11.37)	27#	"	69#		2.5"		
4:10	13 - 1.11	11.89 (11.39)	28#	45.32 (47.52)	69#		2" = 5 gal in 21" = 14.3 GPM		
4:29	13 - 1.03	11.97 (11.47)					2"	14.3	
4:35							2"	14.3	WATER SAMPLE
4:50	13 - 1.00	12.00 (11.50)	28#	"	69.5#	8.46 (9.41)	2"	14.3	55° F
5:00	13 - 0.97	12.03 (11.53)	28#	"	69.5#		2"	14.3	
5:03									Pump off
5:04	13 - 0.97	12.03 (11.53)	46#	3.74 (5.24)					
5:05			44#	8.36					
5:07	13 - 0.99	12.01 (11.51)		10.56					
			Total pumping time 93 minutes						
		1	1		1				

Well Warehouse Date 4-10-74 Page 1 of 1

Feet below land surface to: Upper Packer 169.5 Lower Packer 168.5 Pump intake 114.5

Airline setting in feet below measuring point: Green 110 (110.925) Yellow 169 (169.83)

Measuring point is Mark on spider and is .50 feet above land surface

Time	Electric Line or Tape		Green Airline		Yellow Airline		Water Meter or Orifice Bucket Read	Discharge gpm	Remarks
	Reading	W.L.	Read	W.L.	Read	W.L.			
8:20	12-1.06	10.44	43.5#	10.44	69#	10.44			
8:25									Test Hole Pump
8:30	12-0.39	11.11	43.5#	10.44	69#				
8:32									Pump on.
8:34	13-1.36	11.14							
8:35			20#	64.72			7"	5 gal in 14"	= 21.43
8:37			19#	67.04					
8:38	13-1.31	11.19	19#	"					
8:42	13-1.23	11.27	19#	"			7"		21.43
8:50	13-1.16	11.34	18.5#	68.19	69#		7"		"
8:59	13-1.07	11.43					7"		"
9:18	13-0.94	11.56							
9:36	13-0.86	11.64	18#	69.34					
9:45									Shut pump off
9:48	13-0.86	11.64	43.5	10.44					
10:00	13-0.98	11.52							
10.49									Restart Pump
11:26	13-0.83	11.67	22#	60.10	69#		5.5" =	20.2	Muddy again
11:29			21.5#	61.26					
11:36	13-0.80	11.7					5.25"	19.8	
11:49	13-0.77	11.73	"	"	"				
12:00	13-0.75	11.75	"	"	"		"	"	
12:23	13-0.71	11.79							
12:47	13-0.69	11.81	"	"	"		"	"	
1:25	13-0.65	11.85	"	"	"		5.5"	20.2	
2:29	13-0.61	11.89	21#	62.42	"				
3:00	13-0.60	11.9	21#	"	69#		5.5"	"	
3:37	"		"	"	"		"	"	
4:22									WATER SAMPLE
4:23	13-0.60	11.9	"	"	"		"	"	Shut Pump off
4:27	13-0.60	11.9	43.5	10.44	69				
4:33	13-0.70	11.8	"	"	"				
4.38	13-0.76	11.74							
4:42	13-0.78	11.72							

4:44 Packer off 13-1.85 10.65

Well Warehouse Date 4-1-74 Page 1 of 1

Feet below land surface to: Upper Packer 168.5 Lower Packer 228.5 Pump intake 173.5

Airline setting in feet below measuring point: Green 69 (170.37) Yellow 229 (232.74)

Measuring point is Mark on Spider and is .50 feet above land surface

Time	Electric Line or Tape		Green Airline		Yellow Airline		Water Meter or Orifice Bucket Read	Discharge gpm	Remarks
	Reading	W.L.	Read	W.L.	Read	W.L.			
3:30	13-1.52	10.98	69#	10.98	96#	10.98			
3:33									Pump on
3:36	13-1.47	11.03	69#	"	96#	"	7.5"	22.7	
3:43							11.34"	27.5	open second hole
3:43							3.75	35	
3:45	13-1.42	11.08							open third hole
3:46			67#	15.6	96#	"	over flow		
3:48			67.5#	14.44			23"		
4:00	13-1.16	11.34	67.5	"	96#	"	23"		
4:43	13-0.89	11.61	66.5	16.76	95#?	13.29?	11"	81.9	3 hole dis.
4:44			69#	10.98	96#	10.98			Pump off

Well WAREHOUSE Date 4-15-74 Page 1 of 1

Feet below land surface to: Upper Packer 168.5 Lower Packer 228.5 Pump intake 173.5

Airline setting in feet below measuring point: Green 169 (170.66) Yellow 229 (233.03)

Measuring point is MARK ON Spider and is .50 feet above land surface

Time	Electric Line or Tape		Green Airline		Yellow Airline		Water Meter or Orifice Bucket Read	Discharge gpm	Remarks
	Reading	W.L.	Read	W.L.	Read	W.L.			
8:28	13.00-1.23	11.27	69#	11.27	96#	11.27			
8:40		"	"	"	"	"			inflate packers
8:43	13.00-1.24	11.26							
8:46	13.00-1.24	11.26	"	"	"	"			
8:50									Pump on.
8:51			"	"	"	"	Reading too low.		O.B. 3 hole disch.
8:52	13.0-1.20	11.3	"	"	"	"			
8:53									increase disch.
8:54	13 -1.09	11.41	67#	15.89	"	"	10"	90	
9:00	13 -0.99	11.51	67#	"	95#	13.58	9.5"	88	
9:05	13 - 0.9	11.6	66.5	17.04	"	"	"	"	
9:17	13 -0.79	11.71	"	"	"	"	"	"	
9:27	13 - 0.73	11.77	66.25	17.62	"	"	"	"	
9:40	13 - 0.66	11.84	66	18.2	"	"	"	"	
9:55	13 - 0.59	11.91	"	"	94	15.89	"	"	
10:10	13 - 0.51	11.91	"	"	"	"	"	"	
10:13							5 gal / 3.4 sec.	88.3 GPM	
10:24	13 - 0.43	12.07	"	"	"	"	"		
10:46	13 - 0.38	12.12	"	"	"	"	9.5	"	
11:20	13 - 0.28	12.22	65.9	18.43	94	"	9.75	89	
11:49	14 - 1.22	12.28	65.8	18.66	93	18.2	"	"	
12:10	14 - 1.18	12.32	65.5	19.36	93	"	"	"	
12:50	14 - 1.12	12.38	"	"	"	"	10	90	
1:21	14 - 1.08	12.42	"	"	"	"	"	"	
1:51	14 - 1.04	12.46	65	20.51	"	"	9.5	88	
2:30	14 - 1.00	12.5	"	"	"	"	"	"	
3:06	14 - 0.96	12.54	"	"	"	"	10	90	
3:30	14 - 0.94	12.56	"	"	"	"	"	"	WATER SAMPLE
3:50	14 - 0.94	12.56	"	"	"	"	"	"	54°F
4:20	14 - 0.91	12.59	64.5	21.66	"	"	9"	86	
4:21									Pump off.
4:22	14 - 0.97	12.53	65	20.51	94	15.89			
4:27	14 - 1.07	12.43	67.5	14.74	95	13.58			
4:31	13 - 0.10	12.4	"	14.74	"	"			
4:32									Deflate

Well WAREHOUSE Date 4-17-74 Page 1 of 1

Feet below land surface to: Upper Packer 234.5 Lower Packer 294.5 Pump intake ____

Airline setting in feet below measuring point: Green 235 (238.43) Yellow 295

Measuring point is Mark on Spider and is .5 feet above land surface

Time	Electric Line or Tape		Green Airline		Yellow Airline		Water Meter or Orifice Bucket Read	Discharge gpm	Remarks
	Reading	W.L.	Read	W.L.	Read	W.L.			
8:50	13 - 0.45	12.05							
8:56			98#	44#					
9:00	13 - 0.45	12.05	98	12.05					
9:04	"	"							
9:04			98#	12.05					Pump on.
9:07	13 - 0.23	12.27	2#	233.81					
9:10			10#	215.33					discharge disch.
9:11	14 - 1.16	12.34	12#	210.71					
9:15			13#	208.4					
9:17	14 - 1.10	12.4					2" 1 Hole?	14.3	
9:18			15#	203.78					
9:26	14 - 1.04	12.46	14#	206.09			2"	"	
9:36	14 - 0.97	12.53	14#	"			2"	"	
9:45	14 - 0.93	12.57	14#	"			2"	"	
10:19	14 - 0.80	12.7	13.5#	207.24			2"	"	
10:51	14 - 0.70	12.8	13.5	"					
11:12	14 - 0.65	12.85	13.5#	"					WATER CLOUDY
11:44	14 - 0.60	12.9	14#	206.09					
12:00			12#	210.71	105#	52.45	2"	"	Inflate lower Pkr
12:29	14 - 0.52	12.98	12	"	115	29.35			
1:08	14 - 0.45	13.05	12	"	121	15.49			
1:33	14 - 0.44	13.06	13.5	207.24	121	"			
2:58	14 - 0.40	13.1	15	203.78	121	"			
3:46	14 - 0.37	13.13	15.5	202.62	123	10.87	1.5"	13.5	
4:30									WATER SAMPLE 55°F
4:31	14 - 0.35	13.15	15.5	"	124	8.56			deflate lower packer
4:58			84	44.39					Pump off
4:59			98	12.05					
5:00	14 - 0.47	13.03	99	9.74	120	17.8			
5:01			99	9.74	122	13.18			
5:02									Deflate upper packer

Well WAREHOUSE WELL Date 4-16-74 Page 1 of

Feet below land surface to: Upper Packer 167 Lower Packer 192 Pump intake 172

Airline setting in feet below measuring point: Green 167.5 (169.18) Yellow 192.5 (196.9)

Measuring point is Mark on Spider and is 0.5 feet above land surface

Time	Electric Line or Tape		Green Airline		Yellow Airline		Water Meter or Orifice Bucket Read	Discharge gpm	Remarks
	Reading	W.L.	Read	W.L.	Read	W.L.			
2:20	14 - 1.34	12.16							
2:30			68#	12.1	80#	12.1 ~~7.7~~			
2:34	13 - 0.41	12.09							
2:36									inflate upper packer
2:37									inflate lower packer
2:39			68.5#	10.94	80#				
2:43	13 - 0.37	12.13							
3:04	13 - 0.91	11.59	68#	12.1	80#			1.5	1 gal in 39"
3:20	13 - 0.86	11.64	8#	150.7	80#				
		3:25	shut off pump. Green Airline went						
	to 74#		and	holding.					
				1.76					
3:50			70#	7.48					

Well Warehouse Date 4-19-74 Page 1 of

Feet below land surface to: Upper Packer 187 Lower Packer 212 Pump intake 192

Airline setting in feet below measuring point: Green 187.5 Yellow 212.5 ~~197.95~~ ~~189.81~~ ~~212.91~~ 216.43

Measuring point is Mark on sp. h and is 0.5 feet above land surface

Time	Electric Line or Tape		Green Airline		Yellow Airline		Water Meter or Orifice Bucket Read	Discharge gpm	Remarks
	Reading	W.L.	Read	W.L.	Read	W.L.			
8:29	13 - 0.56	11.94	77#		87#				
8:30									Inflate
8:38					87#		13.5 1/4	30	
		Leaking			Packers				
		Reset	@ 4	-22	-74				
1:05	14 - 0.35	13.15	80#	13.15	88#	13.15			
1:10			80#	"	88#	"			Set upper Packer
1:16	15 - 2.42	12.08							
1:17									Start Pump
1:21									Set lower Packer
1:28	14 - 1.35	13.15	37	112.48	88		17 1/2"	36.5	INCREASE DISC
1:34	14 - 1.32	13.18	36	114.79	88				water milky.
1:51			36	"	88				
2:05	14 - 1.26	13.24	35.5	115.94	88		15 1/2	33	
2:28			35	117.1	88		15 1/2"	33	
2:30							5 gal / 9.8 sec	30.6	
2:55	14 - 1.18	13.32	34.5	118.26	88				
3:16			34.5	"	88				
3:31	14 - 1.14	13.36	34.5	"	88		14 1/2"	31.7	
9:15	14 - 1.11	13.39	34.5	"	88		"	"	
4:28	14 - 1.10	13.4	34.5	"	88		15 1/2	33	
4:30			80	13.15	88	13.15			Pump OFF

Well Warehouse Date 4-23-24 Page 1 of ____

Feet below land surface to: Upper Packer 218 Lower Packer 243 Pump intake 223

Airline setting in feet below measuring point: Green 228.35 218.5 Yellow 249.14 243.5

Measuring point is Mark on spider and is 0.5 feet above land surface

Time	Electric Line or Tape		Green Airline		Yellow Airline		Water Meter or Orifice Bucket Read	Discharge gpm	Remarks
	Reading	W.L.	Read	W.L.	Read	W.L.			
8:55	15 - 0.98	13.52	93#		102#				
9:00									inflate L. packer
9:17	15 - 0.80	13.7							
9:19			93		101				
9:21			41	133.64	101				upper packer leaking

Well WAREHOUSE Date 4-23-74 Page 1 of ____

Feet below land surface to: Upper Packer ____ Lower Packer 111 Pump intake ____

Airline setting in feet below measuring point: Green 86.5 (86.70) Yellow 111.5 (120.2)

Measuring point is MARK ON SPIDER and is .5 feet above land surface

Time	Electric Line or Tape		Green Airline		Yellow Airline		Water Meter or Orifice Bucket Read	Discharge gpm	Remarks
	Reading	W.L.	Read	W.L.	Read	W.L.			
2:58	15-0.56	13.94	31.5	13.94	46				
3:00									Inflate L. packer 100#
3:27			32.5	11.62	46				
3:30									Pump on.
3:34			25.5	27.80	46		17"	35.5	cloudy
3:35			25	28.95	46				
3:40	28-3.37	24.13	27.5	23.18	46		6"	20.8	
3:59			27.5	"	46		6"	"	
4:03	28-4.07	23.43							
4:27	28-3.98	23.52	27.1	24.1	46				
4:48	28-3.98	"	27.1	"	46		6"	"	
4:59	28-3.95	23.55	27.1	"	46				
5:23									water sample 54°
5:27	28-3.84	23.66	27.1	"	46				
5:30									shut pump off
5:31			31	15.09	46				
5:35			31.5	13.93					

Well Warehouse Date 4-25-74 Page 1 of ___

Feet below land surface to: Upper Packer ___ Lower Packer ___ Pump intake 30'
Pumping with AU meter below pump.
Airline setting in feet below measuring point: Green ___ Yellow ___

Measuring point is Mark on Spider and is .5 feet above land surface

Time	Electric Line or Tape		Green Airline		Yellow Airline		Water Meter or Orifice Bucket Read	Discharge gpm	Remarks
	Reading	W.L.	Read	W.L.	Read	W.L.			
8:40	15 - 0.18	14.32 14.82							
8:54	20 - 4.40	15.10 15.60						5" 20 gpm	
9:29	18 - 2.14	15.34 15.86						5" 20	
9:30								Increase	to 20"
~~9:36~~	~~30 - 10.90~~	~~19.1~~	?						
10:05	22 - 5.12	16.38 16.88						20" 41.5	
11:15	25 - 5.03	19.47 19.97						12" 3 plugs 97.5 ?	