Appendix B
Current Test Hole/Water Well Logs

Driller's Report

Conservation

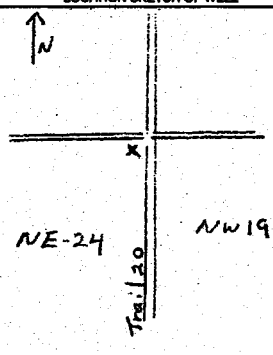
WELL LOCATION

QTR. NE SEC. 24 TWP. 5 RGE. 9 E. [X] W. [ ]

R. LOT [ ] PARISH in NE corner of ¼

REMARKS

LOCATION SKETCH OF WELL



WELL OWNER

NAME Pembina Valley Water Coop. Inc

ADDRESS PHONE

WELL IDENTIFICATION (NO., NAME) TH-1

WELL USE: PRODUCTION [ ] TEST WELL [X] RECHARGE [ ] OBSERVATION WELL [X]

WATER USE: DOMESTIC [ ] LIVESTOCK [ ] MUNICIPAL [ ] INDUSTRIAL [ ] IRRIGATION [ ]
AIR CONDITIONING [ ] OTHER [ ] (Specify)

DATE WELL COMPLETED DAY 25 MONTH May 20 05

LOG

DEPHT BELOW GROUND IN FEET FROM	TO	DESCRIPTION	WATER RECORD (KIND OF WATER)
0	44	Very fine silty sand; brown	
44	55	Brown till; silty (layer of sand)	
55	68	Very fine silty sand to silt; brown	
68	69	Till; light grey	
69	105 82	Silt; light grey-brown - Till layer @ 82 ; coal @ 98	
105	112	Silty clay; soft; light grey	
112	157	Silt to very fine sand	
157	160	Fine sand; grey	
160	176	Silt to very fine sand	
176	210	Fine sand ; some medium	
210	250	Fine sand	
250	270	Fine sand (a bit coarser)	
270	280	Silt + some clay	
280	300	Fine to very fine sand	
		Note: hole redrilled to set obs. well	
		well E-logged by W.R.	

WELL CONSTRUCTION

DEPHT BELOW GROUND LEVEL IN FEET FROM	TO	CASING	OPEN HOLE	PERFORATIONS	GRAVEL PACK	CASING GROUT	PITLESS UNIT	INSIDE DIAMETER INCHES	OUTSIDE DIAMETER INCHES	SCREEN SLOT SIZE NO. OR INCH	TYPE		MATERIAL	MAKE
0	189	X						2			T+C		B.I.	
189	204			X				2	PS	25	WW		SS	
											- drive point on bottom			
0	+4.4	X						2			PVC			
?	180				X			2	5		8-16		Filter Sand	
0	?					X		2	5		Backfill	W	cuttings	

TOP OF CASING OR PITLESS UNIT 4.4 FEET ABOVE [ ] BELOW [ ] GROUND LEVEL

REMARKS: Recovery → T: 4000 IGPD/ft

Field Analysis
EC - 300 µmhos
Hard - 10 gpg
Iron - 0.2 mg/l
Mang - no colour <0.1

PUMPING TEST

DATE OF TEST: DAY [ ] MONTH [ ] 20[ ]

PUMPING [X] FLOWING [ ] RATE 22 I.G.P.M. w air

WATER LEVEL BEFORE PUMPING 40 FT. ABOVE [ ] BELOW [X] GRD. LEVEL

WATER LEVEL AT END OF TEST [ ] FT. ABOVE [ ] BELOW [ ] GRD. LEVEL

DURATION OF TEST [ ] HOURS 60 MINUTES

WATER TEMPERATURE [ ] °F

RECOMMENDED PUMPING RATE [ ] I.G.P.M.

WITH PUMP INTAKE AT [ ] FEET BELOW GROUND LEVEL.

CONTRACTOR

LICENCE NO. [ ] [ ]

NAME Friesen Drillers Ltd

ADDRESS Steinbach

DRILL OPERATOR Paul Sharples

Signature of Contractor

WELL OWNER'S COPY

Sandilands PVWC

Gamma log

COMPANY	
WELL	PVWC tst. 1
FIELD	
COUNTRY	Canada
STATE	Manitoba
COUNTY	
LAT.:	
LONG.:	

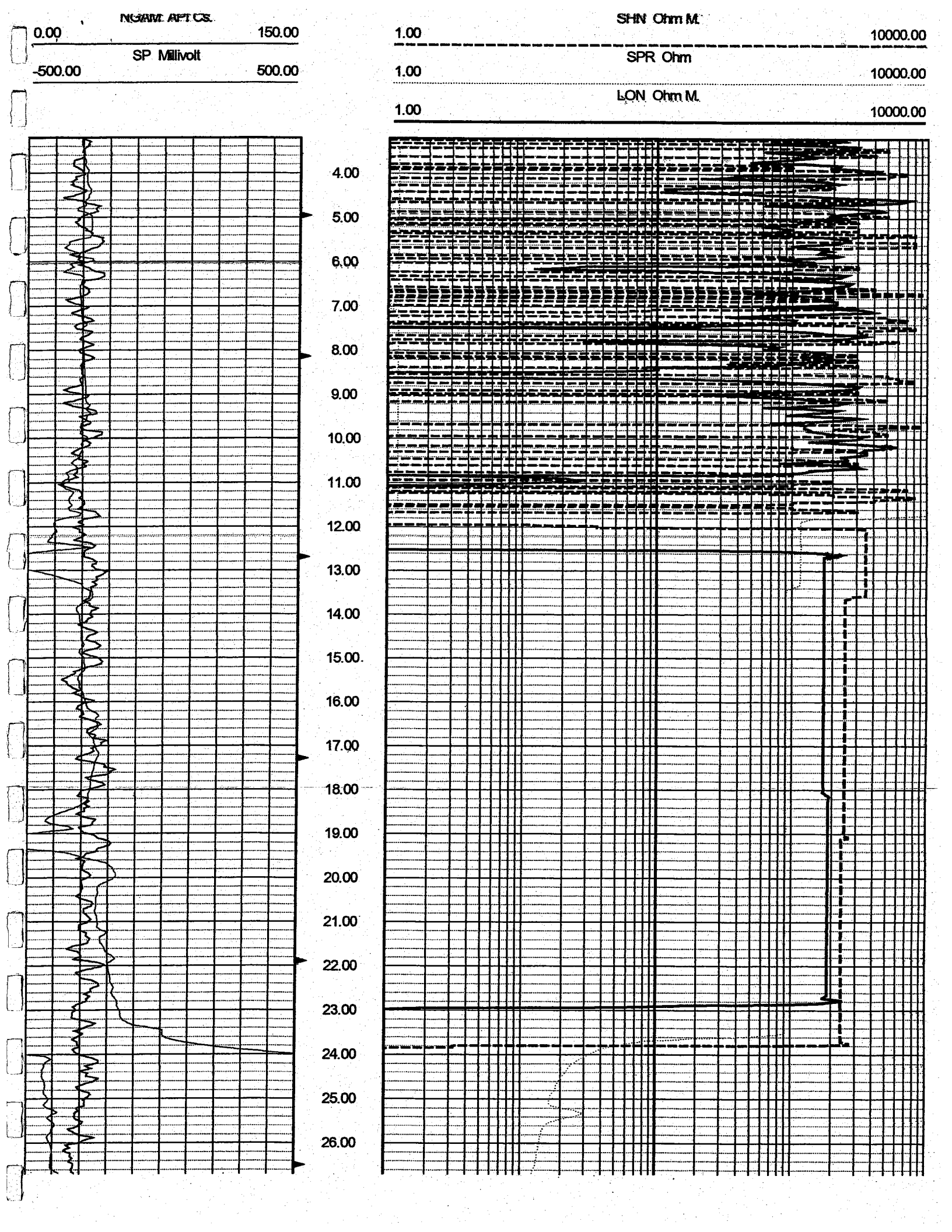
OTHER SERVICES

Perm. Datum	Top Casing	Elev	100	KB	0.00
Log. Datum	Ground			DF	0.00
Drill Datum	ground			GL	0.00

DATE	25 May 05	21 Apr 05	21 Apr 05
RUN#	1	0	0
TYPE OF LOG	Gamma		
DEPTH DRILLER	100.00	0.00	0.00
DEPTH LOGGER	0.00	0.00	0.00
LOG DEEPEST	0.00	0.00	0.00
LOG SHALLOW	0.00	0.00	0.00
FLUID IN HOLE	Water		
SALINITY			
DENSITY	1.0 Kg/CuM		
LEVEL	2.32 m		
MAX TEMP °C	6.00	0.00	0.00
RIG TIME			
RECORDED BY	J. Mowez		
WITNESSED BY	C. Fillmore-Handlon		

RUN#	BIT RECORD			CASING RECORD			
	BIT	FROM	TO	BIT	WEIGHT	FROM	TO
1	210.00	0.00	39.00	50.00	0.00	0.60	60.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pembina Valley Water Co-op testhole 1.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150.00
SP Millivolt
-500.00
500.00
SHN Ohm M.
1.00
10000.00
SPR Ohm
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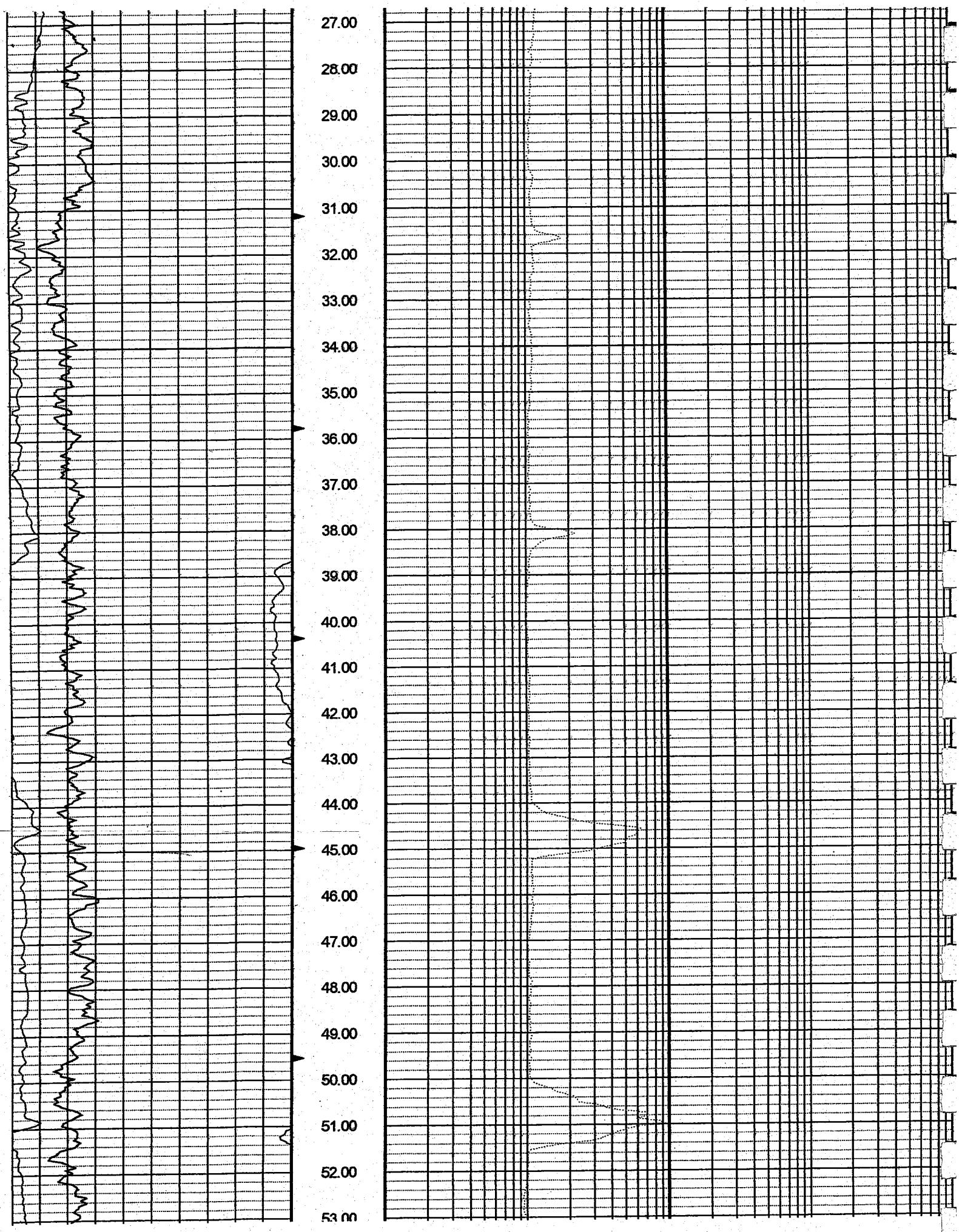
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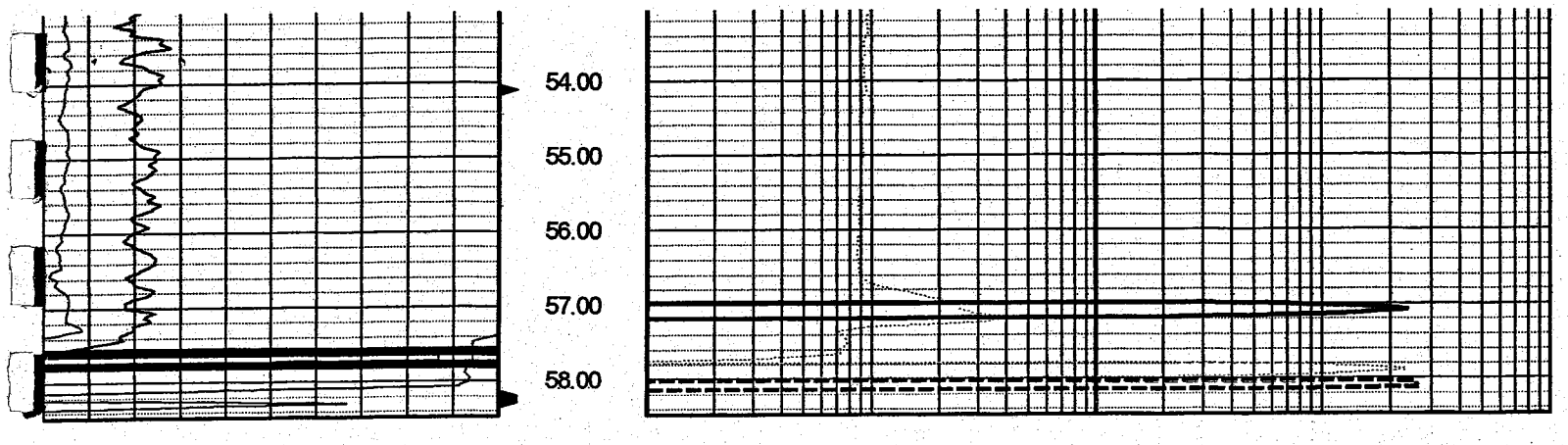
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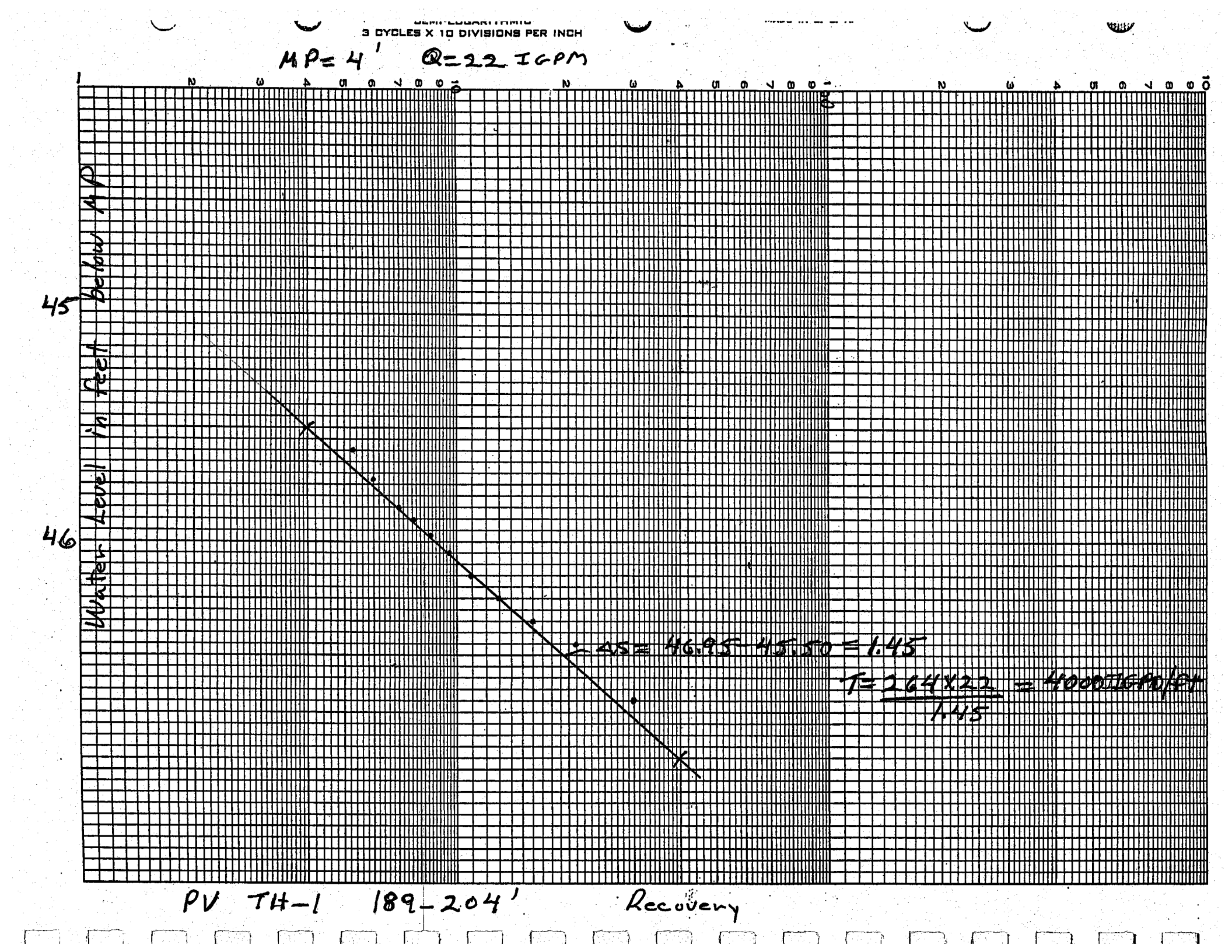

SEMI-LOGARITHMIC
3 CYCLES X 10 DIVISIONS PER INCH
MP= 4'
Q=22 IGPM
Water Level in feet below MP
45
46
Δ45 = 46.95 - 45.50 = 1.45
T = 264 x 22 / 1.45 = 4000 IGPD/FT
PV TH-1 189-204'
Recovery

PROVINCE OF MANITOBA
WATER RESOURCES BRANCH
GROUNDWATER SECTION

TH-1

WELL NO. TH-1	~~PRODUCTION~~ WELL TEST	DATE	SHEET OF
ENGINEER AP	PROJECT: PVWCJ		

M.P. of Well Casing: 4.4'

Type of Pump:

Inital Water Level from M.P.:

Time Test Started:

Pumping Rate: 22 Imp. Gal. ~~U.S. Gal.~~ in ____ sec. = ____ I.G.P.M.

How Measured:

Comments on Solids, Mud etc.

Method of Measuring Water Level:

Time Pumping Stopped:

FIELD ANALYSIS

TIME					
EC	300				
HARD	10				
~~Mang~~	<0.1				
IRON	0.2				
OTHER					

Sampled For Lab: YES NO Time:

Comments:

DRAWDOWN

TIME	Minutes	Water Level Reading	TIME	Minutes	Water Level Reading
	0				
			PR-	22	IGPM
			for	1	hour
		Screen		189 - 204 ft	

RECOVERY

TIME	Total Time (minutes) t	Time Since Pumping Stop t'	t/t'	Water Level Reading
	61	1	~~61.0~~	46.1
	62	2	31	46.7
	63	3	21	46.45
	64	4	16	46.35
	65	5	13	46.25
	66	6	11	46.15
	67	7	9.6	46.05
	68	8	8.5	45.975
	69	9	7.7	45.90
	70	10	7	45.85
	72	12	6	45.725
	74	14	5.3	45.60
	T = 4000			

Static Water Level: ____ below M.P.; ____ below gro

When Taken:

PROVINCE OF MANITOBA

WATER RESOURCES BRANCH

GROUNDWATER SECTION

WELL NO.	PRODUCTION WELL DATA SHEET	DATE	SHEET OF
ENGINEER	PROJECT:		

LOG from	to	DESCRIPTION

Detailed Location Sketc

Well Sketch

Size of Drill Hole: _____

Depth of Drill Hole: _____

Mud Used: _____

CASING: Type; _____

Set To; _____

SCREEN: Type _____ ; Size _____ ; Slot Size _____

Interval Set: _____ to _____

Gravel Pack:

Size of gravel	No. Bags	Size of Bags	Depth to Pack

Screen Guides @ _____

Washdown Fitting: Size _____ ; Type _____

Other: _____

Describe Developing Procedure and Results: _____

Driller's Report

Conservation

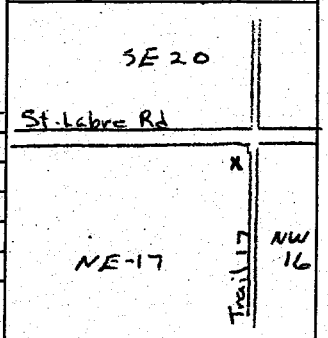
WELL LOCATION

QTR. NE SEC. 17 TWP. 15 RGE. 10 E. X W.

R. LOT PARISH 93 ft south of ℄ St. Labre Rd

REMARKS and 26 ft west of ℄ Trail 17

LOCATION SKETCH OF WELL



WELL OWNER

NAME Pembina Valley Water Coop. Inc

ADDRESS PHONE

WELL IDENTIFICATION (NO., NAME) TH-2

WELL USE PRODUCTION ☐ TEST WELL ☒ RECHARGE ☐ OBSERVATION WELL ☐

WATER USE DOMESTIC ☐ LIVESTOCK ☐ MUNICIPAL ☐ INDUSTRIAL ☐ IRRIGATION ☐

AIR CONDITIONING ☐ OTHER ☐ (Specify)

DATE WELL COMPLETED DAY 26 MONTH May 20 05

WELL LOG

DEPHT BELOW GROUND IN FEET FROM	TO	DESCRIPTION	WATER RECORD (KIND OF WATER)
0	8	Silt; brown	
8	9	Granit rubble gravel	
9	18	Till; brown	
18	22	Till; grey	
22	31	Silt and very fine sand	
31	33	Till; light grey	
33	37	Silt	
37	42	Till; clayey, light grey	
42	49	Silty clay	
49	62	Silt	
62	93	Till & silt layers; stratified	
93	147	Silt	
149	150	Till with silt layers	
150	165	Clay; light grey	
165	174	Silt	
174	181	Clay; some silt layers	
181	195	Clay; firm	
195	276	Silt; some clay	
276	281	Sand; granitic; fine to coarse	
281	290	Sandy Till?	
290	340	Silt; firm	

WELL CONSTRUCTION

DEPHT BELOW GROUND LEVEL IN FEET FROM	TO	CASING	OPEN HOLE	PERFORATIONS	GRAVEL PACK	CASING GROUT	PITLESS UNIT	INSIDE DIAMETER INCHES	OUTSIDE DIAMETER INCHES	SCREEN SLOT SIZE NO. OR INCH	TYPE		MATERIAL		MAKE
									No tests						

TOP OF CASING OR PITLESS UNIT FEET ABOVE ☐ BELOW ☐ GROUND LEVEL

REMARKS:

PUMPING TEST

DATE OF TEST: DAY MONTH 20

PUMPING ☐ FLOWING ☐ RATE I.G.P.M.

WATER LEVEL BEFORE PUMPING FT. ABOVE ☐ BELOW ☐ GRD. LEVEL

WATER LEVEL AT END OF TEST FT. ABOVE ☐ BELOW ☐ GRD. LEVEL

DURATION OF TEST HOURS MINUTES

WATER TEMPERATURE °F

RECOMMENDED PUMPING RATE I.G.P.M.

WITH PUMP INTAKE AT FEET BELOW GROUND LEVEL

CONTRACTOR

LICENCE NO.

NAME Friesen Drillers Ltd

ADDRESS Steinbach

DRILL OPERATOR Paul Sharples

AP

Signature of Contractor

FORM MW-2436

WELL OWNER'S COPY

Driller's Report

Conservation

WELL LOCATION
QTR. SW SEC. 19 TWP. 5T RGE. 10 E. X W.
R. LOT PARISH ~0.12 km north of sw
REMARKS corner on east side of Trail 20

WELL OWNER
NAME Pembina Valley Water Coop. Inc
ADDRESS PHONE

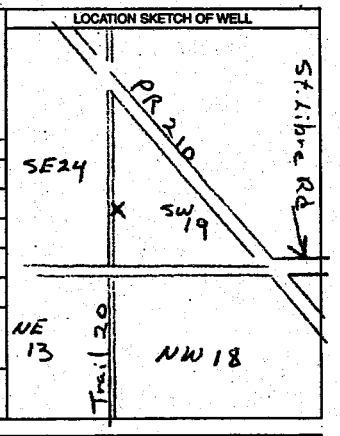
WELL IDENTIFICATION (NO., NAME) TH-3

WELL USE: PRODUCTION ☐ TEST WELL ☒ RECHARGE ☐ OBSERVATION WELL ☐

WATER USE: DOMESTIC ☐ LIVESTOCK ☐ MUNICIPAL ☐ INDUSTRIAL ☐ IRRIGATION ☐
AIR CONDITIONING ☐ OTHER ☐ (Specify)

DATE WELL COMPLETED DAY 24 MONTH May 20 05

LOCATION SKETCH OF WELL



WELL LOG

DEPHT BELOW GROUND IN FEET FROM	TO	DESCRIPTION	WATER RECORD (KIND OF WATER)
0	55	Sand; medium to coarse; some fine; brown - layer gravel @ 11 ft	
55	62	Gravelly coarse sand to fine gravel	
62	77	Very coarse sand to fine gravel	
77	125	Fine sand; brown - till or clay layers @ 115	
125	140	Clay; silty; grey; firm @ 135	
140	154	Fine to silty sand; brown; thin clay layers	
154	165	Clay; silty; firm; grey	
165	181	Clay with layers of silty sand & silt	
181	225	Very fine silty sand	
225	237	Very fine sand	
237	247	Very fine silty sand with clay layers	
247	268	Granitic Rubble; Till?	
268	308	Very fine sand; dirty	

WELL CONSTRUCTION

DEPHT BELOW GROUND LEVEL IN FEET FROM	TO	CASING	OPEN HOLE	PERFORATIONS	GRAVEL PACK	CASING GROUT	PITLESS UNIT	INSIDE DIAMETER INCHES	OUTSIDE DIAMETER INCHES	SCREEN SLOT SIZE NO. OR INCH	TYPE		MATERIAL		MAKE
											No tests				

TOP OF CASING OR PITLESS UNIT _____ FEET ABOVE ☐ BELOW ☐ GROUND LEVEL
REMARKS:

PUMPING TEST
DATE OF TEST: DAY MONTH 20
PUMPING ☐ FLOWING ☐ RATE I.G.P.M.
WATER LEVEL BEFORE PUMPING FT. ABOVE ☐ BELOW ☐ GRD. LEVEL
WATER LEVEL AT END OF TEST FT. ABOVE ☐ BELOW ☐ GRD. LEVEL
DURATION OF TEST HOURS MINUTES
WATER TEMPERATURE °F
RECOMMENDED PUMPING RATE I.G.P.M.
WITH PUMP INTAKE AT FEET BELOW GROUND LEVEL

CONTRACTOR
LICENCE NO.
NAME Friesen Drillers Ltd
ADDRESS Steinbach
DRILL OPERATOR Paul Sharples
AP.
Signature of Contractor

FORM MG-2435 WELL OWNER'S COPY

Driller's Report

Conservation

WELL LOCATION

QTR. NW SEC. 18 TWP. 15 RGE. 10 E. [X] W. [ ]

R. LOT [ ] PARISH ~0.15 Km south of St. Libre Rd

REMARKS and 85 ft east of & of PR210, -across road from Obs. Wells (WR?)

WELL OWNER

NAME Pembina Valley Water Coop. Inc

ADDRESS _____ PHONE _____

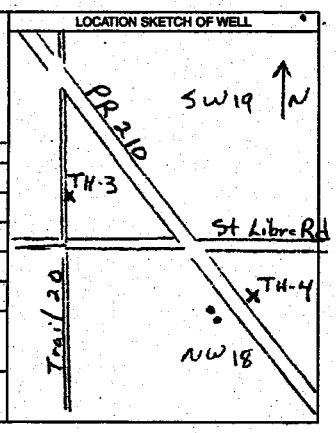
WELL IDENTIFICATION (NO., NAME) TH-4

WELL USE PRODUCTION [ ] TEST WELL [X] RECHARGE [ ] OBSERVATION WELL [X]

WATER USE DOMESTIC [ ] LIVESTOCK [ ] MUNICIPAL [ ] INDUSTRIAL [ ] IRRIGATION [ ]
AIR CONDITIONING [ ] OTHER [ ] (Specify) _____

DATE WELL COMPLETED DAY 30 MONTH May 20 04

LOCATION SKETCH OF WELL



WELL LOG

DEPHT BELOW GROUND IN FEET FROM	TO	DESCRIPTION	WATER RECORD (KIND OF WATER)
0	20	Medium to coarse sand; brown; thin gravel @ 6'	
20	37	Medium sand; brown	
37	62	Medium grey sand; some fine, some coarse	
62	85	Fine sand; some medium; clean; brown	
85	105	Very fine sand; almost silt; brown	
105	123	Very fine silty sand; grey	
123	140	Clay with silt layers; grey	
140	157	Clay, silt to clay; grey	
157	160	Silt; grey	
160	165	Layered clay & medium sand	
165	170	Fine sand; dirty	
170	175	Layered very fine + silty sand	
175	185	Fine to medium sand	
185	200	Medium sand; loose, nice	
200	214	Fine to medium sand; loose	
214	220	Coarse sand; gravelly	
220	223	Medium sand	
223	240	Coarse sand; some medium layers	
240	255	Coarse sand; gravelly	
255	260	Fine sand	

WELL CONSTRUCTION

DEPHT BELOW GROUND LEVEL IN FEET FROM	TO	CASING	OPEN HOLE	PERFORATIONS	GRAVEL PACK	CASING GROUT	PITLESS UNIT	INSIDE DIAMETER INCHES	OUTSIDE DIAMETER INCHES	SCREEN SLOT SIZE NO. OR INCH	TYPE	MATERIAL	MAKE
0	+4	X						2			PVC		
0	231	X						2			T+C	BI	
231	246			X				2	PS	25	WW	SS with drive point	
?	246				X			2	5		8-16	Filter Sand	
0	?					X		2	5		Backfill	with cuttings	

TOP OF CASING OR ~~PITLESS UNIT~~ 4 FEET ABOVE [X] BELOW [ ] GROUND LEVEL

REMARKS: Test No. 1
Pumped 22 IGPM for 1 hour
Recovery → T of 8000 to 6000 IGPD/Ft

Test No. 2
Pumped 13 IGPM for 3 hrs
Recovery → T = 21,000 IGPD/Ft

Field Analyses
EC - 280 Ambos
Hard - 10 gpg
Iron - 0.7 mg/l
Mn - no colour
< 0.1 mg/l

PUMPING TEST

DATE OF TEST: DAY [ ] MONTH _____ 20 [ ]

PUMPING [X] FLOWING [ ] RATE [ ] I.G.P.M.

WATER LEVEL BEFORE PUMPING 63 FT. ABOVE [ ] BELOW [X] GRD. LEVEL

WATER LEVEL AT END OF TEST [ ] FT. ABOVE [ ] BELOW [ ] GRD. LEVEL

DURATION OF TEST [ ] HOURS [ ] MINUTES

WATER TEMPERATURE [ ] °F

RECOMMENDED PUMPING RATE _____ I.G.P.M.

WITH PUMP INTAKE AT _____ FEET BELOW GROUND LEVEL

CONTRACTOR

LICENCE NO. [ ] [ ]

NAME Friesen Drillers Ltd

ADDRESS Steinbach

DRILL OPERATOR Paul Sharples

AP.

Signature of Contractor

FORM MG-2435

WELL OWNER'S COPY

Pembina Valley Water Co-op Study

Gamma log

COMPANY	
WELL	PVWC #4
FIELD	NW18-5-10E
COUNTRY	Canada
STATE	Manitoba
COUNTY	
LAT.:	
LONG.:	

OTHER SERVICES

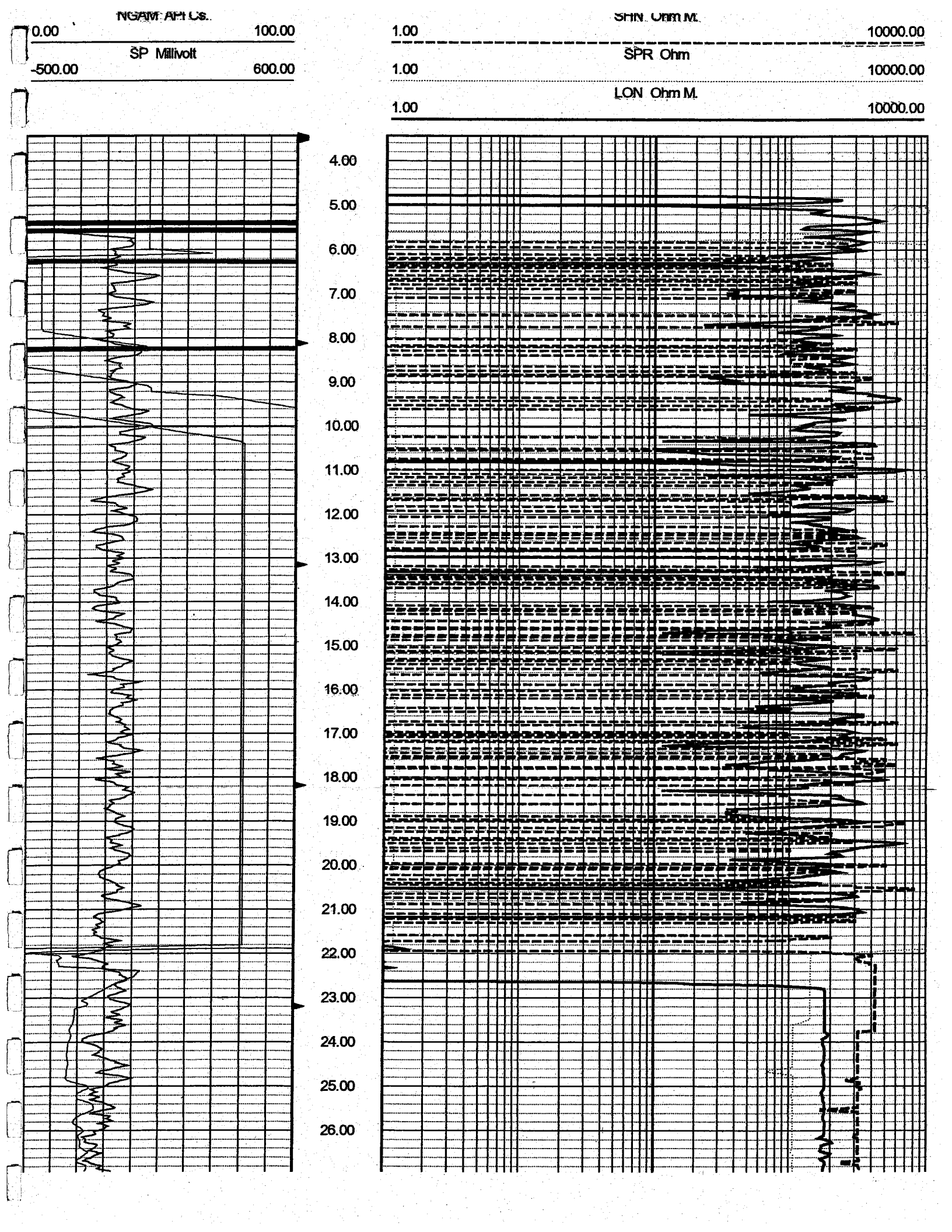
Perm. Datum	Top Casing	Elev	100
Log. Datum	Ground		
Drill Datum	ground		

KB	0.00
DF	0.00
GL	0.00

DATE	31 May 05	21 Apr 05	21 Apr 05
RUN#	1	0	0
TYPE OF LOG	Gamma		
DEPTH DRILLER	100.00	0.00	0.00
DEPTH LOGGER	61.00	0.00	0.00
LOG DEEPEST	59.00	0.00	0.00
LOG SHALLOW	3.43	0.00	0.00
FLUID IN HOLE	Water		
SALINITY			
DENSITY	1.0 Kg/CuM		
LEVEL	13 m		
MAX TEMP °C	6.00	0.00	0.00
RIG TIME			
RECORDED BY	J. Mowez		
WITNESSED BY	C. Fillmore-Handlon		

RUN#	BIT RECORD			CASING RECORD			
	BIT	FROM	TO	BIT	WEIGHT	FROM	TO
1	100.00	0.00	100.00	50.00	9.00	0.00	61.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pembina Valley Water Co-op Study.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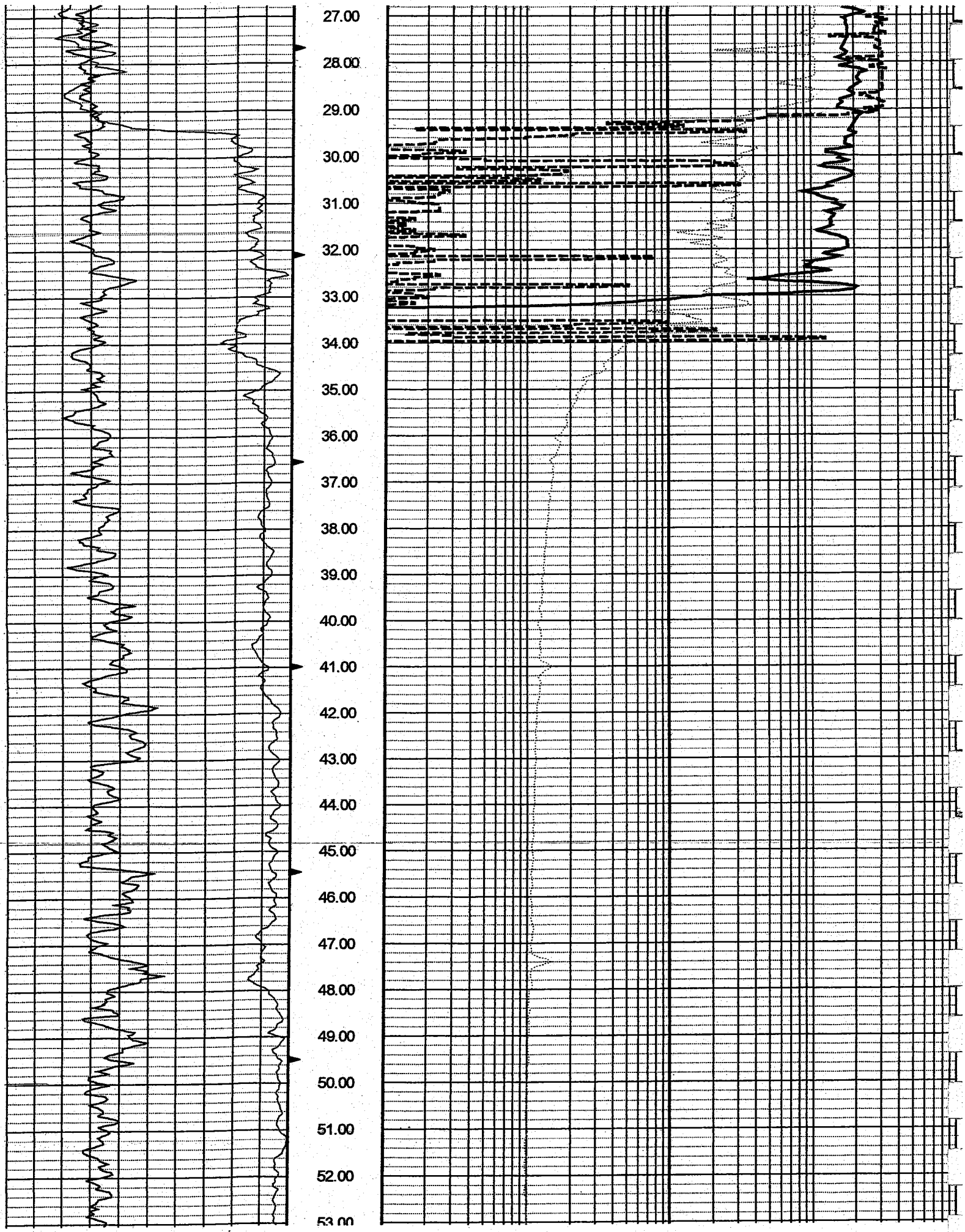
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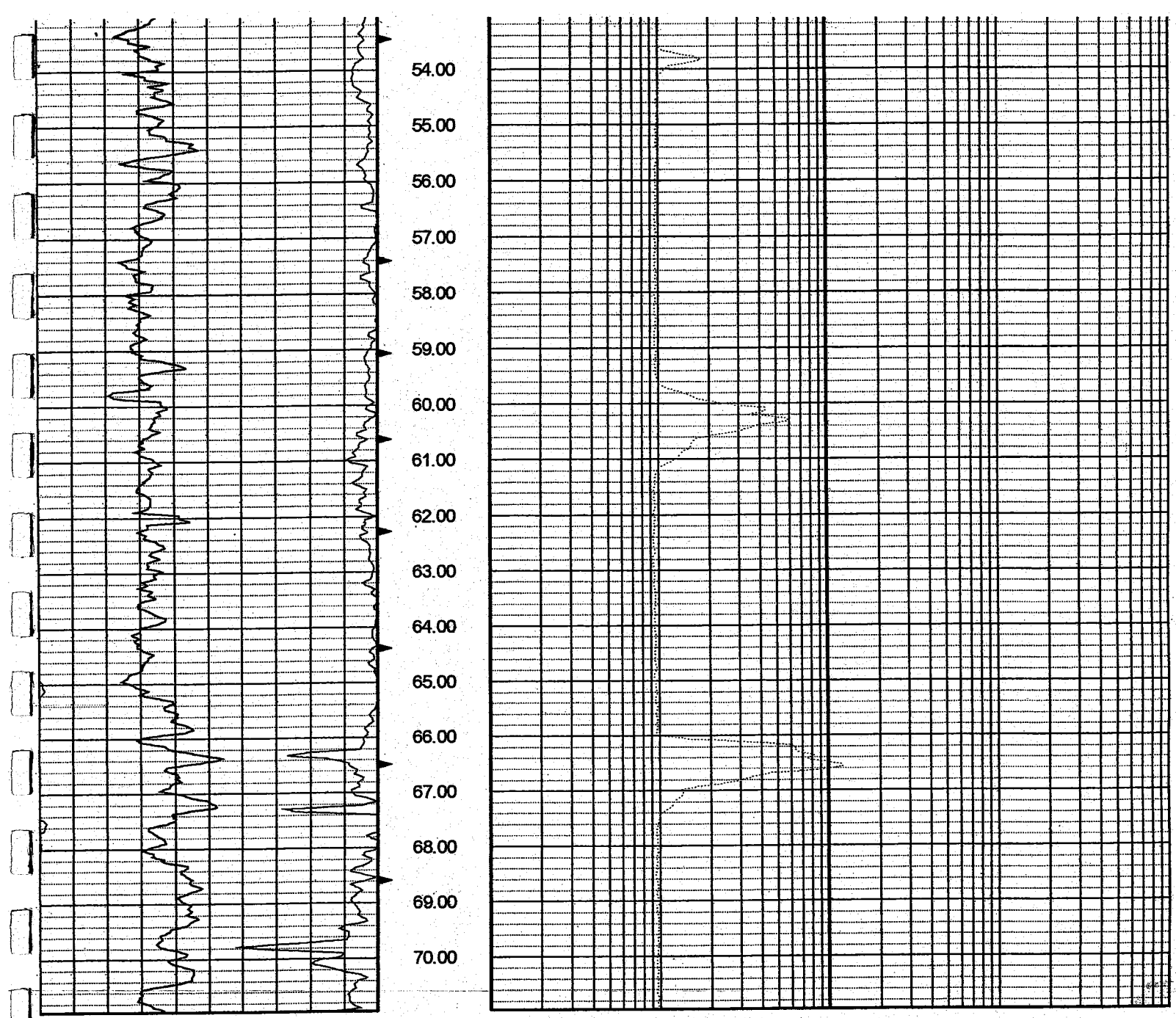
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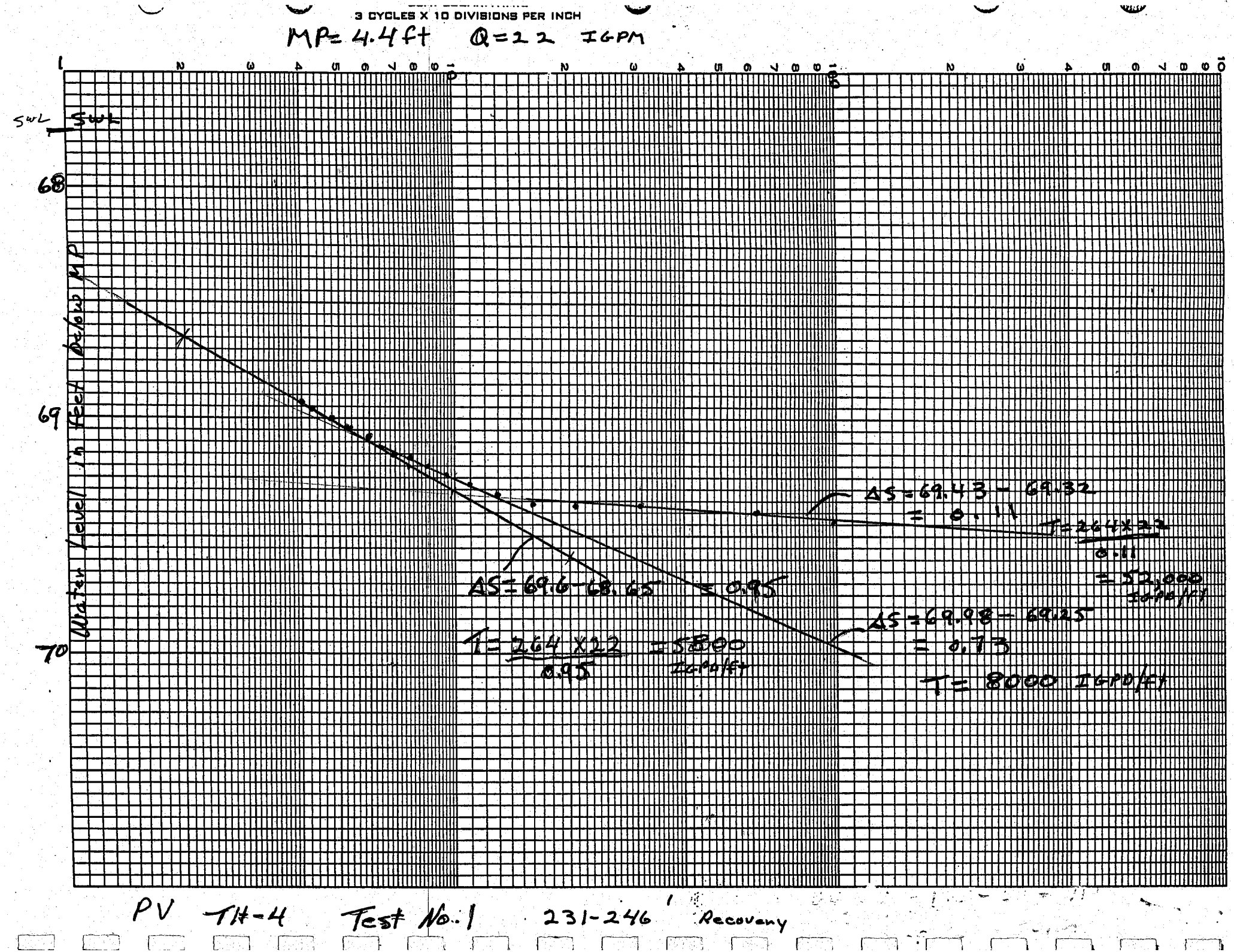
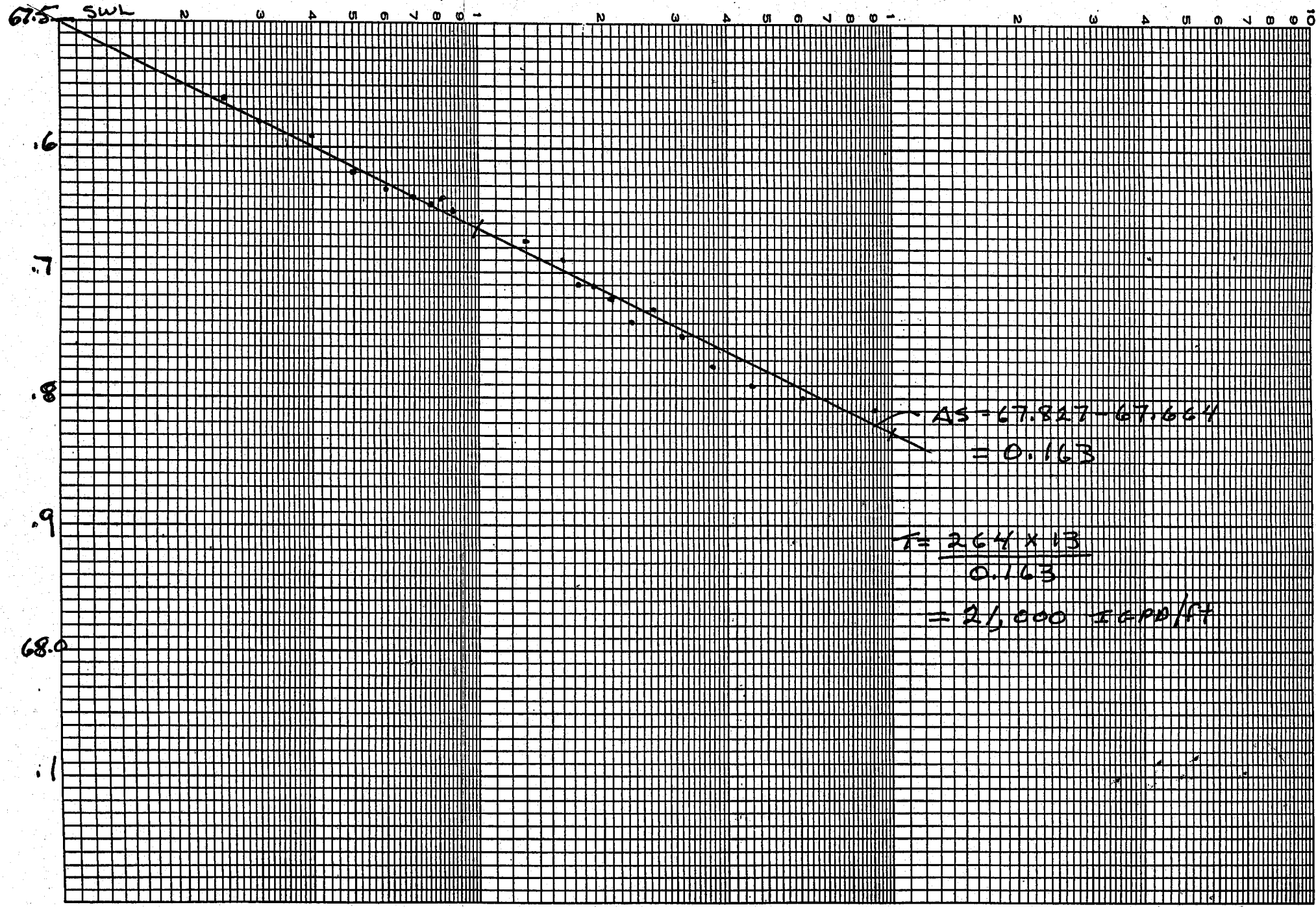
70.00


3 CYCLES X 10 DIVISIONS PER INCH
MP = 4.4 ft Q = 22 IGPM
SWL
68
69
70
Water Level in Feet Below MP
ΔS = 69.6 - 68.65 = 0.95
T = 264 X 22 / 0.95 = 5800 IGPD/FT
ΔS = 69.43 - 69.32 = 0.11
T = 264 X 22 / 0.11 = 52,800 IGPD/FT
ΔS = 69.98 - 69.25 = 0.73
T = 8000 IGPD/FT
PV TH-4 Test No. 1 231-246' Recovery

3 CYCLES X 10 DIVISIONS PER INCH

MP = 4.4 ft Q = 13 IGPM



PW TH-4 Test No. 2 231-246' Recovery

PROVINCE OF MANITOBA
WATER RESOURCES BRANCH
GROUNDWATER SECTION

TH-4

WELL NO. TH-4	~~PRODUCTION~~ WELL TEST	DATE	SHEET OF
ENGINEER AP	PROJECT: PVWCI		

M.P. of Well Casing: 4.4 ft

Type of Pump:

Inital Water Level from M.P.:

Time Test Started:

Pumping Rate: _____ Imp. Gal. U.S. Gal. in _____ sec. = _____ I.G.P.M.

How Measured:

Comments on Solids, Mud etc.

Method of Measuring Water Level:

Time Pumping Stopped:

FIELD ANALYSIS

TIME						
EC	280					
HARD	10					
~~Mpang~~	<0.1					
IRON	0.7					
OTHER						

Sampled For Lab: YES NO Time:

Comments:

SWL- 67.50 ft overnite
Screen Set 231-246 ft

Test No. 1 ~~DRAWDOWN~~ Pumped 22IGPM for 60 min

TIME	Total Minutes T	Water Level Reading t	~~TIME~~ T/t'	Minutes	Water Level Reading
	0	t	T/t'		
	61	1	61		69.4
	62	2	31		69.375
	63	3	21		"
	64	4	16		"
	65	5	13		69.325
	66	6	11		69.28
	67	7	9.6		69.24
	68	8	8.5		69.21
	69	9	7.7		69.17
	70	10	7		69.15
	72	12	6		69.08
	74	14	5.3		69.04
	76	16	4.8		69.00
	78	18	4.3		68.96
	80	20	4		68.93

RECOVERY Test No. 2

TIME	Total Time (minutes) t	Time Since Pumping Stop t'	t/t'	Water Level Reading
	Pumped 13	IGPM	for 3 hours	
	182	2	91	67.81
	183	3	61	.80
	184	4	46	.79
	185	5	37	.77
	186	6	31	.75
	187	7	26.7	.73
	188	8	23.5	.74
	189	9	21	.72
	190	10	19	.71
	191	11	17.4	.71
	192	12	16	.69
	195	15	13	.675
	203	23	8.8	.65
	205	25	8.2	.64
	207	27	7.7	.645
	210	30	7	.64
	216	36	6	.635
	225	45	5	.62
	240	60	4	.59
	270	90	3	.58
	300	120	2.5	.56

Static Water Level: _____ below M.P.; _____ below grour

When Taken:

PROVINCE OF MANITOBA

WATER RESOURCES BRANCH

GROUNDWATER SECTION

WELL NO.	PRODUCTION WELL DATA SHEET	DATE	SHEET OF
ENGINEER	PROJECT:		

LOG

from | to

DESCRIPTION

Detailed Location Sketch

Well Sketch

Size of Drill Hole: _____

Depth of Drill Hole: _____

Mud Used: _____

CASING: Type; _____

Set To; _____

SCREEN: Type _____; Size _____; Slot Size _____

Interval Set: _____ to _____

Gravel Pack:

Size of gravel	No. Bags	Size of Bags	Depth to Pack

Screen Guides @ _____

Washdown Fitting: Size _____; Type _____

Other: _____

Describe Developing Procedure and Results: _____

Driller's Report

Conservation

WELL LOCATION

SW Corner QTR. SE SEC. 22 TWP. 5 RGE. 9 E. X W.

R. LOT PARISH in SW corner of NE-22

REMARKS

WELL OWNER

NAME Pembina Valley Water Coop Inc

ADDRESS PHONE

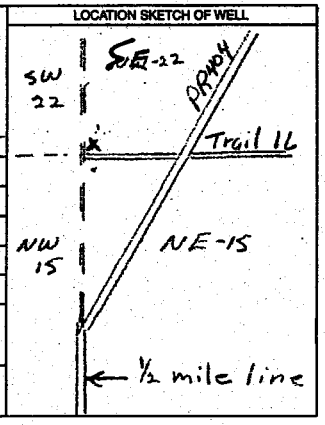
WELL IDENTIFICATION (NO., NAME) TH-5

WELL USE: PRODUCTION ☐ TEST WELL ☒ RECHARGE ☐ OBSERVATION WELL ☒

WATER USE: DOMESTIC ☐ LIVESTOCK ☐ MUNICIPAL ☐ INDUSTRIAL ☐ IRRIGATION ☐ AIR CONDITIONING ☐ OTHER ☐ (Specify)

DATE WELL COMPLETED DAY 14 MONTH June 20 05

LOCATION SKETCH OF WELL



WELL LOG

DEPHT BELOW GROUND IN FEET FROM	TO	DESCRIPTION	WATER RECORD (KIND OF WATER)
0	15	Fine to medium sand; clean; brown	
15	35	Medium sand; brown; taking much water	
35	45	Not sure: clay & silt?	
45	53	silty dark grey clay	
53	81	Till; light grey; sandy gravelly	
81	92	Brown till, softer	
92	104	Silty sand; brown	
104	105	Till?	Difficult to log.
105	110	Silt	
110	124	Till; light grey	
124	154	Clay + silty clay; firm, grey	
154	190	Silty clay to silt	
190	220	Fine to very fine to silty sand	Field Anal.
220	232	Silty clay & silt; grey	
232	275	Very fine silty sand	EC - 300 Amhos
275	325	Fine to medium sand	Hard - 10 gpg
325	345	Silty clay	Iron - 0.8 mg/l
			Mang. - <0.1 mg/l

WELL CONSTRUCTION

DEPHT BELOW GROUND LEVEL IN FEET FROM	TO	CASING	OPEN HOLE	PERFORATIONS	GRAVEL PACK	CASING GROUT	PITLESS UNIT	INSIDE DIAMETER INCHES	OUTSIDE DIAMETER INCHES	SCREEN SLOT SIZE NO. OR INCH	TYPE		MATERIAL	MAKE
0	294	X						2			T&C		BI	
294	309			X				2		25	WW		SS	
?	309				X			2	5		8-16		Filter Sand	14 bags
										backfill with cuttings				
0	+4.2	X						2			PVC			

TOP OF CASING OR PITLESS UNIT 4.2 FEET ABOVE ☒ BELOW ☐ GROUND LEVEL

REMARKS: Test No. 1 - 22 IGPM for 2 hours
Recovery → T= 42,000 IGPD/Ft

Test No. 2 - 22 IGPM for 1 hour; Recovery → T= 43,000 IGPD/Ft

SWL - June 15/05 79.75 from T.C.

PUMPING TEST

DATE OF TEST: DAY MONTH 20

PUMPING ☒ FLOWING ☐ RATE 22 I.G.P.M. w air

WATER LEVEL BEFORE PUMPING 79 FT. ABOVE ☐ BELOW ☒ GRD. LEVEL

WATER LEVEL AT END OF TEST FT. ABOVE ☐ BELOW ☐ GRD. LEVEL

DURATION OF TEST HOURS MINUTES

WATER TEMPERATURE °F

RECOMMENDED PUMPING RATE I.G.P.M.

WITH PUMP INTAKE AT FEET BELOW GROUND LEVEL.

CONTRACTOR

LICENCE NO.

NAME Friesen Drillers Ltd

ADDRESS Steinbach

DRILL OPERATOR Jim Shumacher

AP.

Signature of Contractor

FORM MG-2498

WELL OWNER'S COPY

Pembina Valley Water Co-operative Study

Monitoring Well #5

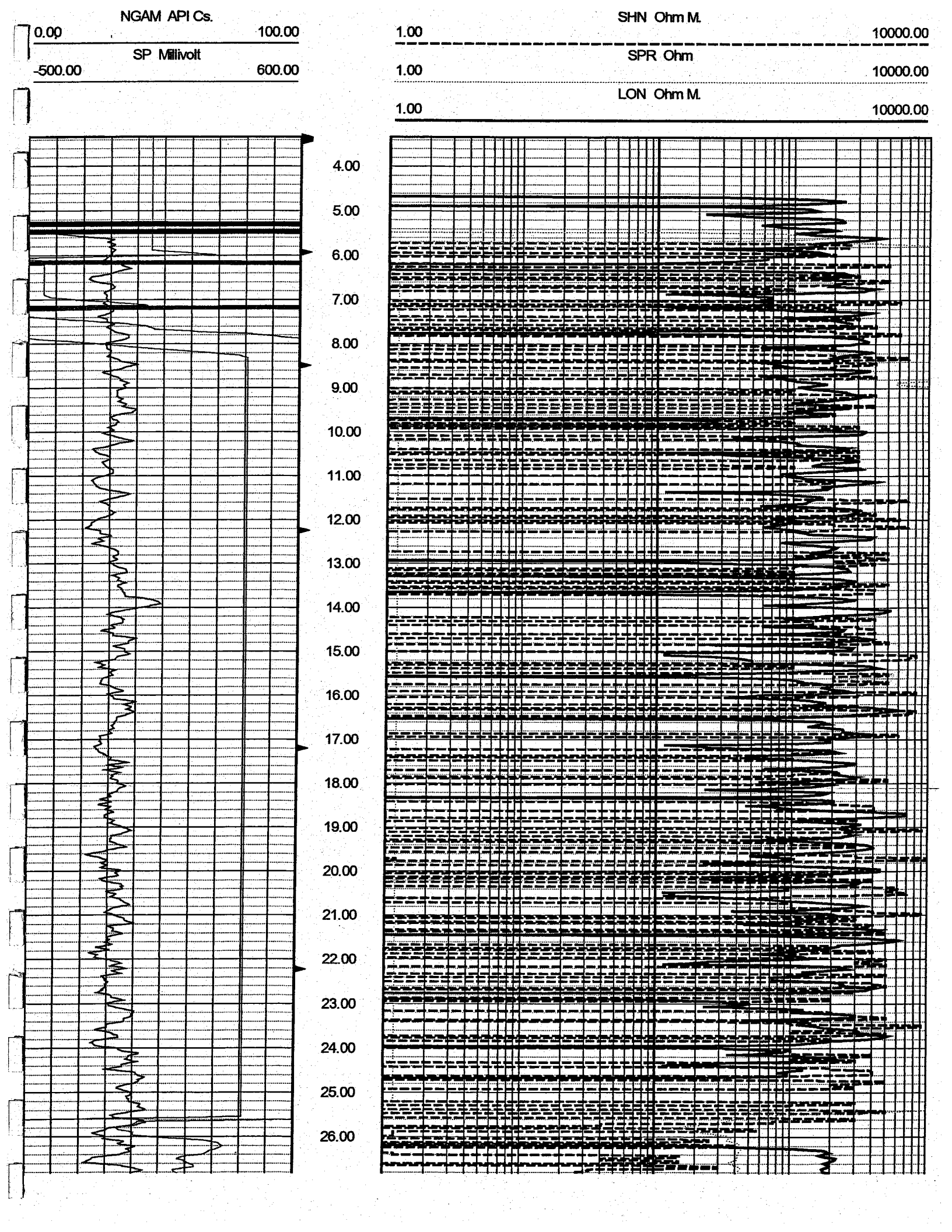
COMPANY	
WELL	PVWC #5
FIELD	SE 22-5-9E
COUNTRY	Canada
STATE	Manitoba
COUNTY	
LAT.:	
LONG.:	

OTHER SERVICES

Perm. Datum		Elev 100.010	KB 0.00
Log. Datum	Ground		DF 0.00
Drill Datum	ground		GL 100.00

DATE	14 Jul 05	12 Jul 05	12 Jul 05
RUN#	1	0	0
TYPE OF LOG	Electric Log		
DEPTH DRILLER	85.00	0.00	0.00
DEPTH LOGGER	74.00	0.00	0.00
LOG DEEPEST	74.00	0.00	0.00
LOG SHALLOW	3.33	0.00	0.00
FLUID IN HOLE	water		
SALINITY	~500 uS/cm	0	
DENSITY	1.0 g/l	0	
LEVEL	~5.0 m	0	
MAX TEMP °C	8.00	0.00	0.00
RIG TIME		0	
RECORDED BY	J.N.Mowez		
WITNESSED BY	C. Fillmore-Handlon		

RUN#	BIT RECORD			CASING RECORD			
	BIT	FROM	TO	BIT	WEIGHT	FROM	TO
1	98.00	0.00	85.00	50.00	5.00	0.00	74.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00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100.00
SP Millivolt
-500.00
600.00
SHN Ohm M.
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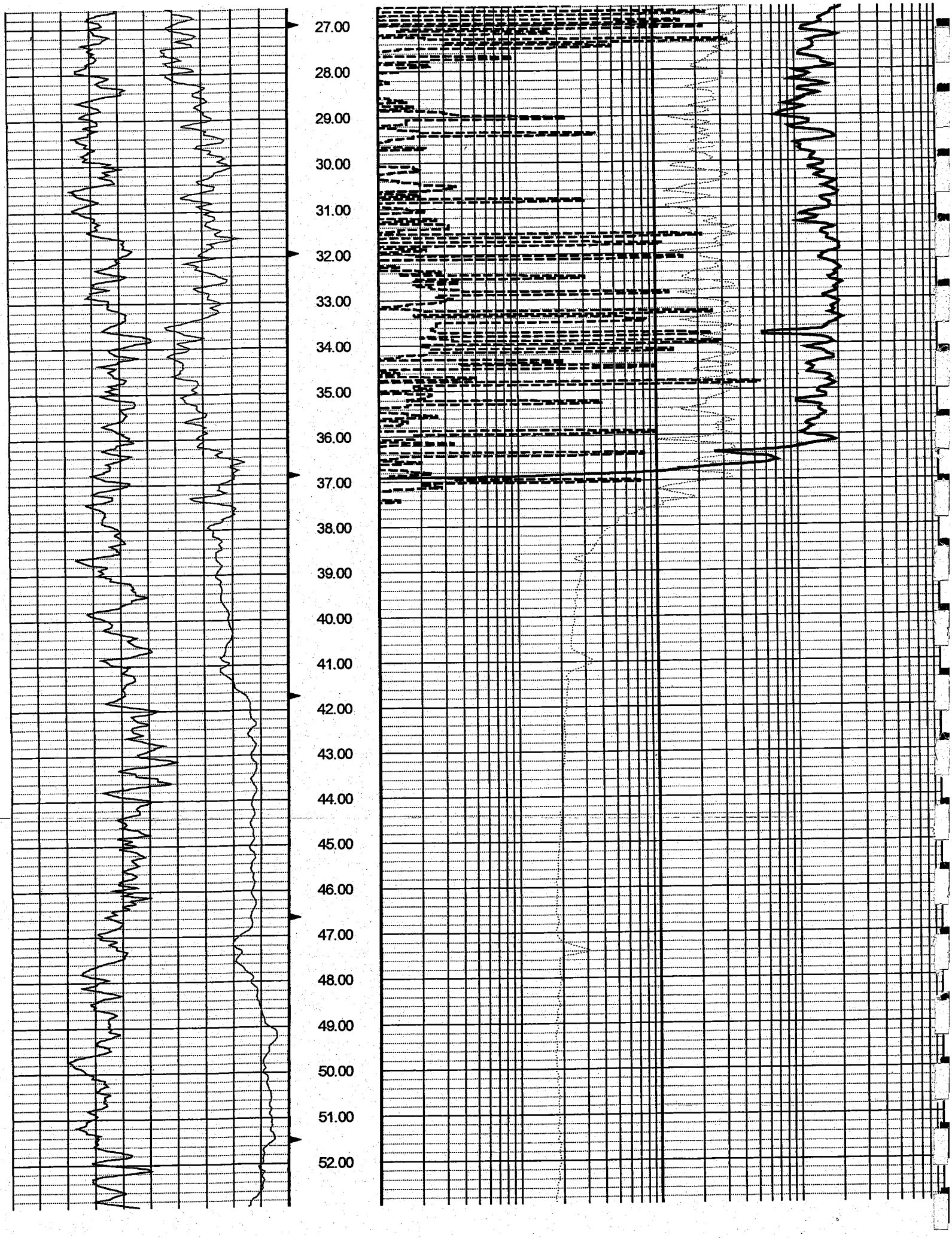
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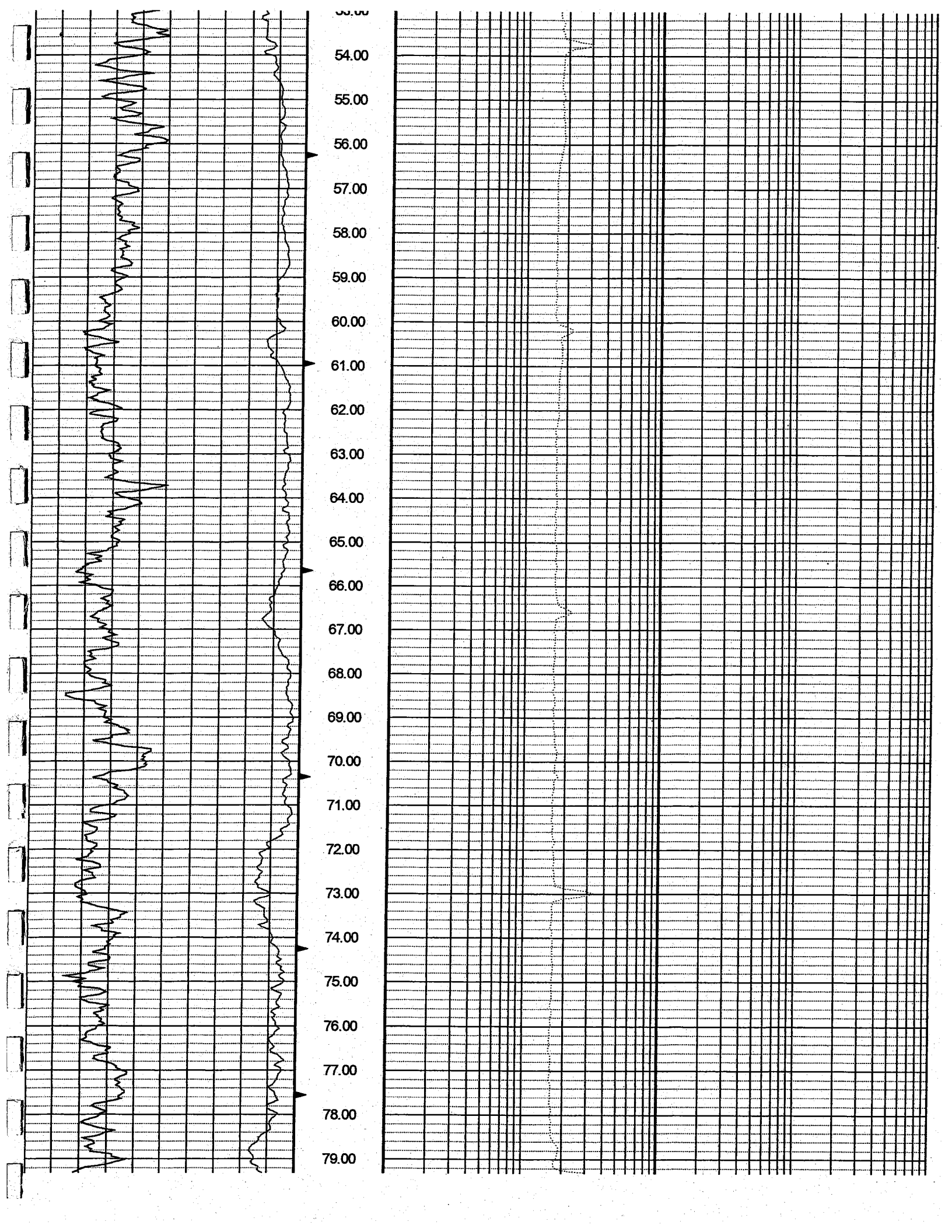
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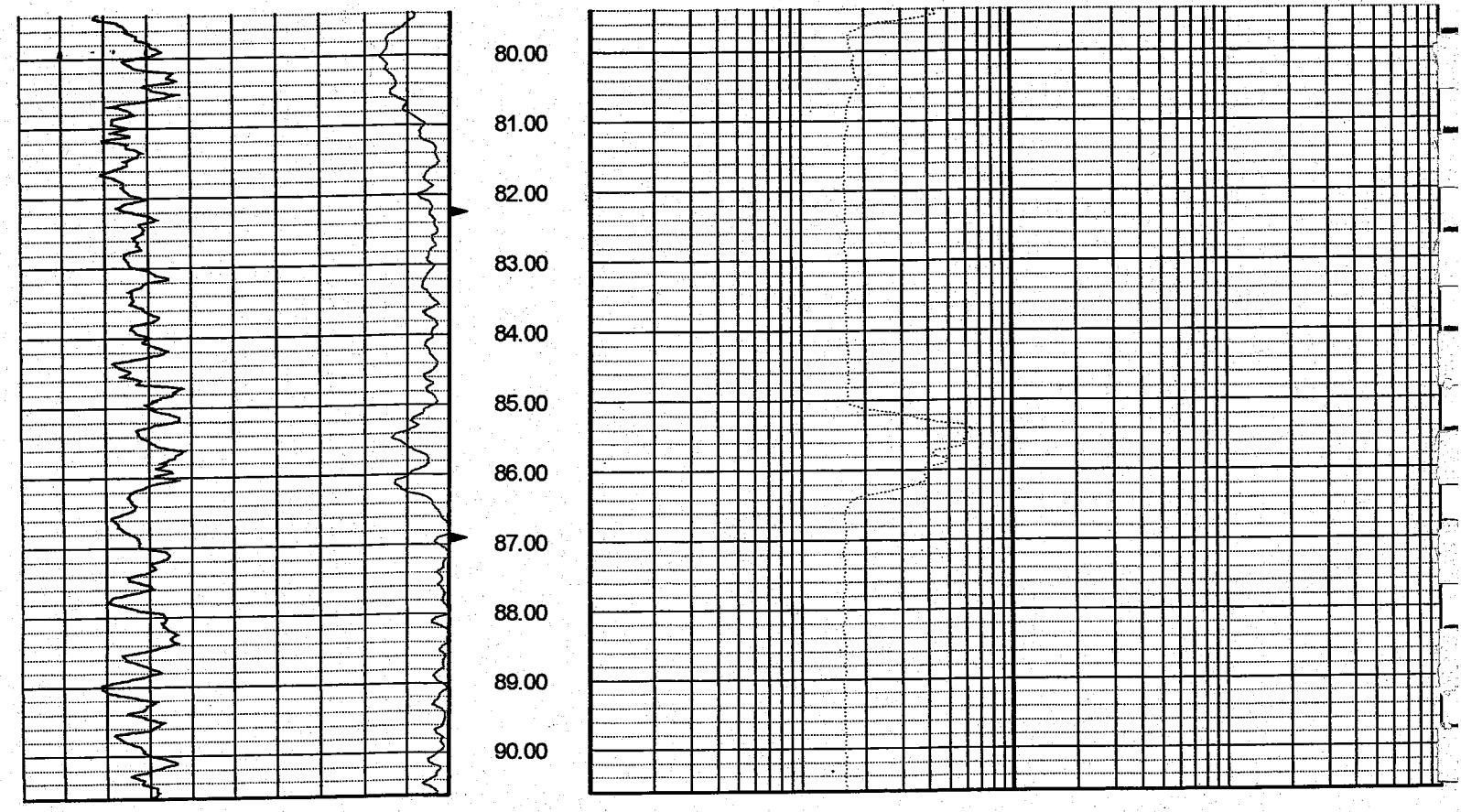
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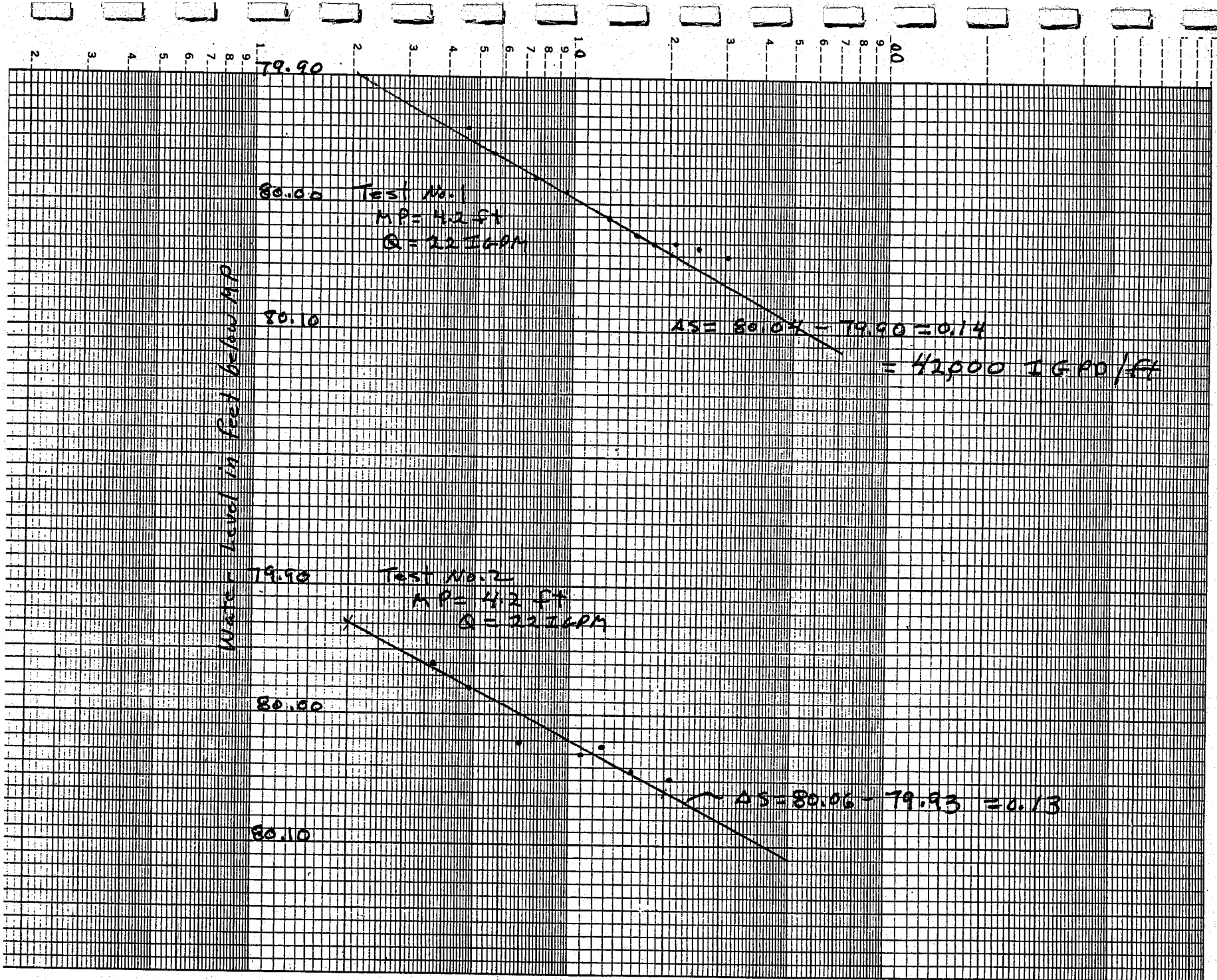


PV TH-5 294-309 ft Recovery 2 Tests

TH-5

WELL NO.	PRODUCTION WELL TEST	DATE	SHEET OF
ENGINEER AP	PROJECT: PVWC1		

M.P. of Well Casing: 4.2 ft

Type of Pump:

Inital Water Level from M.P.:

Time Test Started:

Pumping Rate: _____ Imp. Gal. / U.S. Gal. in _____ sec. = _____ I.G.P.M.

How Measured:

Comments on Solids, Mud etc.

Method of Measuring Water Level:

Time Pumping Stopped:

FIELD ANALYSIS

TIME					
EC	300				
HARD	10				
Mbang	<0.1				
IRON	0.8				
OTHER					

Sampled For Lab: YES NO Time:

Comments:

Screen Set 294-309 ft

Test No.1 DRAWDOWN Pumped 22 IGPM for 2 hours

TIME	Total Minutes T	Water Level Reading t'	TIME	Minutes	Water Level Reading
	0	t'	T/t'		
	124	4	31		80.04
	125	5	25		.035
	126	6	21		.03
	127	7	18		.03
	128	8	16		.025
	130	10	13		.01
	134	14	9.6		79.99
	138	18	7.7		.98
	146	26	5.6		.96
	153	33	4.6		.94
		T=	42,000 IGPD/ft		

Test No 2 RECOVERY

TIME	Total Time (minutes) T	Time Since Pumping Stop t'	T/t'	Water Level Reading
Pumped		22 IGPM for 60 m		
	63	3	21	80.0
	64	4	16	.04
	65	5	13	.02
	66	6	11	.0
	70	10	7	.02
	76	16	4.8	79.9
	82	22	3.7	.96
	T= 42,000 IGPD/ft			

Static Water Level: _____ below M.P.; _____ below g

When Taken:

Driller's Report

Well Location	QTR SE SEC 22 TWP 5 RGE 9 E [X] W [ ] R. Lot Parish Remarks	GPS Reading
Well Owner	Name Pembina Valley Co-op Inc. Address Ste. 250 - 530 Kenaston Blvd. Winnipeg, MB. R3N 1Z4 Phone	Location Sketch of Well
Well Identification	TH - 5A & 6" Test Well	
Well Use	Production [ ] Test Well [X] Recharge [ ] Observation [ ]	
Water Use	Domestic [ ] Livestock [ ] Industrial [ ] Irrigation [ ] Air-condition [ ] Other [ ] Specify	
Date well completed	August 31 2005	

Depth Below Ground in Feet		DESCRIPTION WELL LOG				Note: 5" PVC surface casing set to 58 ft. for test hole	Water Record
0	43	Sand					
43	75	Light Grey Till	248	255	Course Sand		
75	93	Brown Till	255	270	Fine to Medium Sand		
93	95	Clay & Silt	270	285	Medium Sand; Some Course		
95	100	Silt	285	315	Loose Medium Sand		
100	110	Silty Clay	315	348	Course to Medium Sand		
110	114	Silt	348	360	Not sure; may still be the Sand		
114	130	Silty Light Grey Clay					
130	135	Silty Clay; Silty Till					
135	172	Silty Clay					
172	188	Silt					
188	248	Medium to Fine Sand					

WELL CONSTRUCTION

Depth Below Ground Level		Casing	Open Hole	Perforations	Gravel Pack	Casing Grout	Inside Diameter	Outside Diameter	Screen Slot size	TYPE	MATERIAL	MAKE
0	60	X					10			Steel	Surface Casing	
0	290	X					6			Sch. 40	PVC	
290	295			X			6		0		Stainless steel	
295	325			X			6		20	Wire Wound	Stainless steel	
260	325				X		6			8 -16	Filter Sand	
0	360					X				Backfill	Sand Cuttings	

Top of Casing 2 Feet above [X] Below [ ]

REMARKS: Note: 10" surface casing to be removed

Develop with Isolation Block - Very little solids pumped

Prelim Test - SC is 20 - 25 I.G.P.M. SWL 77.3 ft. from T.C

For pump test info please contact Steve Wiecek at UMA Engineering

PUMPING TEST

Date of Test:

Pumping [ ] Flowing [ ] Rate I.G.P.M.

Water level before pumping Above [ ] Below [ ]

Pumping level at end of test Above [ ] Below [ ]

Duration of test HRS Minutes

Recommended pumping rate I.G.P.M.

With pump intake at Feet below ground level

CONTRACTOR

License Number 594 5

Name Friesen Drillers Ltd.

Address Box 1, Grp. 15, R.R.#1
Steinbach, MB. R5G 1L9

Drill Operator Jason Friesen

Driller's Report

Conservation

WELL LOCATION
SW Corner QTR. SE SEC. 3 TWP. 5 RGE. 9 E. X W.
R. LOT ____ PARISH 73 paces East of ℄
REMARKS PR 404, on north side of Trail

WELL OWNER
NAME Pembina Valley Water Coop Inc
ADDRESS ____ PHONE ____

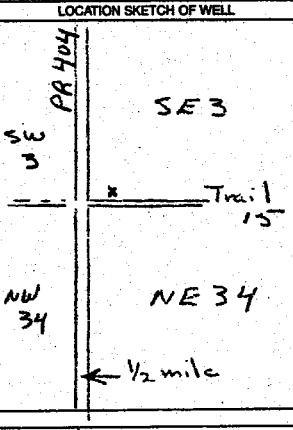
WELL IDENTIFICATION (NO., NAME) TH-6

WELL USE: PRODUCTION ☐ TEST WELL ☒ RECHARGE ☐ OBSERVATION WELL ☐

WATER USE: DOMESTIC ☐ LIVESTOCK ☐ MUNICIPAL ☐ INDUSTRIAL ☐ IRRIGATION ☐
AIR CONDITIONING ☐ OTHER ☐ (Specify) ____

DATE WELL COMPLETED DAY 15 MONTH June 20 05

LOCATION SKETCH OF WELL



WELL LOG

DEPHT BELOW GROUND IN FEET FROM	TO	DESCRIPTION	WATER RECORD (KIND OF WATER)
0	13	Med. to coarse brown Sand	
13	16	Gravel & Sand	
16	31	Med. to coarse " " ; gravel layer @ 31'	
31	81	Fine to med. " "	
81	86	Not sure; prob. till	
86	91	Brown till	
91	97	Light grey till	
97	99	Sand	
99	105	Till or clay	
105	128	Clayey silt to silty clay	
128	150	Very fine sand; silty	
150	172	Fine sand; some medium	
172	186	Gravelly sand; rough (Taking some mud)	
186	193	Till; grey	
193	205	Sand & clay ?	
205	225	Till; grey, sandy; 217 & 224 stones	
225	240	Silty clay or till	
240	300	Till; grey, firm; stone @ 255'	
	91		

WELL CONSTRUCTION

DEPHT BELOW GROUND LEVEL IN FEET FROM	TO	CASING	OPEN HOLE	PERFORATIONS	GRAVEL PACK	CASING GROUT	PITLESS UNIT	INSIDE DIAMETER INCHES	OUTSIDE DIAMETER INCHES	SCREEN SLOT SIZE NO. OR INCH	TYPE		MATERIAL	MAKE
0	173	X						2			T & C		BI	
173	188			X				2		25	WW		SS	

TOP OF CASING OR PITLESS UNIT ____ FEET ABOVE ☐ BELOW ☐ GROUND LEVEL

REMARKS:
Recovery → T = 7500 IGPD/Ft

Field Analyses
EC - 325 µmhos
Hard - 13 gpg
Water too murky for other tests

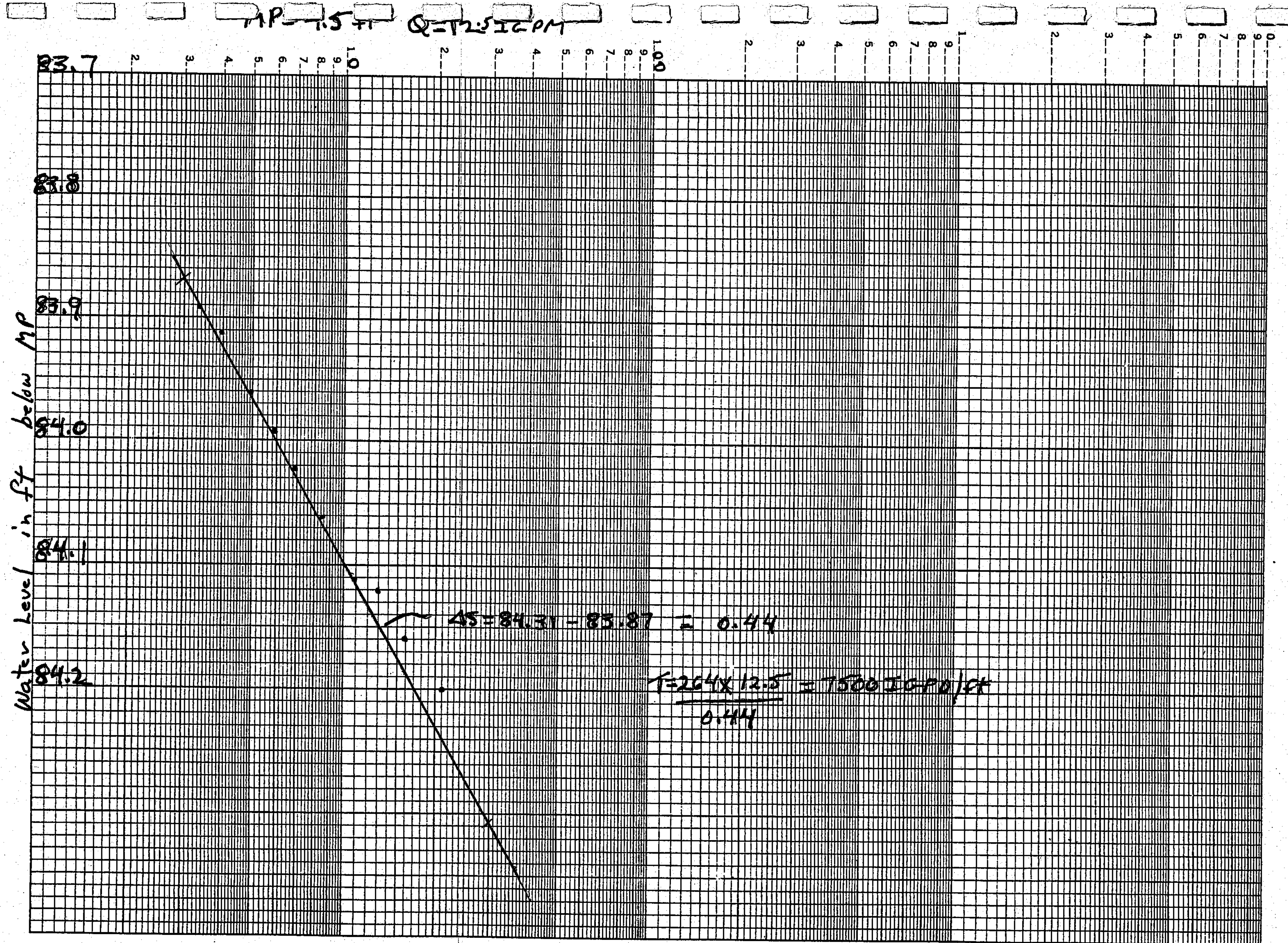
PUMPING TEST

DATE OF TEST: DAY ____ MONTH ____ 20 ____
PUMPING ☒ FLOWING ☐ RATE 12½ I.G.P.M. w air
WATER LEVEL BEFORE PUMPING 79 FT. ABOVE ☐ BELOW ☒ GRD. LEVEL
WATER LEVEL AT END OF TEST ____ FT. ABOVE ☐ BELOW ☐ GRD. LEVEL
DURATION OF TEST ____ HOURS 60 MINUTES
WATER TEMPERATURE ____ °F
RECOMMENDED PUMPING RATE ____ I.G.P.M.
WITH PUMP INTAKE AT ____ FEET BELOW GROUND LEVEL.

CONTRACTOR

LICENCE NO. ____
NAME Friesen Drillers Ltd
ADDRESS Steinbach
DRILL OPERATOR Jim Shumacher
Signature of Contractor

WELL OWNER'S COPY



PV TH-6 173-188 ft Recovery

TH-6

WELL NO.	PRODUCTION WELL TEST	DATE	SHEET OF
ENGINEER AP	PROJECT: PUWCI		

M.P. of Well Casing: 4.5 ft

Type of Pump: _____

Inital Water Level from M.P.: _____

Time Test Started: _____

Pumping Rate: _____ Imp. Gal. / U.S. Gal. in _____ sec. = _____ I.G.P.M.

How Measured: _____

Comments on Solids, Mud etc. _____

Method of Measuring Water Level: _____

Time Pumping Stopped: _____

FIELD ANALYSIS

TIME					
EC	325				
HARD	13				
NaCl					
IRON	1.5	Murky	Sample		
OTHER					

Sampled For Lab: YES NO Time: _____

Comments: _____

DRAWDOWN

TIME	Minutes	Water Level Reading	TIME	Minutes	Water Level Reading
	0				
	Screen Set		173-188'		

RECOVERY

TIME	Total Time (minutes) t	Time Since Pumping Stop t'	t/t'	Water Level Readin
Pumped	12.5	IGPM for 1		
	63	3	21	84.2
	64	4	16	.16
	65	5	13	.17
	66	6	11	.1
	68	8	8.5	.06
	70	10	7	.0
	72	12	6	83.99
	75	15	5	.96
	80	20	4	.9
	85	25	3.4	.89
T = 7500 IGPD/ft				

Static Water Level: _____ below M.P.; _____ below g

When Taken: _____

Driller's Report

Conservation

WELL LOCATION
SW Corner QTR. SE SEC. 15 TWP. 15 RGE. 9 E. [X] W. [ ]
R. LOT [ ] PARISH
REMARKS

WELL OWNER
NAME Pembina Valley Water Coop Inc
ADDRESS PHONE

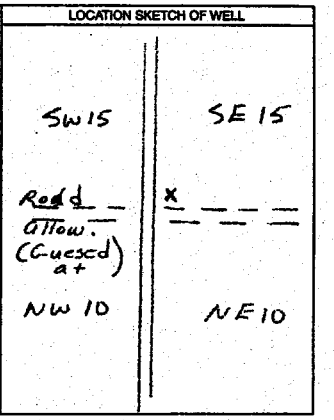
WELL IDENTIFICATION (NO., NAME) TH-7

WELL USE: PRODUCTION [ ] TEST WELL [X] RECHARGE [ ] OBSERVATION WELL [X]

WATER USE: DOMESTIC [ ] LIVESTOCK [ ] MUNICIPAL [ ] INDUSTRIAL [ ] IRRIGATION [ ]
AIR CONDITIONING [ ] OTHER [ ] (Specify)

DATE WELL COMPLETED DAY 16 MONTH June 20 05

LOCATION SKETCH OF WELL



WELL LOG

DEPHT BELOW GROUND IN FEET FROM	TO	DESCRIPTION	WATER RECORD (KIND OF WATER)
0	36	Fine to medium sand; brown	
36	37	Clay; brown	
37	82	Fine to medium sand; brown	
82	95	Clay; brown	
95	108	Very fine sand & silt	
108	135	Silt ? with clay layers, grey	
135	164	Mostly clay; grey	
164	183	Clay; grey, firm	Very difficult to log
183	186	Silt to very fine sand	
186	195	Clay	
195	270	Silt & very fine sand; mostly silt	
270	300	Very fine sand ?	
300	320	Fine sand	
320	331	Till; stoney	
	161		

WELL CONSTRUCTION

DEPHT BELOW GROUND LEVEL IN FEET FROM	TO	CASING	OPEN HOLE	PERFORATIONS	GRAVEL PACK	CASING GROUT	PITLESS UNIT	INSIDE DIAMETER INCHES	OUTSIDE DIAMETER INCHES	SCREEN SLOT SIZE NO. OR INCH	TYPE	MATERIAL	MAKE
0	299	X						2			T+C	B.J.	
299	314			X				2		25	WW	SS	
?	300				X			2	5		8-16	Filter Sand	
0	+4.5	X						2			PVC		
											-backfill with	cuttings	

TOP OF CASING OR PITLESS UNIT 4.5 FEET ABOVE [X] BELOW [ ] GROUND LEVEL

REMARKS: Field Anal.
Recovery → T = 19,000 IGPD/ft
EC - 300 µmhos
Hard - 13 gpg
Iron - 1.5 mg/l
Mn ≤ 0.1 mg/l

PUMPING TEST

DATE OF TEST: DAY MONTH 20
PUMPING [X] FLOWING [ ] RATE 210 I.G.P.M. w. air
WATER LEVEL BEFORE PUMPING 174 FT. ABOVE [ ] BELOW [X] GRD. LEVEL
WATER LEVEL AT END OF TEST FT. ABOVE [ ] BELOW [ ] GRD. LEVEL
DURATION OF TEST HOURS 60 MINUTES
WATER TEMPERATURE °F
RECOMMENDED PUMPING RATE I.G.P.M.
WITH PUMP INTAKE AT FEET BELOW GROUND LEVEL

CONTRACTOR

LICENCE NO.
NAME Friesen Drillers Ltd
ADDRESS Steinbach
DRILL OPERATOR Jim Shumaker
AP
Signature of Contractor

WELL OWNER'S COPY

Pembina Valley Water Co-operative Study

Monitoring Well #7

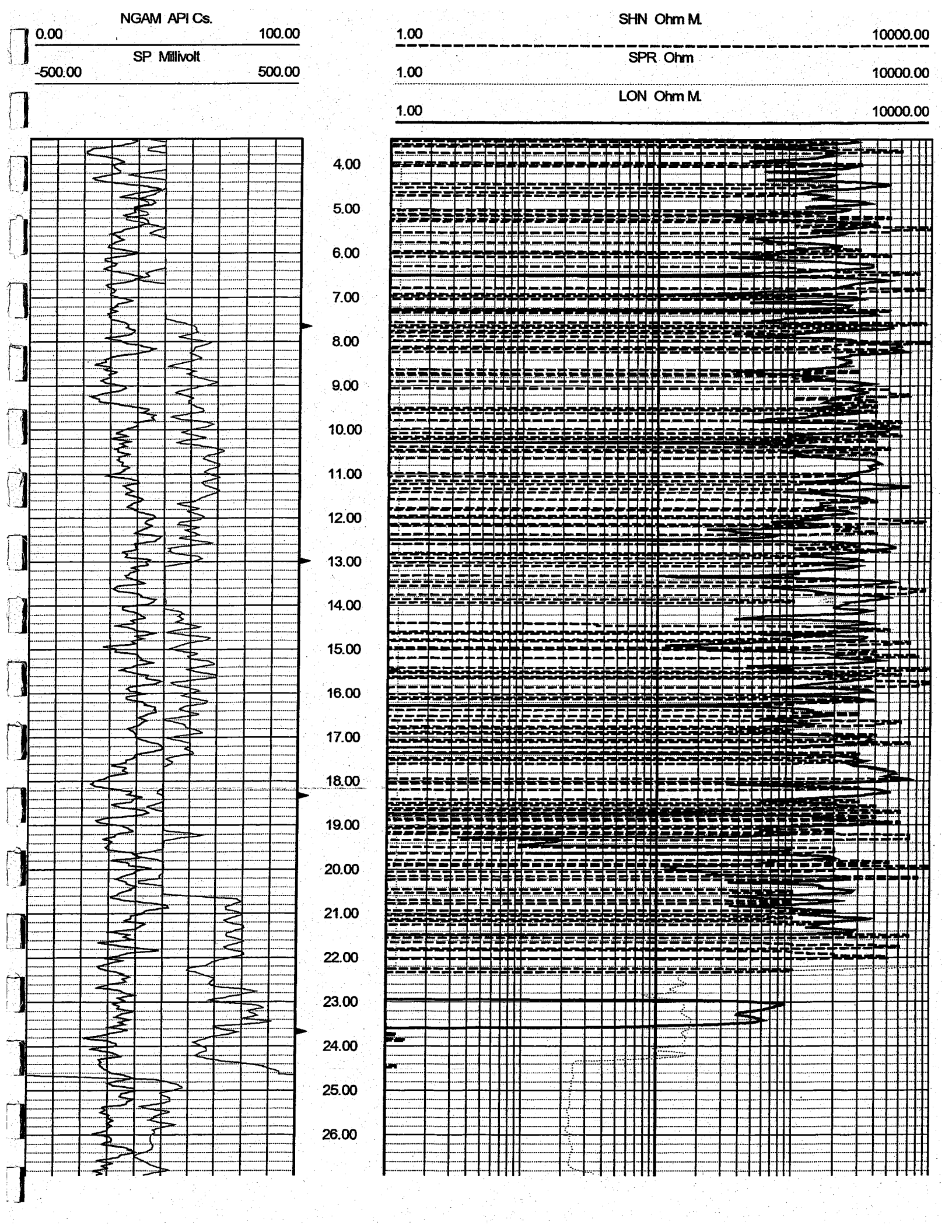
COMPANY	
WELL	PVWC #7
FIELD	SE 15-5-9E
COUNTRY	Canada
STATE	Manitoba
COUNTY	
LAT.:	
LONG.:	

OTHER SERVICES

Perm. Datum		Elev 99.90	KB 0.00
Log. Datum	Ground		DF 0.00
Drill Datum	ground		GL 100.00

DATE	14 Jul 05	12 Jul 05	12 Jul 05
RUN#	1	0	0
TYPE OF LOG	Electric Log		
DEPTH DRILLER	95.00	0.00	0.00
DEPTH LOGGER	90.86	0.00	0.00
LOG DEEPEST	90.86	0.00	0.00
LOG SHALLOW	3.53	0.00	0.00
FLUID IN HOLE	water		
SALINITY	~500 uS/cm	0	
DENSITY	1.0 g/l	0	
LEVEL	~22.5 m	0	
MAX TEMP °C	8.00	0.00	0.00
RIG TIME		0	
RECORDED BY	J.N.Mowez		
WITNESSED BY	C. Fillmore-Handlon		

RUN#	BIT RECORD			CASING RECORD			
	BIT	FROM	TO	BIT	WEIGHT	FROM	TO
1	98.00	0.00	92.10	50.00	5.00	0.00	92.10
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00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500.00
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SPR Ohm
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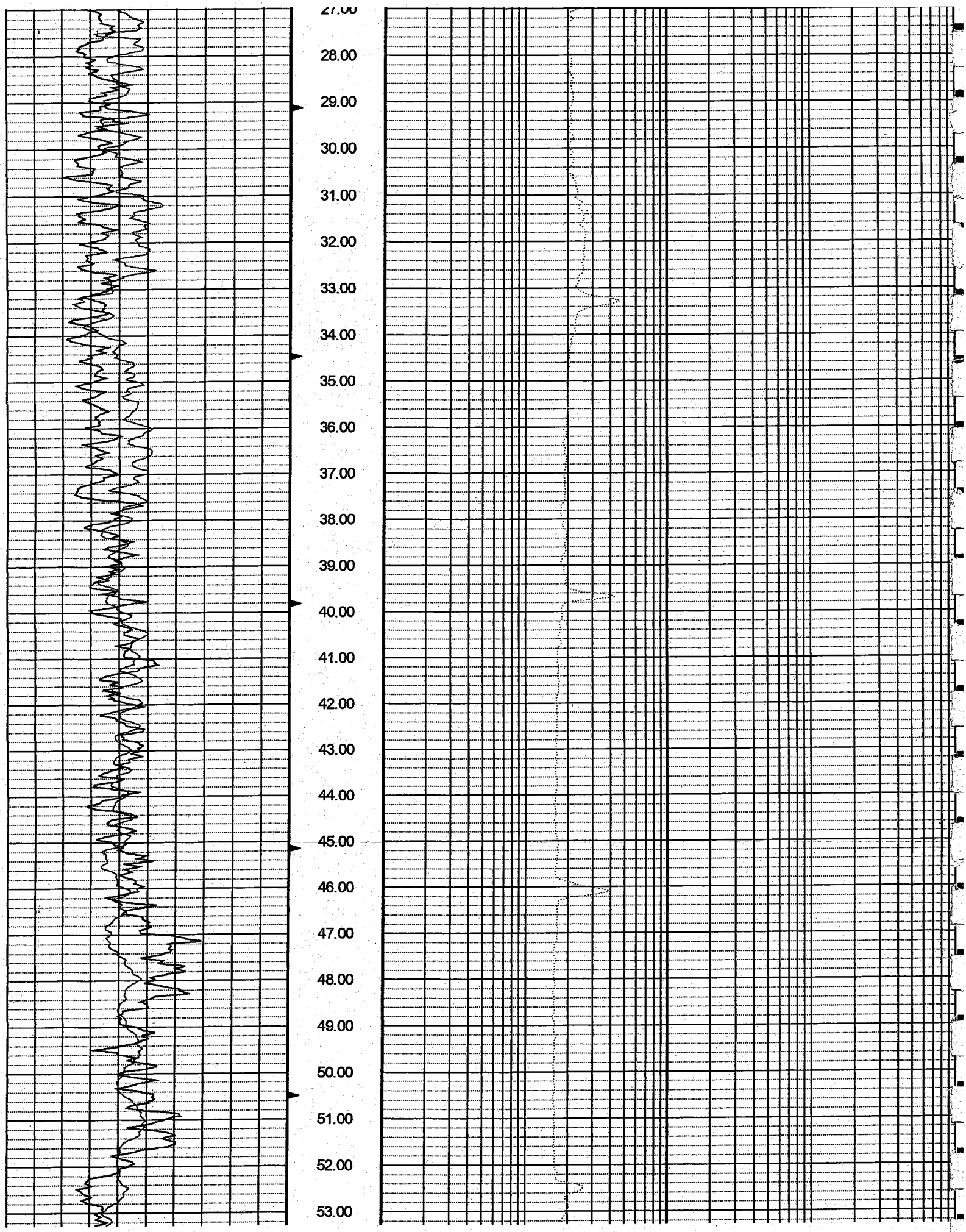
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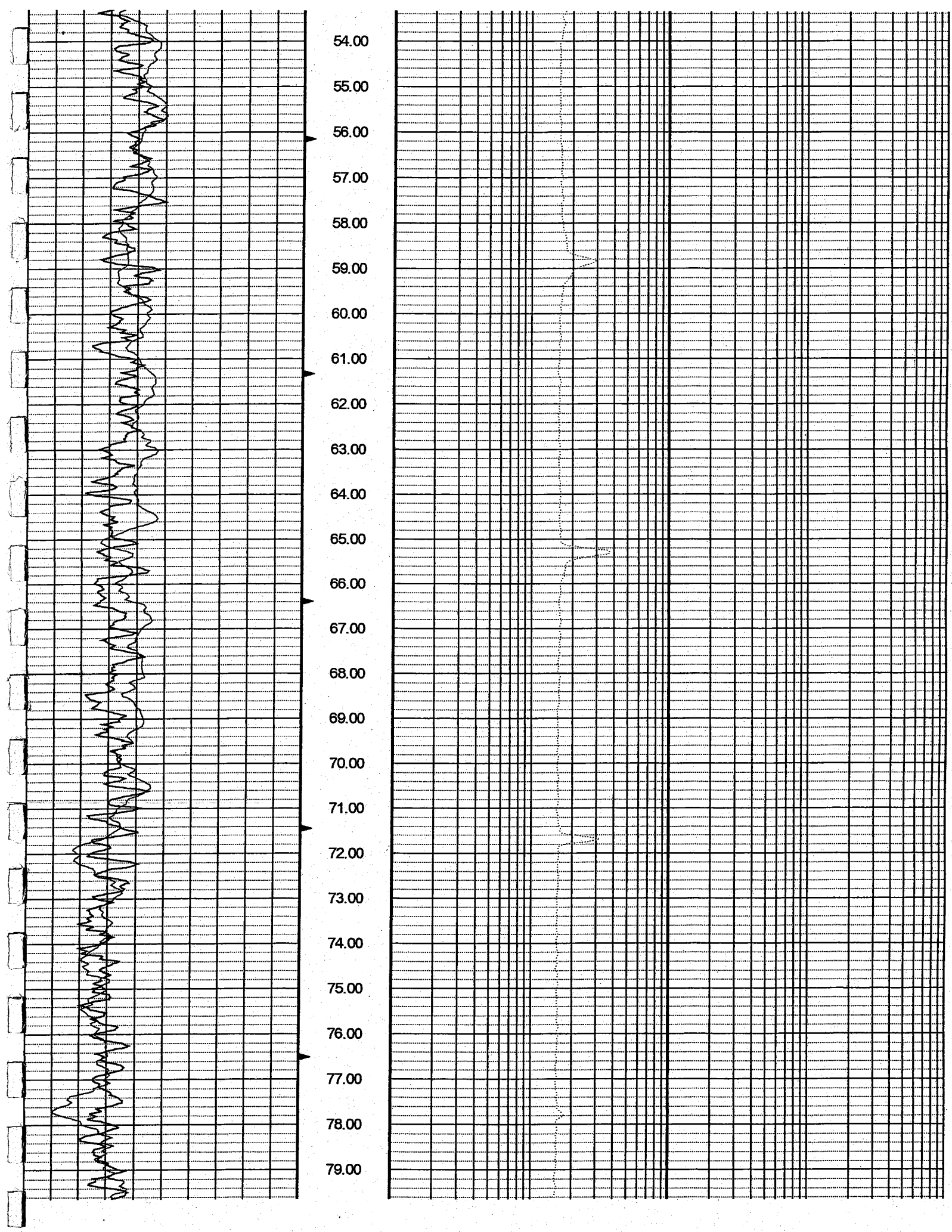
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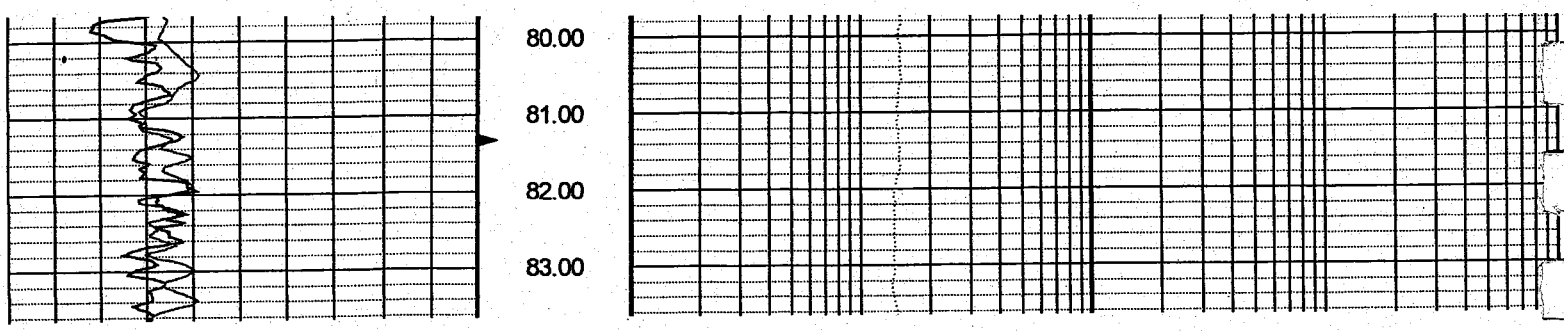
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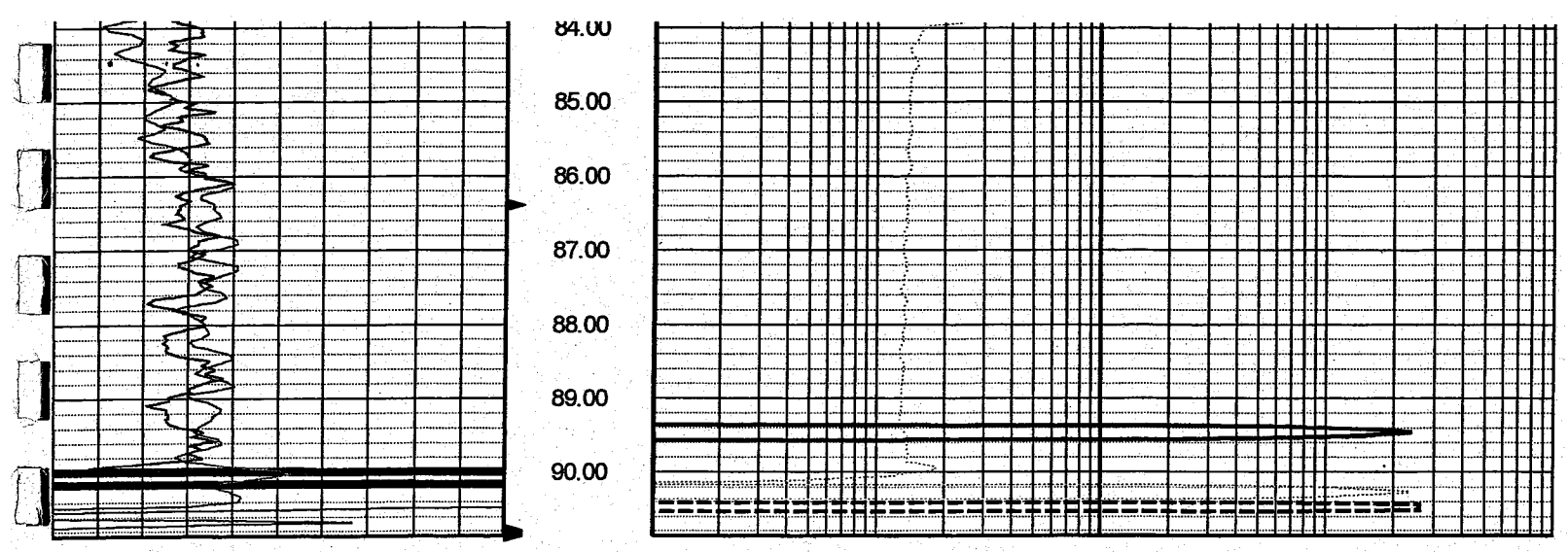
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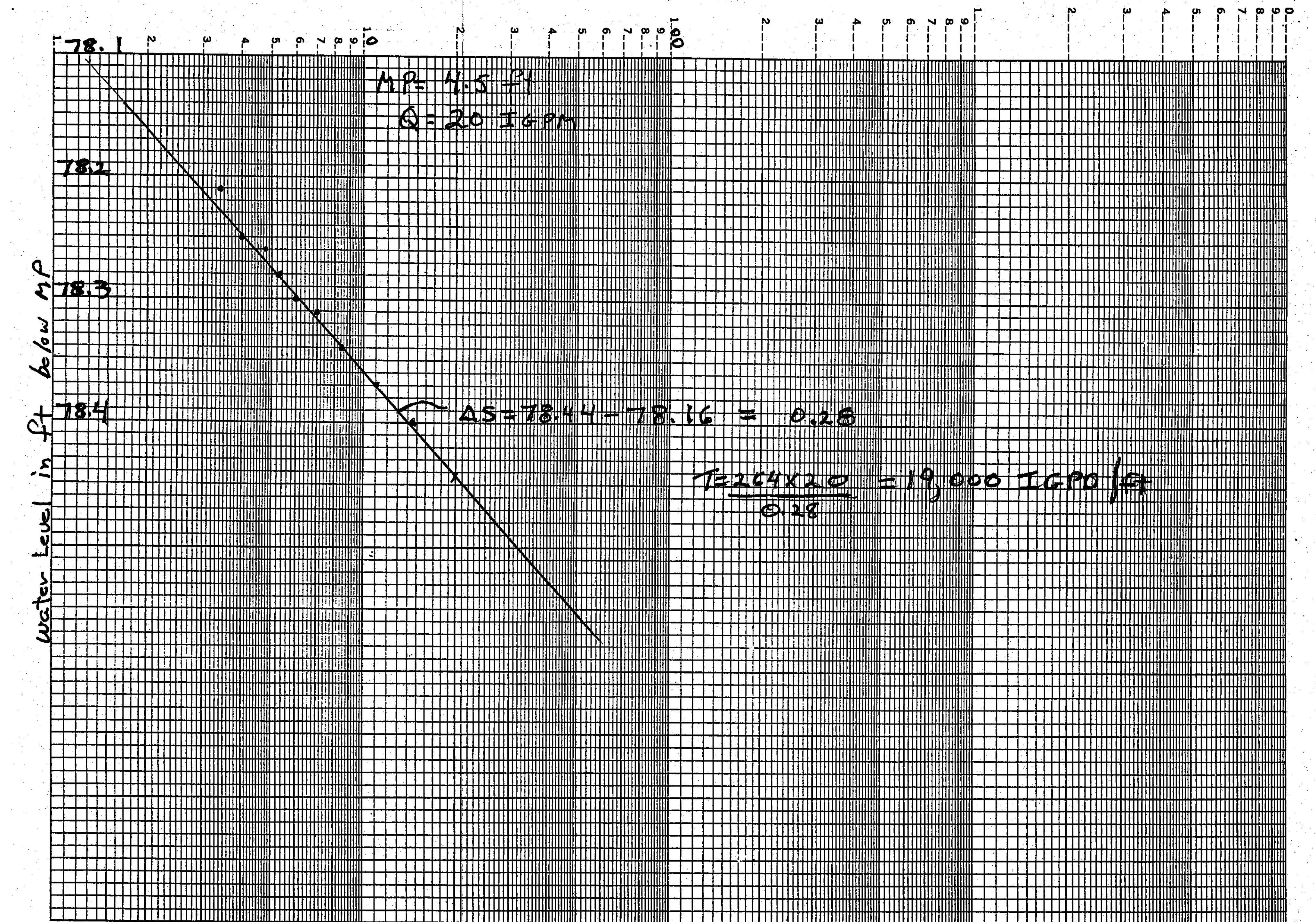


PV TH-7 299-314 ft Recovery

TH-7

WELL NO.	PRODUCTION WELL TEST	DATE	SHEET OF
ENGINEER AP	PROJECT: PVWCI		

M.P. of Well Casing: 4.5 ft

Type of Pump: _____

Inital Water Level from M.P.: _____

Time Test Started: _____

Pumping Rate: _____ Imp. Gal. / U.S. Gal. in _____ sec. = _____ I.G.P.M.

How Measured: _____

Comments on Solids, Mud etc. _____

Method of Measuring Water Level: _____

Time Pumping Stopped: _____

FIELD ANALYSIS

TIME					
EC	300				
HARD	13				
Manganese	<0.1				
IRON	1.5				
OTHER					

Sampled For Lab: YES NO Time: _____

Comments: _____

DRAWDOWN

TIME	Minutes	Water Level Reading	TIME	Minutes	Water Level Reading
	0				
	Screen Set	299-314			

RECOVERY

TIME	Total Time (minutes) t	Time Since Pumping Stop t'	t/t'	Water Level Reading
Pumped 20	IGPM	for 1	hr	
	64.5	4.5	14.3	78.4
	66	6	11	.37
	68	8	8.5	.34
	70	10	7	.31
	72	12	6	.30
	74	14	5.3	.28
	76	16	4.75	.26
	80	20	4	.25
	85	25	3.4	.21
	T=	19,000	IGPD/ft	

Static Water Level: _____ below M.P.; _____ below gro

When Taken: _____

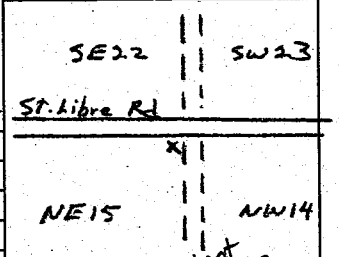
Driller's Report

Conservation

WELL LOCATION

NE corner
QTR. NE SEC. 15 TWP. 5 RGE. 10 E. X W.
R. LOT ___ PARISH ___
REMARKS ___

LOCATION SKETCH OF WELL



WELL OWNER

NAME Pembina Valley Water Coop Inc
ADDRESS ___ PHONE ___

WELL IDENTIFICATION (NO., NAME) TH-8

WELL USE: PRODUCTION ☐ TEST WELL ☒ RECHARGE ☐ OBSERVATION WELL ☒

WATER USE: DOMESTIC ☐ LIVESTOCK ☐ MUNICIPAL ☐ INDUSTRIAL ☐ IRRIGATION ☐
AIR CONDITIONING ☐ OTHER ☐ (Specify) ___

DATE WELL COMPLETED DAY 28 MONTH June 20 05

WELL LOG

DEPHT BELOW GROUND IN FEET FROM	TO	DESCRIPTION	WATER RECORD (KIND OF WATER)
0	2	Sand	
2	9	Brown fill	
9	39	Very fine sand to silt; brown	
39	50	Silty clay to silt; light brown	
50	63	" " ; grey	
63	75	Very fine to fine sand; grey	
75	120	Fine sand; looks clean	
120	144	Fine to medium sand	
144	215	Coarse sand Taking much mud	
215	228	Coarse gravelly sand	
228	-	Boulder	
		Field Anal	
		EC - 300	
		Hard - 10 gpg	
		Iron - 0.3 mg/l	
		Mang < 0.1	"

WELL CONSTRUCTION

DEPHT BELOW GROUND LEVEL IN FEET FROM	TO	CASING	OPEN HOLE	PERFORATIONS	GRAVEL PACK	CASING GROUT	PITLESS UNIT	INSIDE DIAMETER INCHES	OUTSIDE DIAMETER INCHES	SCREEN SLOT SIZE NO. OR INCH	TYPE		MATERIAL		MAKE
0	210	X						2			T&C		BI		
210	225			X				2		25	WW		SS		

TOP OF CASING OR ~~PITLESS UNIT~~ 5" FEET ABOVE ☒ BELOW ☐ GROUND LEVEL

REMARKS: No sand pack; Pumped no sand.

Recovery → T = 70,000 IGPD/ft

PUMPING TEST

DATE OF TEST: DAY ___ MONTH ___ 20 ___
PUMPING ☒ FLOWING ☐ RATE 32 I.G.P.M. w air
WATER LEVEL BEFORE PUMPING 3 FT. ABOVE ☐ BELOW ☒ GRD. LEVEL
WATER LEVEL AT END OF TEST ___ FT. ABOVE ☐ BELOW ☐ GRD. LEVEL
DURATION OF TEST ___ HOURS 30 MINUTES
WATER TEMPERATURE ___ °F
RECOMMENDED PUMPING RATE ___ I.G.P.M.
WITH PUMP INTAKE AT ___ FEET BELOW GROUND LEVEL

CONTRACTOR

LICENCE NO. ___
NAME Friesen Drillers Ltd
ADDRESS Steinbach
DRILL OPERATOR Jim Shumaker
A.P.
Signature of Contractor

Pembina Valley Water Co-operative Study

Monitoring Well #8

COMPANY	
WELL	PVWC #8
FIELD	NE15-5-10E
COUNTRY	Canada
STATE	Manitoba
COUNTY	
LAT.:	
LONG.:	

OTHER SERVICES

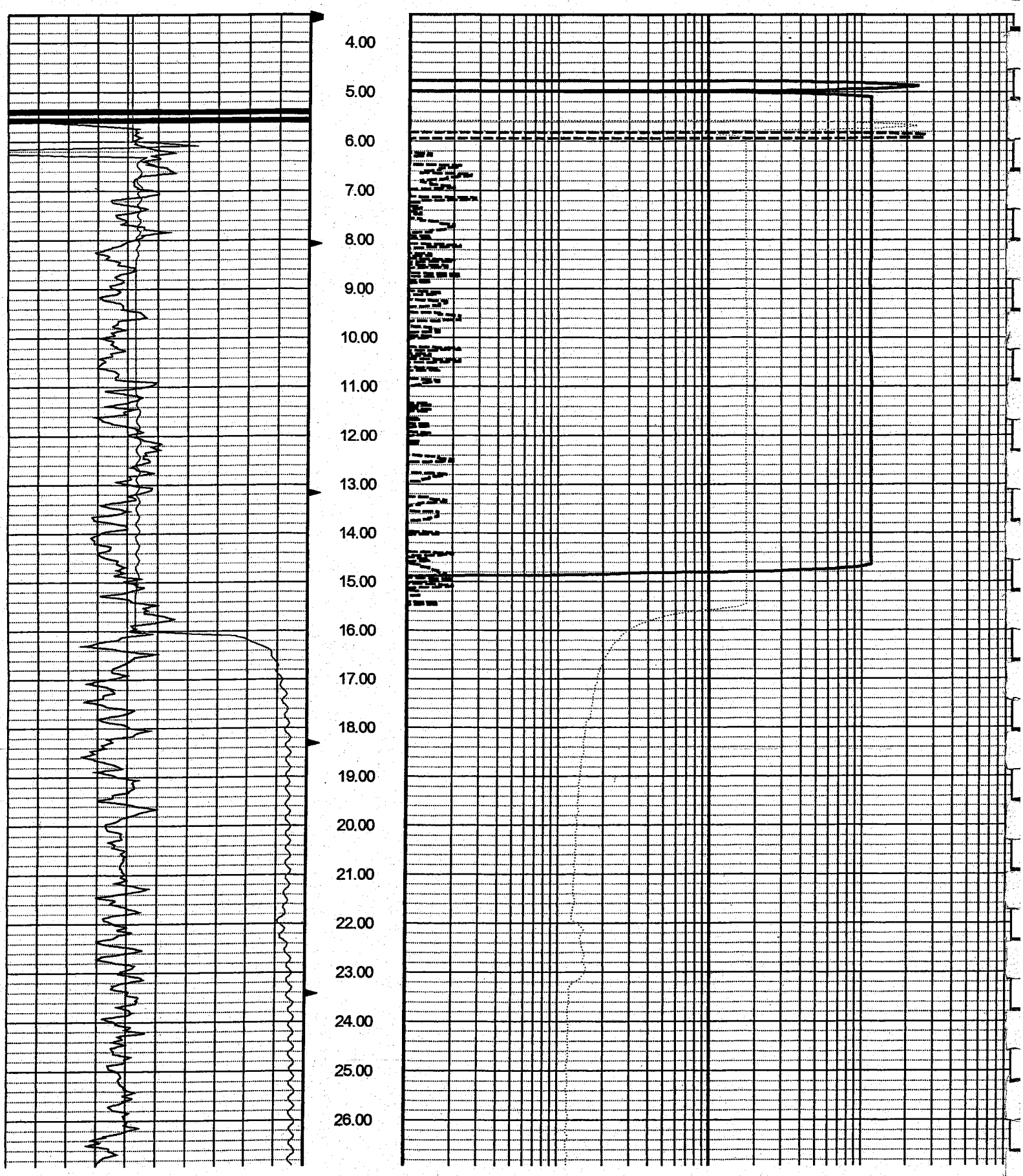
Perm. Datum		Elev 99.90	KB 0.00
Log. Datum	Ground		DF 0.00
Drill Datum	ground		GL 100.00

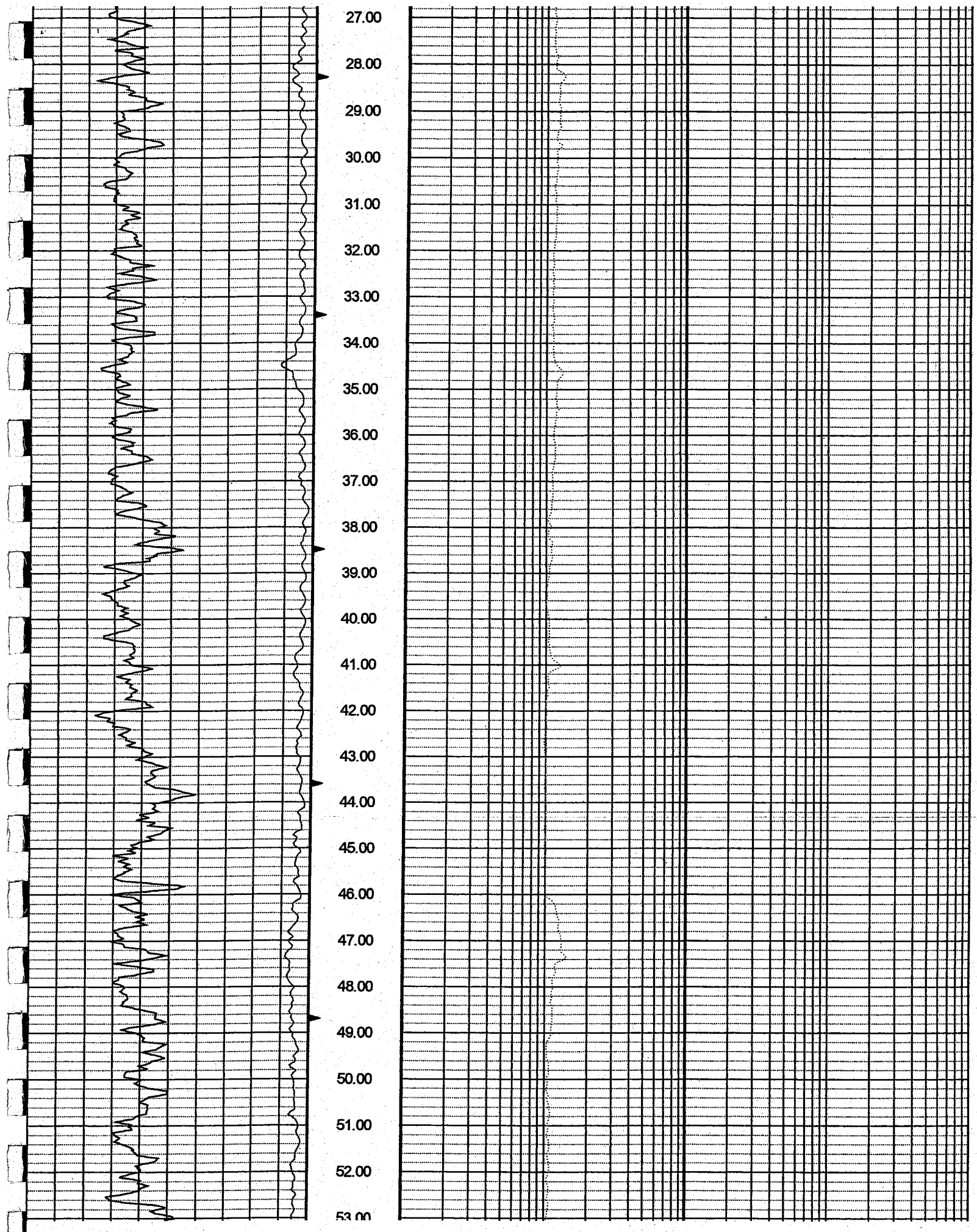
DATE	14 Jul 05	12 Jul 05	12 Jul 05
RUN#	1	0	0
TYPE OF LOG	Electric Log		
DEPTH DRILLER	85.00	0.00	0.00
DEPTH LOGGER	80.00	0.00	0.00
LOG DEEPEST	79.00	0.00	0.00
LOG SHALLOW	79.00	0.00	0.00
FLUID IN HOLE	water		
SALINITY	~500 uS/cm	0	
DENSITY	1.0 g/l	0	
LEVEL	0.3 m	0	
MAX TEMP °C	8.00	0.00	0.00
RIG TIME		0	
RECORDED BY	J.N.Mowez		
WITNESSED BY	C. Fillmore-Handlon		

RUN#	BIT RECORD			CASING RECORD			
	BIT	FROM	TO	BIT	WEIGHT	FROM	TO
1	98.00	0.00	80.00	50.00	5.00	0.00	80.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NGAM API Cs.
0.00 100.00
SP Millivolt
-500.00 700.00

LON Ohm M.
1.00 10000.00
SPR Ohm
1.00 10000.00
SHN Ohm M.
1.00 10000.00

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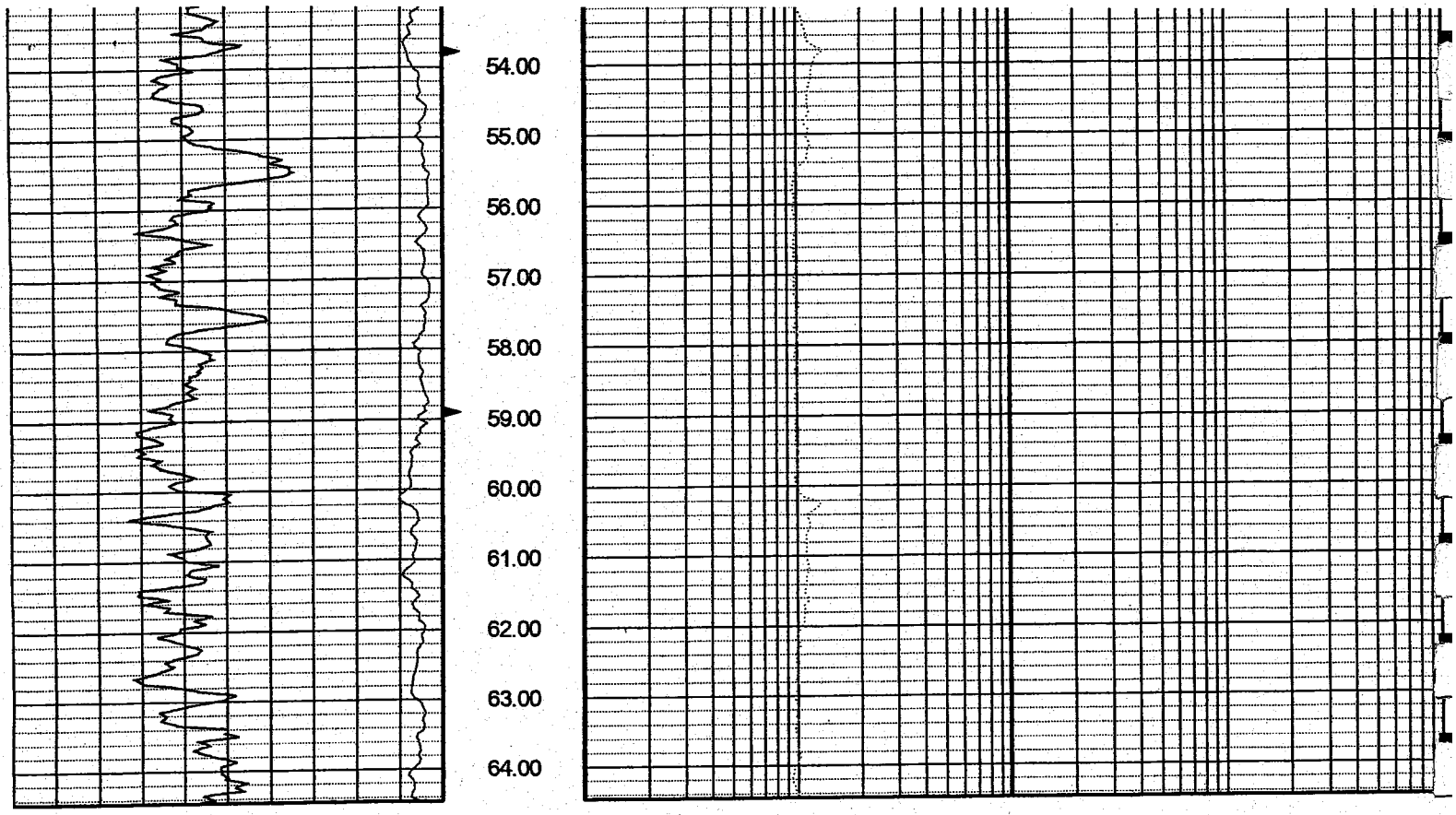
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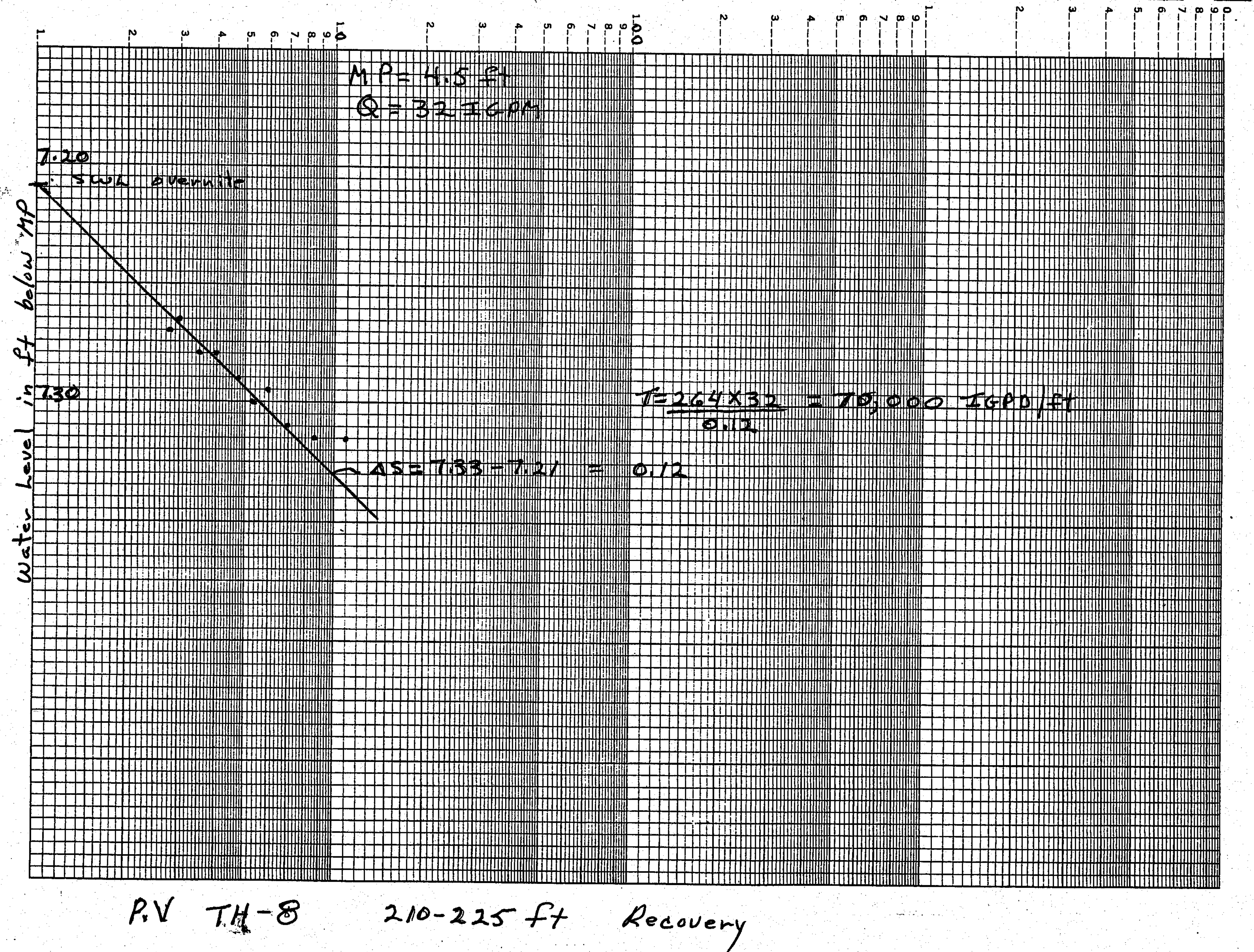
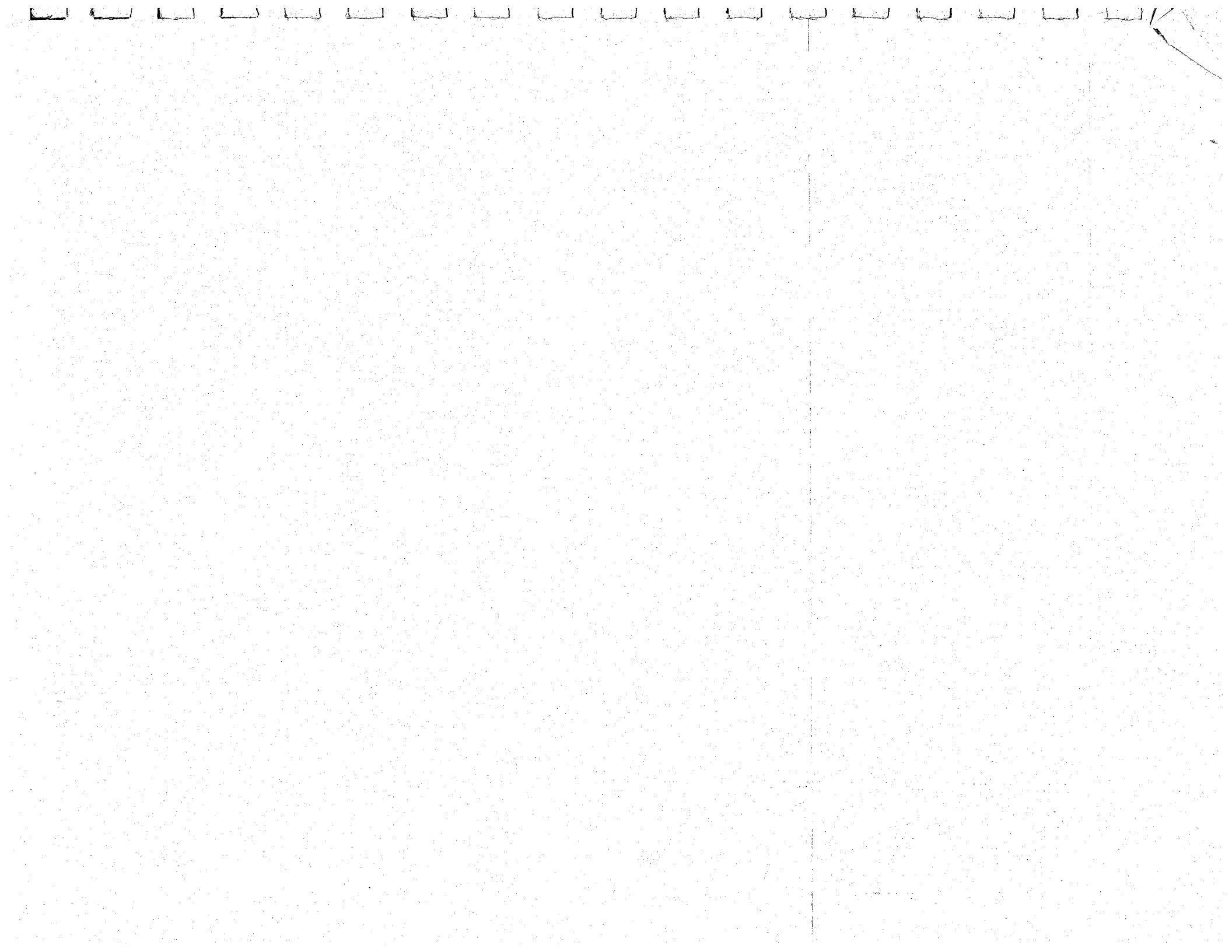

MP = 4.5 ft
Q = 32 IGPM
7.20
SWL overnite
7.30
T = 264 X 32 / 0.12 = 70,000 IGPD/ft
ΔS = 7.33 - 7.21 = 0.12
Water level in ft below MP
P.V TH-8 210-225 ft Recovery



TH-8

PRODUCTION WELL DATA SHEET

PROJECT / CLIENT Pemb. Valley — WELL NO. TH-8
ADDRESS — DATE June 28/05
PHONE — FAX — ENGINEER A.P.
CONTRACTOR
LOCATION : QTR. NE ~~E~~ SEC. 15 TWP. 5 RGE. 9 E E W

M.P. OF WELL CASING : 4.5
TYPE OF PUMP : air Lift
INITIAL WATER LEVEL FROM M.P. : 7.21' overnite
TIME TEST STARTED :
PUMPING RATE : 32 ~~U.S. GAL~~ IMP. GAL IN ___ SEC. = 32 I.G.P.M.
HOW MEASURED : ~~Bo~~ 45 IG Barrell
COMMENTS ON SOLIDS, MUD ETC. : Clean

METHOD OF MEASURING WATER LEVEL : E Tape
TIME PUMPING STOPPED :

FIELD ANALYSIS

TIME					
E.C.	300				
HARD	10				
IRON	0.3				
MANG	<0.1				
OTHER					

SAMPLED FOR LAB : YES NO TIME

COMMENTS :

DRAWDOWN

TIME	MINUTES	WATER LEVEL READING	TIME	MINUTES	WATER LEVEL READING
	0				

RECOVERY

TIME	TOTAL TIME (MINUTES) t	TIME SINCE PUMP STOP t'	t/t'	WATER LEVEL READING
	33	3	11	7.315
	34	4	8.5	7.315
	35	5	7	7.31
	36	6	6	7.295
	37	7	5.3	7.30
	38	8	4.75	7.29
	40	10	4	7.28
	42	12	3.5	7.28
	45	15	3	7.265
	47	17	2.8	7.27

SPECIFIC CAPACITY :

___ GPM/FT @ ___ GPM @ ___ MINUTES

COEFFICIENT OF TRANSMISS :

___ GPD/FT TIME DRAWDOWN

70,000 I GPD/FT RECOVERY

PRODUCTION WELL DATA SHEET

PROJECT / CLIENT _____ WELL NO. _____

ADDRESS _____ DATE _____

PHONE _____ FAX _____ ENGINEER _____

CONTRACTOR _____

LOCATION : QTR. _____ SEC. _____ TWP. _____ RGE. _____ E W

LOG FROM	TO (FT)	DESCRIPTION

DETAILED LOCATION SKETCH

WELL SKETCH

SIZE OF DRILL HOLE _____

DEPTH OF DRILL HOLE _____

MUD USED _____

CASING : SIZE & TYPE; _____

SET TO; _____

HOLE PLUG @ _____

GROUT @ _____

SCREEN : TYPE _____ ;SIZE _____ ;SLOT SIZE _____

INTERVAL SET : _____ TO _____

	SIZE OF GRAVEL	NO. BAGS	SIZE OF BAGS	DEPTH TO PACK
GRAVEL PACK :				

SCREEN GUIDES @ _____

WASH-DOWN FITTING : SIZE _____ ;TYPE _____

OTHER : _____

DESCRIBE DEVELOPING PROCEDURE AND RESULTS : _____

Driller's Report

Conservation

WELL LOCATION

SE corner

QTR. NE SEC. 23 TWP. 5 RGE. 10 E. X W. ☐

R. LOT ____ PARISH on east side of trail

REMARKS ____

LOCATION SKETCH OF WELL

NE 23 | NW 24

SE-23 | SW 24

Trail #

St. Libre Rd

WELL OWNER

NAME Pembina Valley Water Coop Inc

ADDRESS ____ PHONE ____

WELL IDENTIFICATION (NO., NAME) TH-9

WELL USE PRODUCTION ☐ TEST WELL ☒ RECHARGE ☐ OBSERVATION WELL ☐

WATER USE DOMESTIC ☐ LIVESTOCK ☐ MUNICIPAL ☐ INDUSTRIAL ☐ IRRIGATION ☐

AIR CONDITIONING ☐ OTHER ☐ (Specify) ____

DATE WELL COMPLETED DAY 28 MONTH June 20 05

WELL LOG

DEPHT BELOW GROUND IN FEET FROM	TO	DESCRIPTION	WATER RECORD (KIND OF WATER)
0	7	Medium Sand	
7	15	Brown till	
15	43	Fine sand; clean; brown	
43	57	Coarse sand	
57	68	Gravel layers and sand	
68	80	Till; firm, silty, grey; boulder @ 78'	
80	110	Pure silt till or silty clay; stone 98'	
110	119	Till; silty, grey	
119	127	Silt, soft	
127	133	Silt; firmer	
133	141	Very fine sand to sandy silt	
141	163	Very fine sand	
163	175	Fine sand; grey	
175	178	Silty clay; very soft	
178	205	Silt; washing	
205	223	Till; silty, grey	
223	225	Sand	
225	260	Till?; stone @ 236; firm; gravel layer @ 237	
260	287	Dark grey to regular grey clay; } shale?	
297	300	Black clay	
	91		

WELL CONSTRUCTION

DEPHT BELOW GROUND LEVEL IN FEET FROM	TO	CASING	OPEN HOLE	PERFORATIONS	GRAVEL PACK	CASING GROUT	PITLESS UNIT	INSIDE DIAMETER INCHES	OUTSIDE DIAMETER INCHES	SCREEN SLOT SIZE NO. OR INCH	TYPE		MATERIAL		MAKE

TOP OF CASING OR PITLESS UNIT ____ FEET ABOVE ☐ BELOW ☐ GROUND LEVEL

REMARKS:

No tests

PUMPING TEST

DATE OF TEST: DAY ____ MONTH ____ 20 ____

PUMPING ☐ FLOWING ☐ RATE ____ I.G.P.M.

WATER LEVEL BEFORE PUMPING ____ FT. ABOVE ☐ BELOW ☐ GRD. LEVEL

WATER LEVEL AT END OF TEST ____ FT. ABOVE ☐ BELOW ☐ GRD. LEVEL

DURATION OF TEST ____ HOURS ____ MINUTES

WATER TEMPERATURE ____ °F

RECOMMENDED PUMPING RATE ____ I.G.P.M.

WITH PUMP INTAKE AT ____ FEET BELOW GROUND LEVEL

CONTRACTOR

LICENCE NO. ____

NAME Friesen Drillers Ltd

ADDRESS Steinbach

DRILL OPERATOR Jim Shumaker

AP

Signature of Contractor

FORM MG-2406

WELL OWNER'S COPY

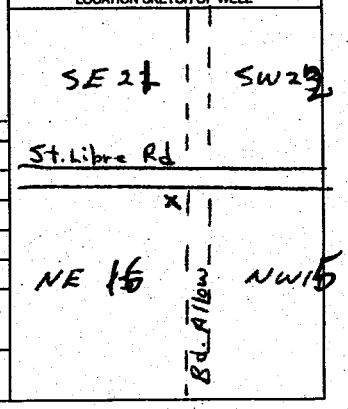
Driller's Report

Conservation

WELL LOCATION

NE Corner
QTR. NE SEC. 16 TWP. 5 RGE. 19 E. X W. ☐
R. LOT ____ PARISH ____
REMARKS ____

LOCATION SKETCH OF WELL



WELL OWNER

NAME Pembina Valley Water Coop Ltd
ADDRESS ____ PHONE ____

WELL IDENTIFICATION (NO., NAME) TH-10

WELL USE: PRODUCTION ☐ TEST WELL ☒ RECHARGE ☐ OBSERVATION WELL ☐

WATER USE: DOMESTIC ☐ LIVESTOCK ☐ MUNICIPAL ☐ INDUSTRIAL ☐ IRRIGATION ☐
AIR CONDITIONING ☐ OTHER ☐ (Specify) ____

DATE WELL COMPLETED DAY 29 MONTH June 20 05

WELL LOG

DEPHT BELOW GROUND IN FEET FROM	TO	DESCRIPTION	WATER RECORD (KIND OF WATER)
0	9	Fine Sand; brown	
9	24	Medium to coarse grey sand	
24	46	Silt; grey	
46	66	Till; grey	
66	82	Fine Sand	
82	105	Fine Sand; a bit coarser than above	
105	110	Coarse Sand	
110	112	Clay or till	
112	135	Layered sand with till or clay	
135	150	Fine Sand	
150	165	same but a bit coarser	
165	180	Very fine silty sand	
180	190	Fine Sand; some medium	
190	194	Clay	
194	210	Very fine sand	
210	229	Fine to medium Sand	
229	240	Coarse gravelly Sand	
240	247	Sand	
247	255	Layered ? Sand & dark grey till or clay	
255	262	Sand	
262	278	Till; grey	

WELL CONSTRUCTION

DEPHT BELOW GROUND LEVEL IN FEET FROM	TO	CASING	OPEN HOLE	PERFORATIONS	GRAVEL PACK	CASING GROUT	PITLESS UNIT	INSIDE DIAMETER INCHES	OUTSIDE DIAMETER INCHES	SCREEN SLOT SIZE NO. OR INCH	TYPE	MATERIAL	MAKE
278	285										Fine to coarse sand;	organics noted	
285	330										Fine to medium sand		

TOP OF CASING OR PITLESS UNIT ____ FEET ABOVE ☐ BELOW ☐ GROUND LEVEL

REMARKS: No tests

PUMPING TEST

DATE OF TEST: DAY ____ MONTH ____ 20 ____
PUMPING ☐ FLOWING ☐ RATE ____ I.G.P.M.
WATER LEVEL BEFORE PUMPING ____ FT. ABOVE ☐ BELOW ☐ GRD. LEVEL
WATER LEVEL AT END OF TEST ____ FT. ABOVE ☐ BELOW ☐ GRD. LEVEL
DURATION OF TEST ____ HOURS ____ MINUTES
WATER TEMPERATURE ____ °F
RECOMMENDED PUMPING RATE ____ I.G.P.M.
WITH PUMP INTAKE AT ____ FEET BELOW GROUND LEVEL

CONTRACTOR

LICENCE NO. ____
NAME Friesen Drillers Ltd
ADDRESS Steinbach
DRILL OPERATOR Jim Shumaker
AP
Signature of Contractor

WELL OWNER'S COPY

Driller's Report

Well Location	QTR SE SEC 22 TWP 5 RGE 9 E [X] W [ ] R. Lot Parish Remarks	GPS Reading
Well Owner	Name Pembina Valley Water Co-op Inc. Address P.O. Box 1180 Altona, MB R0G 0B0 Phone	Location Sketch of Well
Well Identification	TH - 11	
Well Use	Production [ ] Test Well [X] Recharge [ ] Observation [ ]	
Water Use	Domestic [ ] Livestock [ ] Industrial [ ] Irrigation [ ] Air-condition [ ] Other [ ] Specify	
Date well completed	September 27 2005	

Depth Below Ground in Feet		DESCRIPTION WELL LOG	Water Record
0	18	Brown Silty Till	
18	27	Grey Till	
27	33	Silty Clay Till	
33	103	Silty Brown Till	
103	160	Sand (No Returns)	

WELL CONSTRUCTION

Depth Below Ground Level		Casing	Open Hole	Perfor-ations	Gravel Pack	Casing Grout	Inside Diameter	Outside Diameter	Screen Slot size	TYPE	MATERIAL	MAKE
0	90	X					5	5½		Insert Glued	PVC	
0	150	X								2" PVC Liner		
150	160			X						2" Stainless steel screen		
145	160				X					Sandpack		
140	145					X				Enviroplug Grout		

Top of Casing 2 Feet above [X] Below [ ]

REMARKS:

PUMPING TEST

Date of Test:
Pumping [X] Flowing [ ] Rate I.G.P.M.

Water level before pumping	Above [ ]	Below [X]
Pumping level at end of test	Above [ ]	Below [X]
Duration of test HRS	Minutes	
Recommended pumping rate	I.G.P.M.	
With pump intake at	Feet below ground level	

CONTRACTOR

License Number 594 5

Name Friesen Drillers Ltd.

Address Box 1, Grp. 15, R.R.#1
Steinbach, MB. R5G 1L9

Drill Operator Paul Sharples

Driller's Report

Well Location	QTR SE SEC 22 TWP 5 RGE 9 E [X] W [ ] R. Lot Parish Remarks	GPS Reading
Well Owner	Name Pembina Valley Water Co-op Inc. Address P.O. Box 1180 Altona, MB R0G 0B0 Phone	Location Sketch of Well
Well Identification	TH-12	
Well Use	Production [ ] Test Well [X] Recharge [ ] Observation [ ]	
Water Use	Domestic [ ] Livestock [ ] Industrial [ ] Irrigation [ ] Air-condition [ ] Other [ ] Specify	
Date well completed	September 28 2005	

Depth Below Ground in Feet		DESCRIPTION WELL LOG	Water Record
0	3	Sand	
3	5	Brown Till	
5	38	Sand	
38	67	Silt	
67	100	Silty Grey Till	
100	123	Fine Silty Sand	
123	148	Sand Medium	
148	214	Silty Sand	
214	230	Silty Grey Till	
230	237	Grey Clay	
237	320	Silty Sand	
320	360	Fine Sand with Till Layers	

WELL CONSTRUCTION

Depth Below Ground Level		Casing	Open Hole	Perfor-ations	Gravel Pack	Casing Grout	Inside Diameter	Outside Diameter	Screen Slot size	TYPE	MATERIAL	MAKE
										2" PVC		
0	345	X								2" Stainless steel screen		
345	360									Sandpack		
340	360									Holeplug		
330	340											

Top of Casing 2 Feet above [X] Below [ ]

REMARKS:

PUMPING TEST

Date of Test:
Pumping [X] Flowing [ ] Rate I.G.P.M.

Water level before pumping — Above [ ] Below [X]

Pumping level at end of test — Above [ ] Below [X]

Duration of test HRS Minutes

Recommended pumping rate I.G.P.M.

With pump intake at Feet below ground level

CONTRACTOR

License Number 594 5

Name Friesen Drillers Ltd.

Address Box 1, Grp. 15, R.R.#1
Steinbach, MB. R5G 1L9

Drill Operator Paul Sharples

Test Well TH-12

Depth (Feet)

0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360

Driller's Report

Well Location	QTR SE SEC 27 TWP 5 RGE 9 E [X] W [ ] R. Lot Parish Remarks	GPS Reading
Well Owner	Name Pembina Valley Water Co-op Address P.O. Box 1180 Altona, MB. R0G 0B0 Phone	Location Sketch of Well
Well Identification	TH 13 (Shallow monitoring well - Pocock Lake)	
Well Use	Production [ ] Test Well [ ] Recharge [ ] Observation [X]	
Water Use	Domestic [ ] Livestock [ ] Industrial [ ] Irrigation [ ] Air-condition [ ] Other [ ] Specify	
Date well completed	October 11 2005	

Depth Below Ground in Feet		DESCRIPTION WELL LOG	Water Record
0	2	Brown Sandy Loam	
2	34	Medium to Course Brown Sand	
34	80	Grey Silty Sand	

WELL CONSTRUCTION

Depth Below Ground Level		Casing	Open Hole	Perfor-ations	Gravel Pack	Casing Grout	Inside Diameter	Outside Diameter	Screen Slot size	TYPE	MATERIAL	MAKE
0	65	X					2	2¼		Insert Glued	PVC	
65	70			X					15	2" PVC		
55	78				X					20-40 Grade Silica Sand		
45	55					X				Enviroplug Grout		
0	45					X				Fill		

Top of Casing 3 Feet above [X] Below [ ]

REMARKS:

12½ ft. separation (to the Southwest) between monitors

No testing - E-Logging se TH - 14

PUMPING TEST

Date of Test: 2005

Pumping [ ] Flowing [ ] Rate 5. - 6 I.G.P.M.

Water level before pumping 15 Above [ ] Below [X]

Pumping level at end of test 65 Above [ ] Below [X]

Duration of test HRS Minutes

Recommended pumping rate I.G.P.M.

With pump intake at Feet below ground level

CONTRACTOR

License Number 594 5

Name Friesen Drillers Ltd.

Address Box 1, Grp. 15, R.R.#1
Steinbach, MB. R5G 1L9

Drill Operator Jim Shoemaker

Driller's Report

Well Location	QTR SE SEC 27 TWP 5 RGE 9 E [X] W [ ] R. Lot Parish Remarks	GPS Reading
Well Owner	Name Pembina Valley Water Co-op Address P.O. Box 1180 Altona, MB. R0G 0B0 Phone	Location Sketch of Well
Well Identification	TH 14 (Deep monitoring well - Pocock Lake)	
Well Use	Production [ ] Test Well [ ] Recharge [ ] Observation [X]	
Water Use	Domestic [ ] Livestock [ ] Industrial [ ] Irrigation [ ] Air-condition [ ] Other [ ] Specify	
Date well completed	October 3 2005	

Depth Below Ground in Feet		DESCRIPTION WELL LOG	Water Record
0	2	Organic Brown Sandy Loam	
2	12	Gravely Sand	
12	32	Silty Shaley Sand	
32	34	Yellow Silty Sand	
34	52	Silty Clay	
52	250	Fine Silty Sand with some Clay Stringers	
250	255	Course Sand with Silt	
255	300	Hard Clay with Silt Seams	

WELL CONSTRUCTION

Depth Below Ground Level		Casing	Open Hole	Perforations	Gravel Pack	Casing Grout	Inside Diameter	Outside Diameter	Screen Slot size	TYPE	MATERIAL	MAKE
0	194	X					2	2¼		Insert Glued	PVC	
194	214			X					15	2" PVC		
180	230				X					20-40 Grade Silica Sand		
160	180					X				Enviroplug Grout		
0	160					X				Fill		

Top of Casing 3 Feet above [X] Below [ ]

REMARKS:

E-logged - J. Bell (Friesen Drillers Ltd.)

No further Testing P.V.W.C. Ltd.

PUMPING TEST

Date of Test: 2005

Pumping [ ] Flowing [ ] Rate I.G.P.M.

Water level before pumping 27 Above [ ] Below [X]

Pumping level at end of test Above [ ] Below [ ]

Duration of test HRS Minutes

Recommended pumping rate I.G.P.M.

With pump intake at Feet below ground level

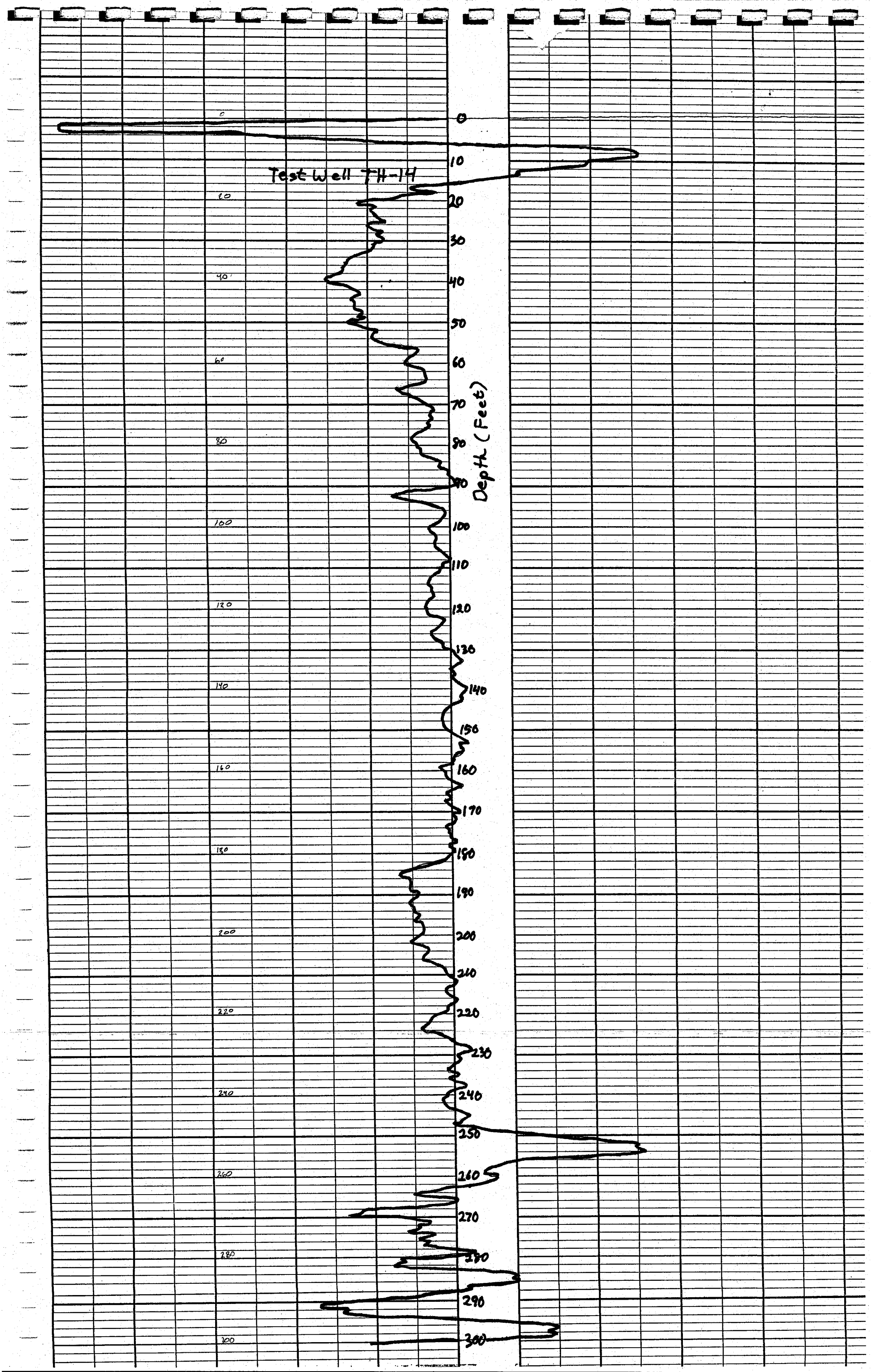
CONTRACTOR

License Number 594 5

Name Friesen Drillers Ltd.

Address Box 1, Grp. 15, R.R.#1
Steinbach, MB. R5G 1L9

Drill Operator Jim Shoemaker


Test Well TH-14
Depth (Feet)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300

Driller's Report

Well Location	QTR SE SEC 22 TWP 5 RGE 9 E [X] W [ ] R. Lot Parish Remarks	GPS Reading
Well Owner	Name Pembina Valley Water Co-op Address P.O. Box 1180 Altona, MB. R0G 0B0 Phone	Location Sketch of Well
Well Identification	TH 15 (Shallow monitoring well - Pumping Well Site)	
Well Use	Production [ ] Test Well [ ] Recharge [ ] Observation [X]	
Water Use	Domestic [ ] Livestock [ ] Industrial [ ] Irrigation [ ] Air-condition [ ] Other [ ] Specify	
Date well completed	October 4 2005	

Depth Below Ground in Feet		DESCRIPTION WELL LOG	Water Record
0	2	Sandy Loam	
2	44	Fine to Medium Brown Sand	
44	60	Grey Till with Silt Stringers	

WELL CONSTRUCTION

Depth Below Ground Level		Casing	Open Hole	Perforations	Gravel Pack	Casing Grout	Inside Diameter	Outside Diameter	Screen Slot size	TYPE	MATERIAL	MAKE
0	34	X					2	2¼		Insert Glued	PVC	
34	44			X					15	2" PVC		
25	50				X					20-40 Grade Silica Sand		
20	25					X				Enviroplug Grout		
0	20					X				Fill		

Top of Casing 3 Feet above [X] Below [ ]

REMARKS:

Monitoring Well - No Testing

No E-log

PUMPING TEST

Date of Test: 2005

Pumping [ ] Flowing [ ] Rate I.G.P.M.

Water level before pumping 22 Above [ ] Below [X]

Pumping level at end of test Above [ ] Below [ ]

Duration of test HRS Minutes

Recommended pumping rate I.G.P.M.

With pump intake at Feet below ground level

CONTRACTOR

License Number 594 5

Name Friesen Drillers Ltd.

Address Box 1, Grp. 15, R.R.#1
Steinbach, MB. R5G 1L9

Drill Operator Jim Shoemaker

Driller's Report

Well Location	QTR SE SEC 30 TWP 5 RGE 9 E [X] W [ ] R. Lot Parish Remarks	GPS Reading N 49° 24' 52" W 96° 22' 28"
Well Owner	Name Pembina Valley Water Co-op Address P.O. Box 1180 Altona, MB. R0G 0B0 Phone	Location Sketch of Well
Well Identification	TH 16 (Upper sands monitoring well - Marchand South)	
Well Use	Production [ ] Test Well [ ] Recharge [ ] Observation [X]	
Water Use	Domestic [ ] Livestock [ ] Industrial [ ] Irrigation [ ] Air-condition [ ] Other [ ] Specify	
Date well completed	October 13 2005	

Depth Below Ground in Feet		DESCRIPTION WELL LOG	Water Record
0	2	Fill	
2	3	Sandy Loam	
3	60	Medium - Course Sand with Narrow Gravel Stringers	

WELL CONSTRUCTION

Depth Below Ground Level		Casing	Open Hole	Perfor-ations	Gravel Pack	Casing Grout	Inside Diameter	Outside Diameter	Screen Slot size	TYPE	MATERIAL	MAKE
0	39	X					2	2½		Threaded Steel		
39	49			X					15	2" stainless steel		
32	60				X					20-40 Grade Silica Sand		
25	32					X				Enviroplug Grout		

Top of Casing 3 Feet above [X] Below [ ]

REMARKS:

Monitor well is 10ft. South of 300 ft. monitor

No testing - E-logged - See TH-18 J. Bell - Friesen Drillers

PUMPING TEST

Date of Test: 2005

Pumping [ ] Flowing [ ] Rate 8 I.G.P.M.

Water level before pumping 6 Above [ ] Below [X]

Pumping level at end of test Above [ ] Below [X]

Duration of test HRS Minutes

Recommended pumping rate I.G.P.M.

With pump intake at Feet below ground level

CONTRACTOR

License Number 594 5

Name Friesen Drillers Ltd.

Address Box 1, Grp. 15, R.R.#1
Steinbach, MB. R5G 1L9

Drill Operator Jim Shoemaker

Driller's Report

Well Location	QTR SE SEC 30 TWP 5 RGE 9 E [X] W [ ] R. Lot Parish Remarks	GPS Reading
Well Owner	Name Pembina Valley Water Co-op Address P.O. Box 1180 Altona, MB. R0G 0B0 Phone	Location Sketch of Well
Well Identification	TH 17 (Lower sands monitring well - Marchand South)	
Well Use	Production [ ] Test Well [ ] Recharge [ ] Observation [X]	
Water Use	Domestic [ ] Livestock [ ] Industrial [ ] Irrigation [ ] Air-condition [ ] Other [ ] Specify	
Date well completed	October 14 2005	

Depth Below Ground in Feet		DESCRIPTION WELL LOG	Water Record
0	2	Fill	
2	3	Sandy Loam	
3	116	Medium to Course Grey Sand with Narrow Gravel Stringers	
116	124	Meddium Gravel	
124	161	Fine to Medium Grey Sand	
161	200	Medium to Course Grey Sand	

WELL CONSTRUCTION

Depth Below Ground Level		Casing	Open Hole	Perfor-ations	Gravel Pack	Casing Grout	Inside Diameter	Outside Diameter	Screen Slot size	TYPE	MATERIAL	MAKE
0	178	X					2	2½		Threaded Steel		
178	188			X					25	2" stainless steel		
165	190				X					20-40 Grade Silica Sand		
0	165					X				Enviroplug Grout		

Top of Casing 3 Feet above [X] Below [ ]

REMARKS:

Monitor well is 17 ft south of 300 ft. monitor

E-Log see TH-18 J. Bell - Friesen Drillers Ltd. Oct. 12, 2005

PUMPING TEST

Date of Test: 2005

Pumping [ ] Flowing [ ] Rate 23 I.G.P.M.

Water level before pumping 2½ Above [ ] Below [X]

Pumping level at end of test Above [ ] Below [X]

Duration of test HRS Minutes

Recommended pumping rate I.G.P.M.

With pump intake at Feet below ground level

CONTRACTOR

License Number 594 5

Name Friesen Drillers Ltd.

Address Box 1, Grp. 15, R.R.#1
Steinbach, MB. R5G 1L9

Drill Operator Jim Shoemaker

Driller's Report

Well Location	QTR SE SEC 30 TWP 5 RGE 9 E [X] W [ ] R. Lot Parish Remarks	GPS Reading N 49° 24' 52" W 96° 22' 28"
Well Owner	Name Pembina Valley Water Co-op Address P.O. Box 1180 Altona, MB. R0G 0B0 Phone	Location Sketch of Well
Well Identification	TH 18 (Marchand South Sandstone Monitoring well)	
Well Use	Production [ ] Test Well [ ] Recharge [ ] Observation [X]	
Water Use	Domestic [ ] Livestock [ ] Industrial [ ] Irrigation [ ] Air-condition [ ] Other [ ] Specify	
Date well completed	October 12 2005	

Depth Below Ground in Feet		DESCRIPTION WELL LOG	Water Record
0	2	Fill	
2	3	Brown Loam	
3	54	Medium to Course Grey Sand	
54	55	Grey Till	
55	62	Gravel	
62	72	Sand	
72	73	Till	
73	108	Course Sand	
108	124	Fine Silty Sand	
124	178	Medium to Course Grey Black Sand	
178	234	Course Sand - Fine Gravel	
234	239	Red Shale	
239	268	Limestone - Granite - Rubble	
268	300	Sandstone	

WELL CONSTRUCTION

Depth Below Ground Level		Casing	Open Hole	Perfor-ations	Gravel Pack	Casing Grout	Inside Diameter	Outside Diameter	Screen Slot size	TYPE	MATERIAL	MAKE
0	281	X					2	2½		B. Steel		
281	291			X					25	2" stainless steel		
270	299				X					20-40 Grade Silica Sand		
240	270					X				Enviroplug Grout		
0	270					X				Fill		

Top of Casing 3 Feet above [X] Below [ ]

REMARKS:

E-Logged October 12, 2005 - J. Bell - Friesen Drillers Ltd.

No further Testing - Sandstone monitoring well

PUMPING TEST

Date of Test: 2005

Pumping [ ] Flowing [ ] Rate 18 I.G.P.M.

Water level before pumping 1½ Above [ ] Below [X]

Pumping level at end of test 65 Above [ ] Below [X]

Duration of test HRS Minutes

Recommended pumping rate I.G.P.M.

With pump intake at Feet below ground level

CONTRACTOR

License Number 594 5

Name Friesen Drillers Ltd.

Address Box 1, Grp. 15, R.R.#1
Steinbach, MB. R5G 1L9

Drill Operator Jim Shoemaker

Test Well TH-18

0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300

Depth (Feet)

Driller's Report

Well Location	QTR SE SEC 22 TWP 5 RGE 9 E [X] W [ ] R. Lot Parish Remarks	GPS Reading
Well Owner	Name Pembina Valley Water Co-op Inc. Address P.O. Box 1180 Altona, MB. R0G 0B0 Phone	Location Sketch of Well
Well Identification		
Well Use	Production [X] Test Well [ ] Recharge [ ] Observation [ ]	
Water Use	Domestic [ ] Livestock [ ] Industrial [ ] Irrigation [ ] Air-condition [ ] Other [X] Specify Municipal	
Date well completed	October 28 2005	

Depth Below Ground in Feet		DESCRIPTION WELL LOG				Water Record
0	43	Sand	248	255	Course Sand	
43	75	Till Light Grey	255	270	Sand - Layers of Fine to Medium	
75	93	Brown Till	270	285	Sand - Medium to Course	
93	95	Clay & Silt	285	315	Sand - Medium	
95	100	Silt	315	325	Sand	
100	114	Silt				
114	130	Clay Silty Light Grey				
130	135	Silty Till				
135	172	Clay - Silty				
172	188	Silt				
188	248	Sand Medium Grained				

WELL CONSTRUCTION

Depth Below Ground Level		Casing	Open Hole	Perfor-ations	Gravel Pack	Casing Grout	Inside Diameter	Outside Diameter	Screen Slot size	TYPE	MATERIAL	MAKE
0	200	X					16			Weld	B. St PVC	
200	325			X			10		25	W.W Stainless steel screen		
190	200	X					10			Zero Wrap Solid S.S		
190	192						10	16		Double K Packer Concentric Reducer		
190	325				X					10 - 20 Silica Sand		

Top of Casing 2 Feet above [X] Below [ ]

REMARKS:

PVWC Sandilands Aquifer Study. Pumping / Recovery Test Analysis by UMA
AECOM Engineering Inc.
Test well TH- 5 A Log - J. Bell (Friesen Drillers) and A. Pedersen

PUMPING TEST

Date of Test: 2005
Pumping [X] Flowing [ ] Rate 1415 I.G.P.M.
Water level before pumping 77'4" Above [ ] Below [X]
Pumping level at end of test 156' Above [ ] Below [X]
Duration of test HRS Minutes
Recommended pumping rate I.G.P.M.
With pump intake at Feet below ground level

CONTRACTOR

License Number 594 5
Name Friesen Drillers Ltd.
Address Box 1, Grp. 15, R.R.#1 Steinbach, MB. R5G 1L9
Drill Operator James Friesen

Driller's Report

Well Location	QTR SE SEC 22 TWP 5 RGE 9 E [X] W [ ] R. Lot Parish Remarks	GPS Reading
Well Owner	Name Pembina Valley Water Co-op Address P.O. Box 1180 Altona, MB. R0G 0B0 Phone	Location Sketch of Well
Well Identification	TH 19 Sandilands	
Well Use	Production [ ] Test Well [ ] Recharge [ ] Observation [X]	
Water Use	Domestic [ ] Livestock [ ] Industrial [ ] Irrigation [ ] Air-condition [ ] Other [ ] Specify Municipal	
Date well completed	October 21 2005	

Depth Below Ground in Feet		DESCRIPTION WELL LOG	Water Record
0	2	Brown Sandy Loam	
2	10	Soft Brown Clay	
10	47	Brown Sand	
47	56	Grey Clay	
56	83	Grey Till	
83	144	Fine Silty Grey Sand	
144	158	Grey Till	
158	191	Fine Grey Silty Sand	
191	202	Grey Till	
202	260	Fine Silty Grey Sand	

WELL CONSTRUCTION

Depth Below Ground Level		Casing	Open Hole	Perfor-ations	Gravel Pack	Casing Grout	Inside Diameter	Outside Diameter	Screen Slot size	TYPE	MATERIAL	MAKE
0	247	X					2	2½		T & C	B. Steel	
247	257			X					25	2" PVC		
235	260				X					20-40 Grade Silica Sand		
40	235					X				Enviroplug Grout		
0	40					X				Fill		

Top of Casing 3 Feet above [X] Below [ ]

REMARKS:

PUMPING TEST

Date of Test: October 21 2005
Pumping [ ] Flowing [ ] Rate 6 I.G.P.M.
Water level before pumping 64 Above [ ] Below [X]
Pumping level at end of test Above [ ] Below [ ]
Duration of test HRS Minutes
Recommended pumping rate I.G.P.M.
With pump intake at Feet below ground level

CONTRACTOR

License Number 594 5
Name Friesen Drillers Ltd.
Address Box 1, Grp. 15, R.R.#1
Steinbach, MB. R5G 1L9
Drill Operator Jim Shoemaker