

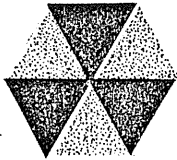
GROUND WATER EXPLORATION
PROGRAM FOR THE
TOWN OF EXETER, NEW HAMPSHIRE

Submitted by:

The D.L. Maher Co.
71 Concord Street
North Reading, MA 01864

July 25, 1984

D. L. MAHER CO.
GROUND WATER DEVELOPMENT



P.O. BOX 127 • 71 CONCORD STREET • NORTH READING • MA 01864 • 617/933-3210

July 18, 1984

Board of Selectmen
Town Offices
10 Front Street
Exeter, N.H.

Attn: Evelyn Zarnowski
Re: Groundwater Exploration Program
Town of Exeter, N.H.

Gentlemen:

In accordance with your request, we have conducted a geohydro-logic test well investigation program, concerning an additional 700 GPM groundwater supply for the Town of Exeter, New Hampshire. Our work has included: drilling 6-inch diameter bedrock test wells, evaluation of the glacial geomorphology, 2-1/2 and 8 inch diameter test wells in sand and gravel aquifers, and the performance of a 6 day sustain pumping test. Our report, including recommendations and conclusions are presented hereinafter.

BEDROCK TEST WELL EXPLORATION

In our July, 1982 study we had delineated four areas as having favorable geologic conditions for high yield bedrock wells. Of the four areas identified, areas 1 and 3 were test drilled along with an alternate area on Town cemetary property, Linden St. The bedrock well locations are shown on Figure 1, and the well logs may be found in Appendix A.

HOWARD PROPERTY (ROUTE 101) - A 6-inch diamter well BRW-1, was completed to a depth of 463 feet. The depth to bedrock was 18

feet, with 32 feet of casing being installed. During the test drilling, rock cuttings were collected in a sieve and analyzed for fracturing, as well as the various levels of water bearing zones. The water bearing zones are as follows:

<u>Depth</u> (feet)	<u>Cumulative Yield</u> From 6-inch hole (GPM)
52	3
154	4
219-263	soft gouge zone (no water)

The bedrock is a gray diorite with included beds of quartz.

The well yield (4 GPM) was approximated in the field, utilizing a discharge pipe and a 5 gallon cylindrical container. The static water level was approximately 7.0 feet below the top of the casing.

LUCKY PROPERTY - A 6-inch diameter well (BRW-2) was completed to a depth of 323 feet. The depth to bedrock was 1 foot, with 18 feet of casing being installed.

During the test drilling, rock cuttings were collected in a sieve and analyzed for fracturing, as well as the various levels of water bearing zones. The water bearing zones are as follows:

<u>Depth</u> (feet)	<u>Cumulative Yield</u> (gpm)
103	2
143	3
183-227	soft gouge zone (no water)

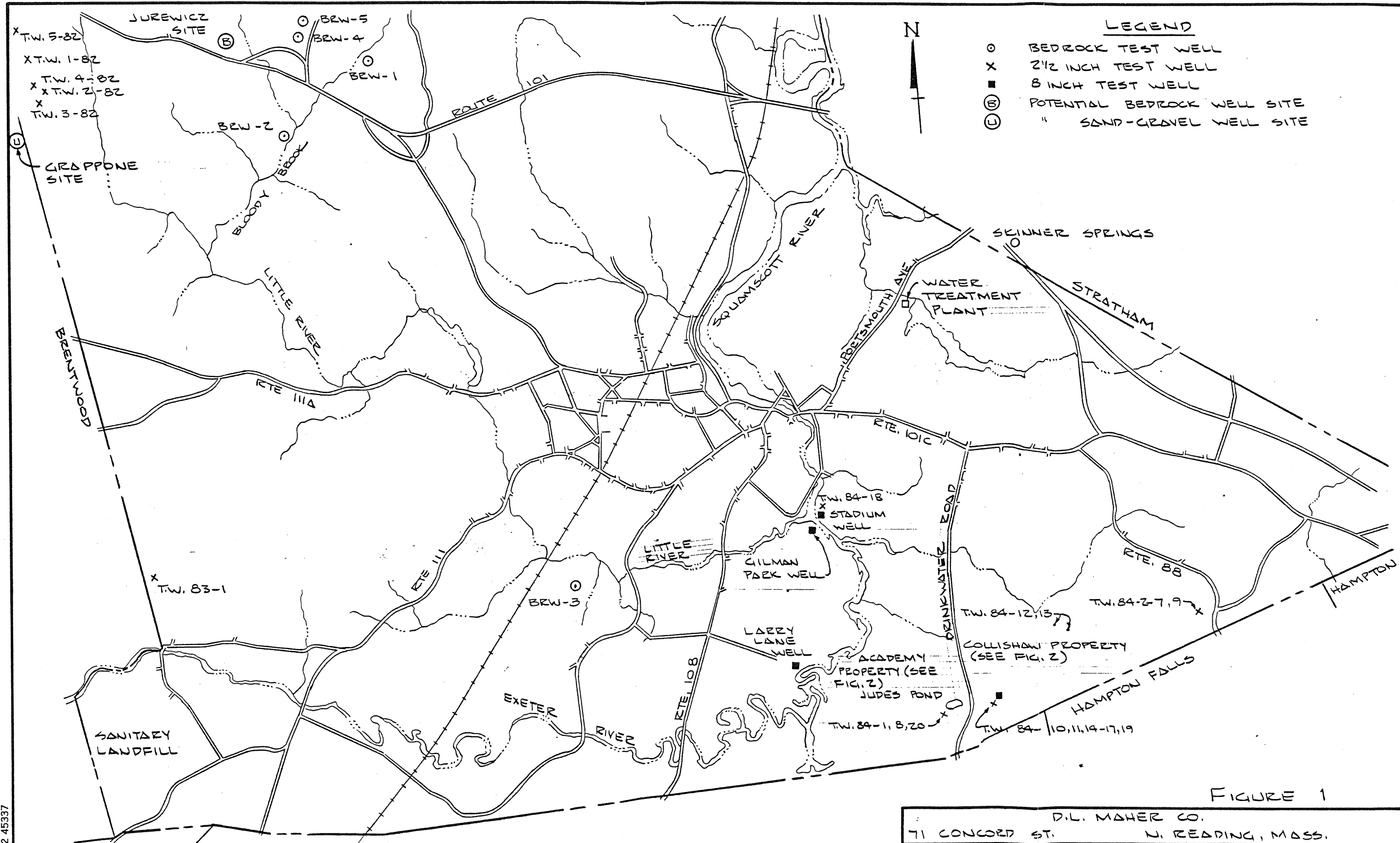


FIGURE 1

D.L. MAHER CO.
 71 CONCORD ST. N. READING, MASS.
 GROUNDWATER EXPLORATION PROGRAM
 EXETER, N.H. 1984

BRUNING 44-132 45337

The well yield (3 GPM) was approximated in the field, utilizing a discharge pipe and a 5 gallon cylindrical container. The static water level was approximately 7.0 feet below the top of the casing. The results of the 2 test wells drilled on the Howard and Lucky properties were sited on a long lineament trending parallel to Bloody Brook. A gouge zone was found at both test wells; with, the fractures were filled with finely abraded material and rotten rock. The gouge zone is found between the walls of a fault, and is the result of grinding movement. However, the well yields were very low yielding.

It was recommended by the D. L. Maher Co., to install additional test wells offset from the lineament trend. However at the Howard Property, access negotiations between the owner and the Town were not successful. On the Lucky Property, access to the site was possible only with frozen ground conditions and spring mud conditions returned, before a decision to continue testing could be reached.

Cemetery Property - A 6-inch diameter well (BRW-3) was completed to a depth of 400 feet. The depth to bedrock was 75 feet with 85 feet of casing being installed.

The water bearing zones are as follows:

<u>Depth</u> (feet)	<u>Cumulative Yield</u> (GPM)
143	0.5
343	1.0

The static water level was 20 feet below the top of casing.

HOWARD PROPERTY (BEECH HILL ROAD) - Two 6-inch diameter wells (BRW 4 and 5) were completed to a depth of 535 and 600 feet respectively. The depth to bedrock was 14 and 15 feet with 20 feet of casing being installed at both wells. The water bearing zones are as follows:

Well No.	<u>Depth</u> (feet)	<u>Cumulative Yield</u> (gpm)
BRW-4	125	3
	190	8
	275	20
	530	100

The static water level was 3 feet below the top of casing.

Well No.	<u>Depth</u> (feet)	<u>Cumulative Yield</u> (gpm)
BRW-5	80	4
	135	7
	260	25

The static water level was 3 feet below the top of casing.

A short duration pumping test, lasting approximately 4.0 hours, was performed on BRW-4.

Well No. BRW-4 was test pumped at 10 GPM, and had 6.25 feet drawdown at the conclusion of the test. This drawdown gives Well No. BRW-4 a specific capacity of 1.6 gallons per foot of drawdown. The pumping level had stabilized after 3.0 hours of pumping and had fully recovered within 25 minutes of shutdown.

Water quality samples were taken at the end of the pumping test (Appendix B). The water analysis was of acceptable quality for those parameters tested.

CONCLUSION OF BEDROCK TEST WELL

The only promising test well, BRW-4, had an estimated safe yield of 100-125 GPM. Since a ground water supply of 700 GPM was desired, an additional well site (Jurewicz B) was selected (Fig. 1). The Exeter selectmen voted to test drill the Jurewicz site, and permission to test drill was granted by the owner. Recently the Exeter selectmen have put on-hold test drilling of the Jurewicz property.

SAND AND GRAVEL TEST WELL EXPLORATION

In August 1982, a 2-1/2-inch diameter test well program was performed on the Grappone and L.P. Trucking property in the Town of Exeter, N.H. (Fig. 1). The test wells (1 thru 5 -82) were installed parallel to a glacial sand/gravel formation that borders the Exeter-Brentwood Town lines. Although it was evident that the formations greatest water bearing potential is situated in Brentwood, test wells were installed to determine if the water bearing sand and gravels extended under the overlying clay into the Town of Exeter. Test wells 1 through 5 - 82 (Appendix C), did not encounter water bearing material.

In March of 1983, a test well (83-1) was installed at the southerly extension of the same formation, in the vicinity of Pickpocket Road (Fig. 1). The material encountered was non-water bearing fine sands with silts.

DRINKWATER ROAD AND BRENTWOOD SITES

On December 5, 1983, the Board of Selectmen and the D. L. Maher Co., discussed the development of sand/gravel type aquifers at the Drinkwater Rd. (Exeter), and the Brentwood sites (Grappone and Bell & Flynn Co.). The Drinkwater Road had previously been tested with elevated nitrates found. It was decided to re-test the area to determine if the nitrate concentrations were still elevated. Also during the meeting, two potential sites in Brentwood were discussed. The author had informed the Board that due to client confidentiality (D. L. Maher Co. performed test well work for Bell & Flynn Co.), we could not discuss the test well exploration program. However, the geology of the site in general was discussed with the following observations being derived about the Bell & Flynn site:

1. Water quality appears to be excellent.
2. Substantial well yields are available; however, based on the available recharge to the area, it is unsure whether a safe sustainable yield of 700 GPM or greater could be sustained, based on the 1963-1964 drought sequence.
3. The aquifer is surrounded by marine clays and recharge is principally through infiltration of precipitation. The aquifer area may not fall entirely within the wells sanitary radius protection. According to the selectmen, the remainder of the property was proposed as an industrial park, with on-site sewage disposal. The risk for

aquifer contamination through industrial type contaminants great, if on site sewage disposal is utilized.

4. The distance of properly sized water main extension to the site, was over 3.0 miles.

Based on the discussion, it was recommended that the Grappone property had equivalent water bearing potential, is closer to the Town line, and that test wells should be installed to verify the aquifers yield and water quality. If the Grappone property exploration program did not prove successful, then the Board still had the Bell & Flynn site option available. The Selectmen decided the most desirable alternative would be to locate a groundwater source within Exeter; therefore, the Drinkwater Rd. site was assigned a higher priority over the Grappone or Bell & Flynn site.

DRINKWATER ROAD AREA - Water quality analysis obtained 23 years ago, indicated that the iron and manganese levels were below the maximum EPA standards of 0.3 mg/L, and 0.05 mg/L respectively. However, the nitrate level was 13.0 mg/L (limit is 10.0 mg/L) and is normally attributed to warm blooded animal waste or fertilization.

In order to determine the present nitrate levels in the groundwater, a 2-1/2 inch test well program was initiated on the Exeter Academy property west of Drinkwater Rd. (Fig. 1). The test well logs appear in Appendix D. Test well 84-1 (Fig. 2), was driven to refusal at 114'-6". The unconsolidated material

consisted of fine sand with traces of clay from 0-18 feet, clay from 18-97 feet, and fine gray sand from 97-114'-6". A 40 slot (0.040 inches) screen was exposed at 114 feet and would not pump water. A 20 slot screen was then reset at 106 feet and pumped at 50 gallons per minute (gpm). A water sample analysis was taken, and indicated the nitrates were less than <0.2 mg/L.; and therefore acceptable (Appendix E).

While the water quality analysis was being conducted, it was decided to install test wells on the Bennett property west of Rte. 88 (Fig. 1). Test wells 84-2 through 7 encountered non-water bearing material. Test well 84-9, installed to a depth of 44 feet, yielded 10 GPM.

Based on the 84-1 test well results, it was decided to move 125 feet to the east, where test well 84-8 was driven to a depth of 124 feet. A 60 slot (0.060 inches) screen was exposed from 115 to 120 feet in fine to coarse sand. A short pump test of 6.25 hours duration was performed on test well 84-8, resulting in a specific capacity of 21.8 gallons per foot of drawdown (gal/ft/dd). Water quality analysis for test well 84-8 indicated that the chemical concentrations were below the EPA standards; and therefore acceptable.

COLLISHAW PROPERTY - The test wells installed on the Academy property indicated that the water bearing material increased in depth to the east. Therefore, it was decided to install test wells on the Collishaw property (Fig. 2). Test well 84-10 was driven to a

depth of 141 feet and would not pump water; test well 84-11 was driven to a depth of 132 feet, where a test screen was exposed from 122-127 feet; test well 84-11 was test pumped 5 hours with a specific capacity of 17.84 gal/ft/dd. Water quality analysis for test well 84-11 indicated the chemical concentrations were below the EPA standards (Appendix D).

TOWN OF EXETER CONSERVATION SITE - Test wells 84-12 and 13, were installed on Exeter conservation land adjacent to the Collishaw property (Fig. 1). The test wells encountered significant depths, 123 feet; however, the soil material was thin (113'-121'), and yielded only 30 GPM with 25 inch vacuum. No further testing was recommended on this site.

8 INCH PUMP TEST-COLLISHAW PROPERTY - Based on the test well and water quality data, it was determined that the Drinkwater Rd. site was an extensive confined aquifer. The area is overlain by thick impermeable marine clays. After discussions with Exeter Board of Selectmen, it was decided to proceed with the installation of observation wells to monitor water table levels, while performing an 8-inch diameter pumping high rate pumping test.

Test wells 84-14 to 84-17, were installed as observation wells (Fig. 2). During the installation of 84-16, it was determined that a greater thickness of water bearing sand gravels (140 feet) existed at test well 84-16 (Appendix D). Test well 84-16 was pump tested at 55 GPM, and had a specific capacity of 16.5 gal/ft/dd. The

water quality analysis was acceptable and appears in Appendix E. NEW HAMPSHIRE WATER SUPPLY SITE APPROVAL - Based on the results of the test well program on the Collishaw property, it was recommended to the Town of Exeter to perform an 8-inch diameter 5 day pump test at test well 84-16. Mr. Thomas Andrews, of the New Hampshire Water Supply and Pollution Control Commission, was contacted and performed a sanitary site review of the Collishaw property.

In general, the site is bordered to the west by the 300 acre plus Exeter Academy property. This property is forested, undeveloped and dedicated as a tree management farm. To the east and north, is a 60 acre plus Town of Exeter conservation parcel. Six hundred feet to the south, in the Town of Kensington, is a small residential development with septic system disposal of modern construction. Overlying the Drinkwater Rd., aquifer is from 70 to 112 feet of impervious marine clays.

Therefore, the relatively undeveloped nature of the surrounding area combined with the impervious clay cap, makes the Drinkwater site a very attractive and protected well site.

Mr. Andrews, upon site review, had remarked that the Drinkwater Rd. area is "one of the cleanest and well protected sites he has reviewed". Mr. Andrews site approval letter can be found in (Appendix F).

PROLONGED 8-INCH DIAMETER PUMP TEST

Test Site Location:

An 8-inch diameter test well was driven approximately 2 feet from observation well test well 84-16, by the D. L. Maher Co. The well was driven to 137'-0" through 79 feet of marine clay, 32'-6" of silty sand, into 14'-6" of brown coarse gravel. At 137'-0" to 141', the strata changed to a fine silty sand (Appendix G). A 10 foot long telescoping well screen with a size 80 slot (0.080") opening, was set and exposed from 125 to 135 feet below ground. The discharge pipe was directed approximately 400 feet east into a brook entering "The Cove" swamp. A sieve analysis was conducted on the sand and gravel between 121 and 135 feet. Ther precent finer material passing each sieve size for selected strata's sampled, was then plotted as curves on a grain size distribution chart (Appendix G.) The curves show that the uniformity co-efficient ranged from 3.43 to 4.46, between 121-129 feet in-depth. A continuous 80 slot screen was selected based on the sieve analysis.

PROLONGED PUMP TEST

The pump test was developed at 360 GPM (518.400 gallons per day) capacity, for the start of the prolonged pump test at 9:45 A.M. on April 1, 1984. The 8-inch diameter pump rate was based on an extrapolated pump rate from the 2-1/2" test well 84-16.

During the pump test, which lasted 6 days, water level readings (drawdown measurements) in the 8-inch well and observation wells 2, 50, 325, 620, 1360 and 500 feet in distance were recorded.

Two observation wells, 84-19 & 84-20, were installed in the fine sands formation overlying the marine clays. The purpose of wells 84-19 and 20, were to determine the effect of puming within the confined aquifer on the overlying unconfined sand formations. A staff gauge was installed in Judes Pond to monitor any potential influence during the pumping test.

Recovery water level readings were measured in the same wells at the conclusion of the pump test, for 8.25 continuous hours on April 18, 1984. An arithmetic plot showing the water level reading in selected observation wells, appears in Figure 1 (Appendix H).

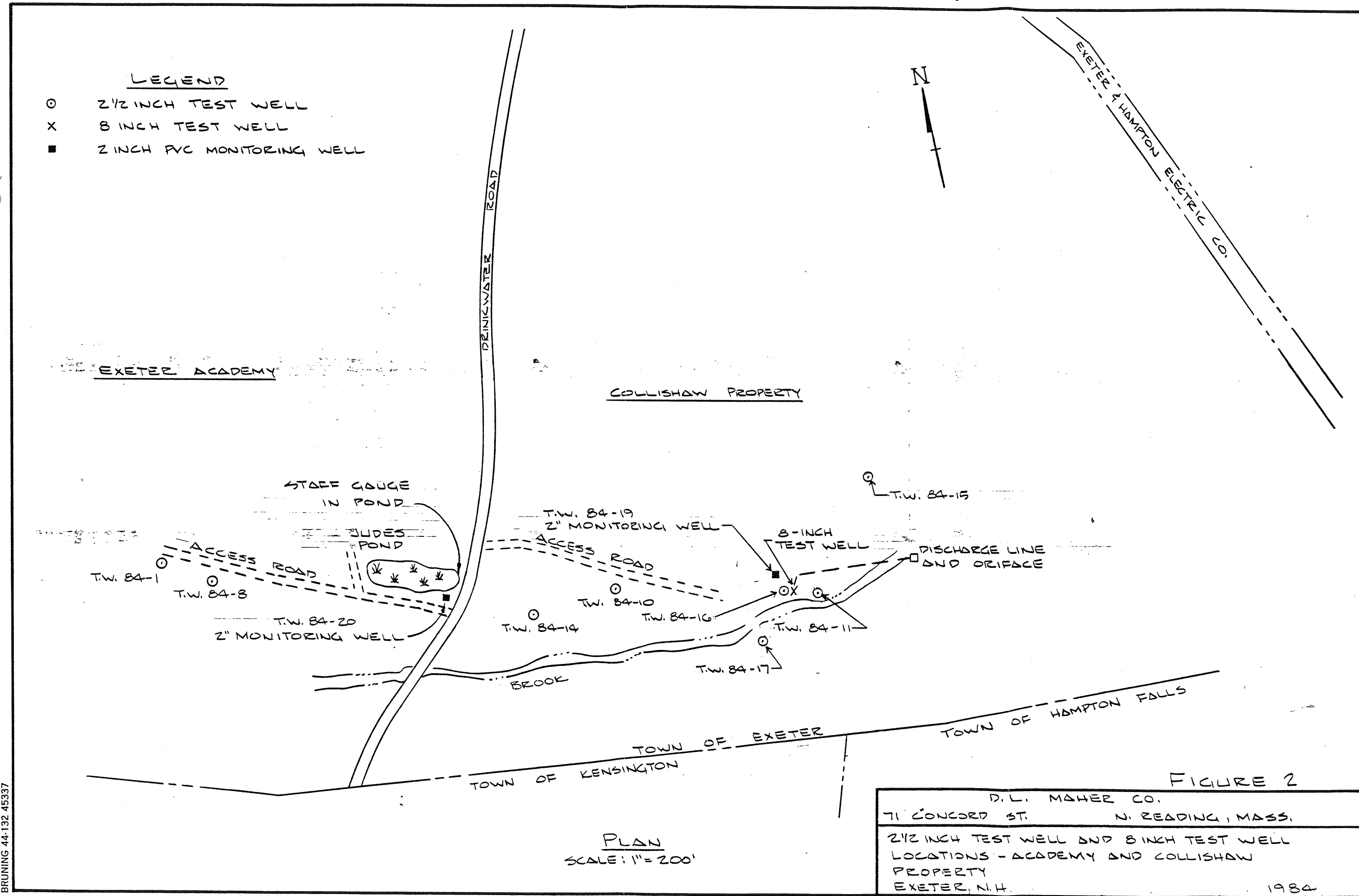
Water samples for selected parameters were taken after 1 and 4 hours on 4/11/84. Also, water samples were taken on April 13, 15 and 17. A complete Safe Drinking Water Act 1974 analysis, was taken on April 17, 1984. The results of these tests are included in Appendix I.

8-INCH TEST ANALYSIS

The record of the 8" pump test appears in Appendix J. an analysis of the pump test records showed a steady rate of decline in water levels in the observation wells, with stabilization beginning to occur after 6,975 minutes of pumping. The plot of pump test graphs may be found in Appendix H. The observation wells had shown signs of stabilization, indicating that the discharge versus recharge equilibrium was being approached in the aquifer.

Boundary conditions were not evident in the observation wells.

- LEGEND
- 2 1/2 INCH TEST WELL
 - X 8 INCH TEST WELL
 - 2 INCH PVC MONITORING WELL



PLAN
SCALE: 1" = 200'

FIGURE 2

D. L. MAHER CO.	
71 CONCORD ST.	N. READING, MASS.
2 1/2 INCH TEST WELL AND 8 INCH TEST WELL LOCATIONS - ACADEMY AND COLLISHAW PROPERTY EXETER, N.H.	
1984	

BRUNING 44-132 45337

The cone of depression was flat and extensive in distance, which is indicative of a confined aquifer (Fig. 3). Test well 84-14 was a partially penetrating well (90 ft. versus 137 for the 8"), and its characteristic drawdown is evident in Figure 3.

In figure 2, a semi-log plot of the total drawdown versus distance of each observation well is shown. The line of best fit (drawdown slope) was plotted between the observation wells, and projected to a point of zero on the distance coordinator. The projection shows a theoretical drawdown of approximately 46 feet and a specific capacity of 8.0 gallons per foot of drawdown, for a 24 inch diameter gravel packed well continuously pumping at 360 GPM. Aquifer transmissivity (permeability parameter) could not be accurately calculated by the distance drawdown method.

However, the transmissivity calculated by the time-drawdown and recovery method (Fig. 4 & 5), indicated a value of 1852 and 1458 ft²/day, respectively.

The storage coefficient calculated by the time drawdown method for observation well test well 11-84, is 1.1×10^{-3} . The relatively low transmissivity, storage co-efficient and flat cone of depression is indicative of a fully confined aquifer.

A realistic radius of influence cannot be calculated by the distance-drawdown method (Fig. 3), due to the aquifer being fully confined. However, during the constant discharge test, a drawdown of 15.13 feet was recorded at test well 8-84, located 1500 ft. to the west of the 8-inch well (Fig. 2). At 9:15 A.M. on April 17,

1984, the pump test was terminated and recovery water level readings were recorded (Fig. 6). The 8-inch diameter well had recovered within 23% of the original static water level, which may indicate that recharge to the aquifer is not derived from a westerly direction.

ACADEMY PROPERTY PUMP TEST - In order to determine the groundwater hydraulics at test well 8-84, a 24-hour sustained pumping test was performed. The test well group at 8-84 was pumped at 98 GPM. Drawdowns of 6'-2" and 2' - 3-1/2" were recorded at test well 84-8, and the 8-inch well, respectively. A specific capacity of 15.9 gal/ft/dd, was obtained for test well 8-84, while pumping at 98 GPM. the record of the 24 hour pump test can be found in Appendix H.

WELL YIELDS

Since the aquifer underlying the Academy and Collishaw sites is confined and interconnected, pumping of permanent wells installed at the 8-inch test well site and test well 8-84, would influence each other. The degree of influence is dependent on the pumping rates.

At the site of the 8-inch test well, we would recommend that an 18" x 12" gravel packed well constructed to a depth of 137 feet, with 10 feet of stainless steel well screen, would yield 500 GPM (or about 720,000 gallons per day) based on a normal operating day.

If a production well of similar design is installed at test well 8-84 on the Academy property, a combined yield of 700-750 GPM could be developed under normal operation.

WATER QUALITY ANALYSIS

Water quality samples for routine chemical analysis were taken at selected intervals of 1/2 and 4 hours, on April 11, 1984. Samples were also taken on April 13, 15 and 18 (conclusion of pumping test).

Water analysis indicates the quality of water at the 8-inch test well is low in iron and manganese (non-corrosive), and meets the EPA Safe Drinking Water Act standards.

Water analysis for test well 8084 obtained during the 24-hour pumping test on the Academy property, indicates that iron is 0.12 mg/L (limit is 0.03), and manganese is 0.05 mg/L (limit is 0.05). The nitrate levels were acceptable at both sites.

PUMP TEST STADIUM WELL - A 2-1/2" diameter test well 84-18 was installed to a depth of 49'-0" approximately 10 feet from the stadium well. A test well screen was set and exposed at 48, 42 and 30 feet in depth. At each depth, water samples were taken and analyzed at the Exeter water treatment plant. Also, a final sample was analyzed by the laboratory at Water Supply and Pollution Control.

The purpose of the test well was to see if the concentrations of the iron and manganese, would decline with a decrease in depth. The stadium well has an iron level of 1.32 mg/L, and a manganese

level of 0.36 mg/L.

In test well 84-18, it was found that at a depth of 30 feet, the iron was reduced to 0.19 mg/L. However, the manganese stayed relatively the same at 0.5 mg/L.

RECOMMENDATIONS

The Town of Exeter will always have a growing demand for potable high quality water supplies. Therefore, a continuing program in which potable water supply sources are identified, test drilled and protected should be implemented. Once a water supply source is lost due to development or contamination, it is exceedingly difficult to rehabilitate the source. We recommend the following:

1. Purchase the Collishaw Property in order to protect the aquifer from development. Obtain an option on the Exeter Academy Property.
2. Perform a 2-1/2" test well exploration program on the Grappone property (Brentwood-Pine Rd.), to determine the aquifer well yield and water quality.
3. Conduct an 8-inch diameter pump test on the Bell and Flynn Property (Rte. 101-Brentwood), to determine the aquifers safe sustainable well yield and water quality.
4. Insure that no industrial subsurface disposal systems be located within the potential well sites cone of depression, and hydraulically up-gradient from the said well site.

5. Perform an engineering cost-effective analysis comparing the Brentwood and Drinkwater sites.
6. Perform 6-inch diameter test wells in bedrock at the Jurewicz site. This site will become attractive if water mains are extended into Brentwood.
7. During the installation and pumping of the 8-inch test well on the Collishaw Property, there did not appear to be a hydraulic connection between the aquifer underlying the marine clays and the overlying shallow fine sands. However, it is recommended to install a test broing adjacent to the Gorrill Pond to determine the lithology and if a hydraulic connection exists between the aquifers.
8. The recommended well size construction for the Collishaw site is an 18" x 12" gravel packed well, yielding 500 GPM installed to a depth of 137 feet with 10 feet of stainless steel well screen.
9. Once the Collishaw Well is installed and a long term water quality trend is established, a production well of similar design should be installed at the Academy site. Manganese levels (0.05 mg/L) are at the EPA drink water limit. However, simple blending of the Collishaw Well with the Academy Well would reduce the manganese levels below 0.05 mg/L.
10. It is strongly believed that a low chlorine residual 0.5 mg/L would successfully reduce the hydrogen sulfide odor at the Larry Lane Well. Sequestering of the well water using

phosphates will eliminate any problems associated with 0.1 mg/L manganese concentrations.

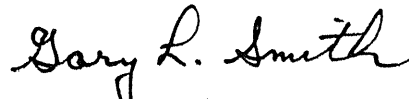
11. 2 test wells (2-1/2 inch diameter) installed to a depth of 30 feet, should be placed radially around the stadium well in order to locate a ground water source low in manganese.
12. A hydrogeologic/engineering feasibility study should be performed evaluating items 9-10. This study should evaluate the feasibility of piping the Larry Lane, a new shallow stadium and Drinkwater Rd. wells directly into the water treatment plant. This arrangement deserves strong consideration as the well water entering the plant will be virtually free of iron and lower in manganese than the present Exeter River surface supply. The ground water supply will be colder with no turbidity as compared to the warm temperature and turbid Exeter River waters.

Any potential aquifer contamination or increase in mineral concentrations could be readily corrected by direct piping of the wells into the water treatment plant. If the Brentwood aquifers become contaminated, direct piping of the ground water supply into the treatment plant would not be feasible due to the aquifers location in relation to the water distribution system.

The D.L. Maher Co. wishes to express our appreciation for the assistance and courtesies extended to us by Mr. Donald Chick, Mr. Robert Stroudt, Mr. Rober Tucker and the Exeter Board of Selectmen.

Very truly yours

D. L. MAHER COMPANY



Gary L. Smith
Hydrogeologist

GLS/em

APPENDIX A

Job. No. RW2-035-83

Driller KEVIN KIRBY

Machine No. 82-5

Date Started FEB. 9, 1983

Date Completed FEB. 15, 1983

Name TOWN OF EXETER N.H.

Mailing Address _____

Well Drilled at TEST WELL # 1

Depth of Well 463'

Depth to Ledge 18'

Feet of Pipe 32' OF 6"

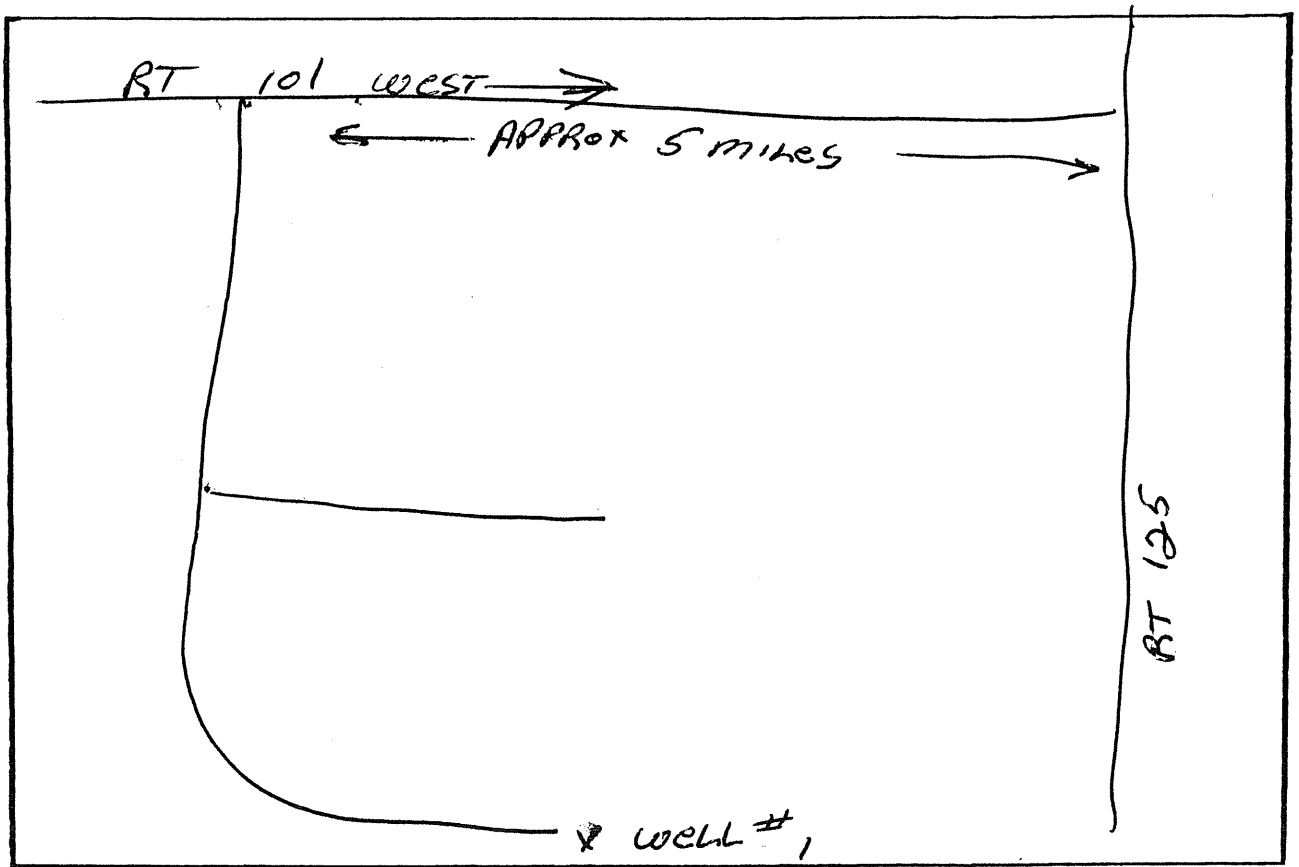
Static Water Level 7'

Gallons per Minute 4

Drilling was completed today on the above well. We hereby accept this well and agree to amke payment as per contract to the Domestic Wells Inc., Bolton, Ma. Total amount Due \$_____.

Signed _____

Location of job by street names or route number and show location of well on property.



Job. No. RW2-035-83

Driller KEVIN KIRBY

Machine No. 82-5

Date Started FEB. 16, 1983

Date Completed FEB. 17, 1983

Name TOWN OF EXETER N.H.

Mailing Address _____

Well Drilled at TEST WELL # 2

Depth of Well 323'

Depth to Ledge 1

Feet of Pipe 17' 6" OF 6"

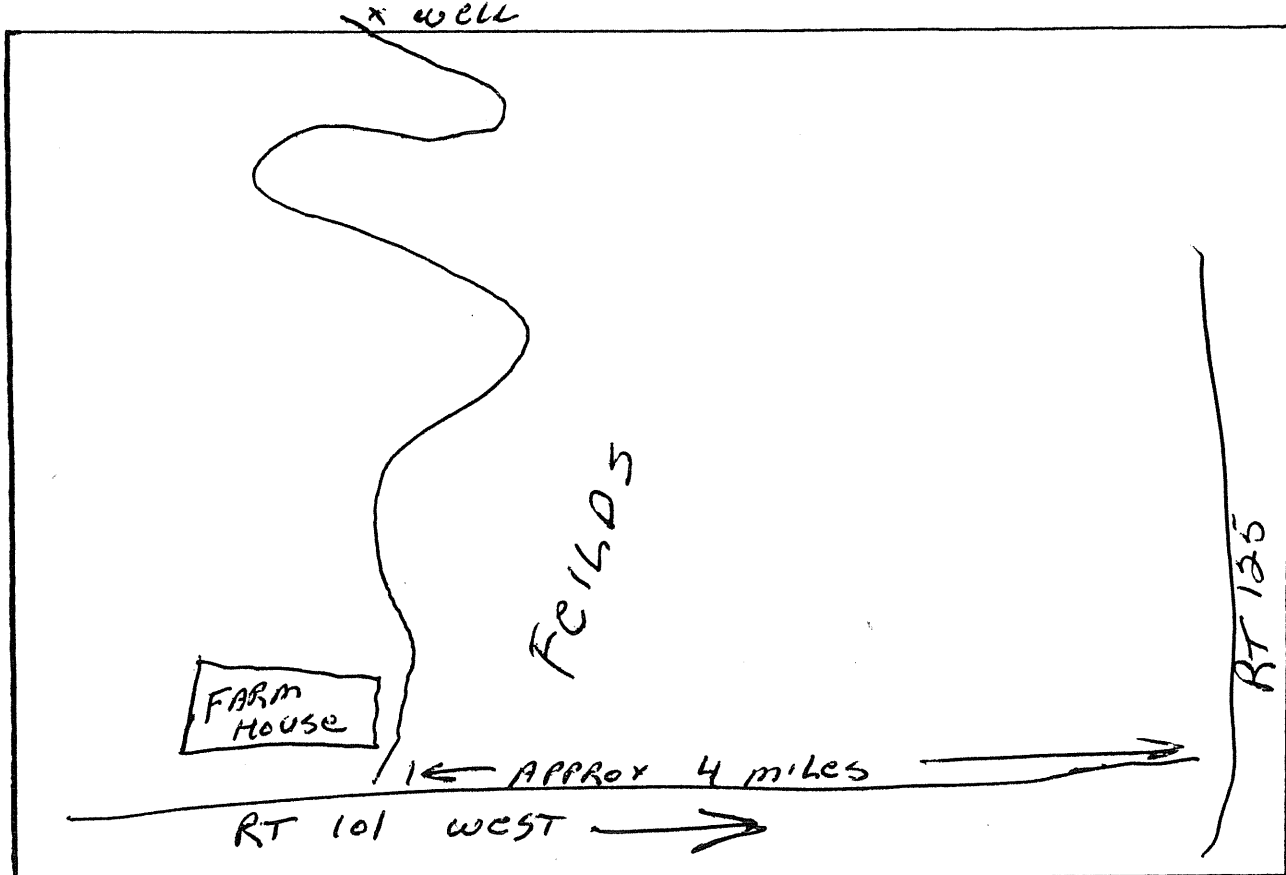
Static Water Level 7'

Gallons per Minute 3

Drilling was completed today on the above well. We hereby accept this well and agree to amke payment as per contract to the Domestic Wells Inc., Bolton, Ma. Total amount Due \$ _____.

Signed _____

Location of job by street names or route number and show location of well on property.



Job. No. T3-056-83

Driller Jim Ash

Machine No. CP650

Date Started JUNE 1, 1983

Date Completed JUNE 3, 1983

Name Town of Exeter N.H.

Mailing Address _____

Well Drilled at TW-3

Depth of Well 400'

Depth to Ledge 75'

Feet of Pipe 85'

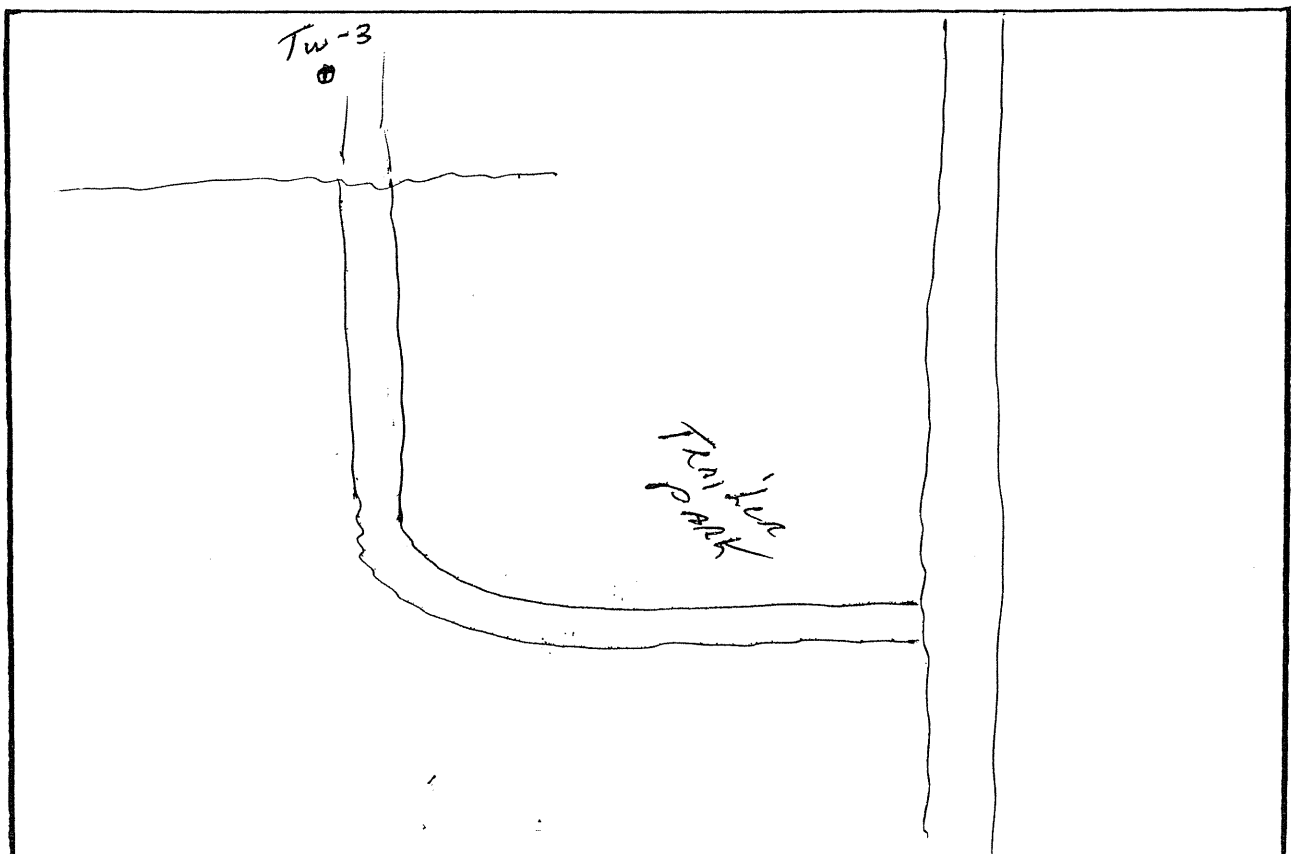
Static Water Level 20'

Gallons per Minute 1

Drilling was completed today on the above well. We hereby accept this well and agree to amke payment as per contract to the Domestic Wells Inc., Bolton, Ma. Total amount Due \$_____.

Signed _____

Location of job by street names or route number and show location of well on property.



Job. No. RW2-035-83A

Driller Jim Ash

Machine No. CP650

Date Started Jan 9, 1984

Date Completed JAN 13, 1984

Name Town of Exeter, N.H.

Mailing Address Well No. 4

Well Drilled at Howard property, off RT. 101, Exeter, N.H.

Depth of Well 535'

Depth to Ledge 14'

Feet of Pipe 20' 6" Steel

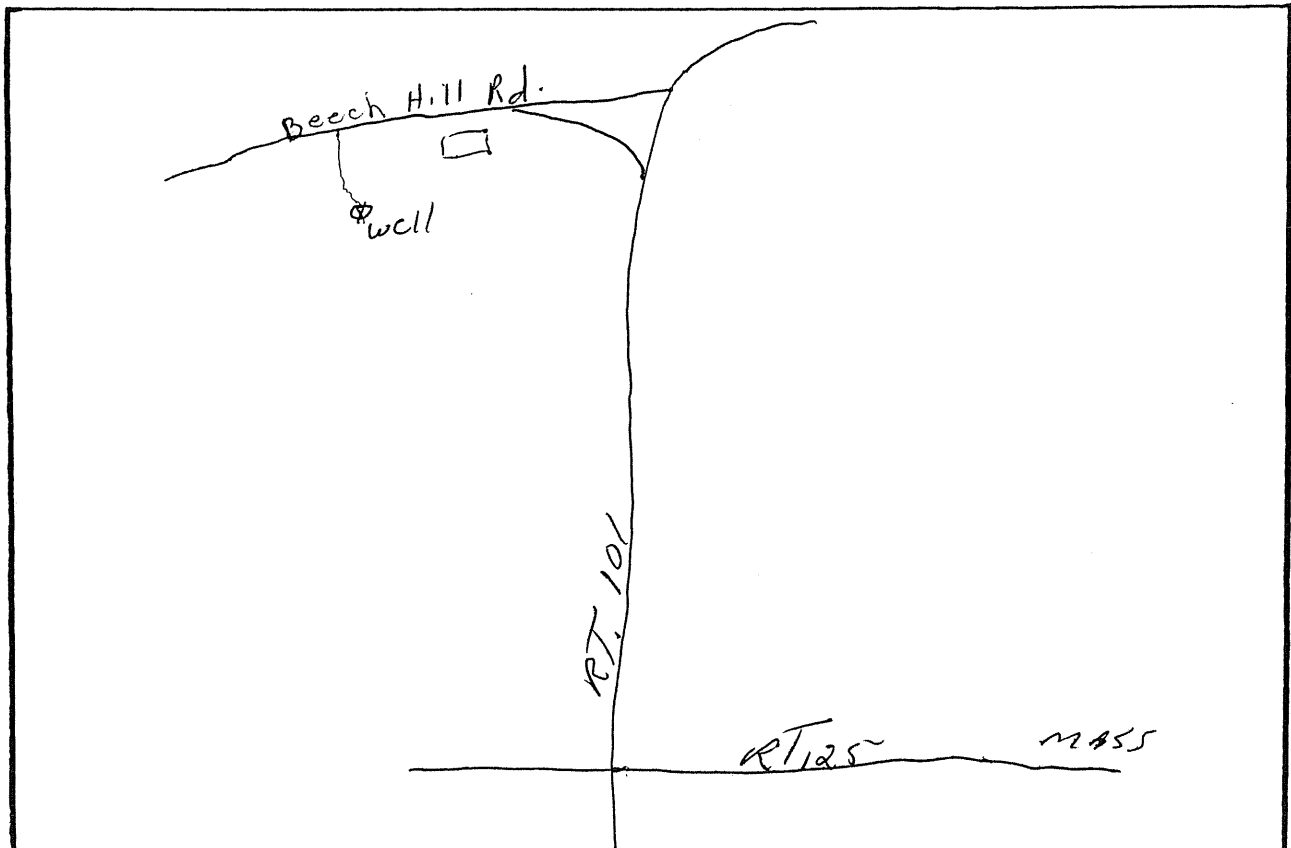
Static Water Level 3'

Gallons per Minute 90+

Drilling was completed today on the above well. We hereby accept this well and agree to amke payment as per contract to the Domestic Wells Inc., Bolton, Ma. Total amount Due \$ _____.

Signed _____

Location of job by street names or route number and show location of well on property.



D.L. MAHER COMPANY
P.O. Box 127
71 Concord Street
North Reading, MA 01864
(617) 933-3210

JOB No. _____

Driller Jim Ash

Machine No. 825 CP650

Date Started MARCH 12, 1984

Date Completed MARCH 16, 1984

NAME Town of Exeter, N.H.

Mailing Address _____

Well Drilled at Test Well #5 ^{Houseed property} off RT. 101, Exeter, N.H.

Depth of Well 600'

Depth to Ledge 10'

Feet of Pipe 20'

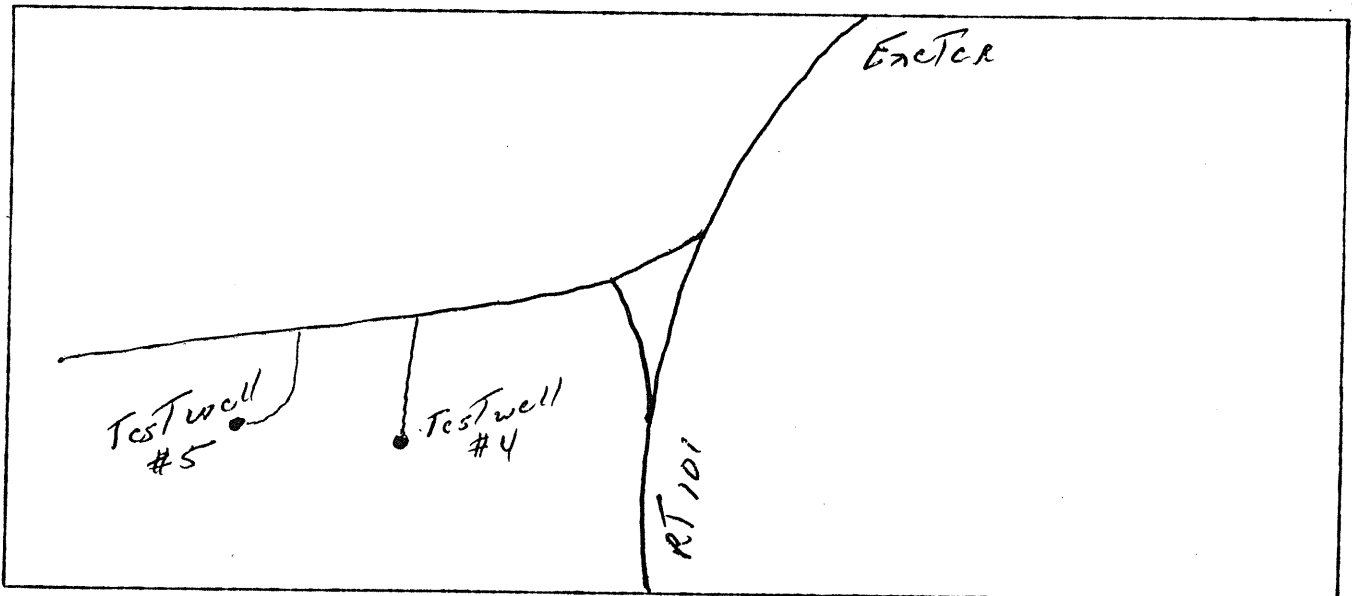
Static Water Level 3'

Gallons per Minute 25

Drilling was completed today on the above well. We hereby accept this well and agree to make payment as per contract to the D.L. Maher Co., North Reading, MA. Total amount due: \$ _____

Signed: _____

Location of job by street names or route number and show location of well on property.



APPENDIX B

RAI

FILE NO.	E.J.M.	D.L.M.	A.L.A.	J.T.M.	R.L.S.	R.C.H.	F.L.K.	T.C.	P.A.S.	A.P.S.
	✓					✓			✓	✓
	2/10		2/10			2/10			2/3	4/13

FEB 10 1984

Resource Analysts, Incorporated

Box 4778 Hampton, NH 03842

(603) 926-7777

TO:

Mr. Gary Smith
 DL Maher Company
 71 Concord Street
 North Reading, MA 01864

PO #verbal

Date Received: 1-23-84

Lab Number: 3115

Date Reported: 2-9-84

IDENTIFICATION

Exeter 6" Well Water Sample

Howard Property

PARAMETER

SAMPLE DESIGNATION

method

Exeter 6" Well Water

Flouride (mg/L)	413A,C	1
Arsenic, total (mg/L)	304	<0.005
Iron, total (mg/L)	303A	0.11
Manganese, total (mg/L)	303A	0.022
Sodium, total (mg/L)	303A	20

Clarke/Van Kouwenberg

ANALYST

Russell D. Taylor

DIRECTOR



STATE OF MAINE
DEPARTMENT OF HUMAN SERVICES
AUGUSTA, MAINE 04333



JOSEPH E. BRENNAN
GOVERNOR

MICHAEL R. PETIT
COMMISSIONER

RADON WATER ANALYSIS

Sample No. 51223

The Radon-222 concentration in your water sample is calculated to be 1600 + 200 picocuries of radon per liter of water. The first number is the calculated radon concentration; the second represents the statistical range within which we are 95% certain the actual value lies. A picocurie is one trillionth (0.000000000001) of a curie; the standard unit for measuring radioactivity.

There is currently no federal or state drinking water standard for radon. It is generally accepted that any exposure to radiation will produce some effect; the difficult part is determining the exposure level at which a significant health effect might occur. As with all risks taken as part of our everyday life, the ultimate decision as to which risks are acceptable or unacceptable lies with the individual.

To assist you in evaluating the potential risk from your radon concentration we have enclosed a booklet prepared by our office and the University of Maine. This booklet addresses what radon is; where it is found; some average levels; the perceived health risks, and the current treatment methods. We hope that this publication will answer any questions you may have.

The Department recommends that individuals with radon concentrations in water above 20,000 picocuries/liter consider having their house tested for airborne radon. This service is available through the State Public Health Laboratory for \$30.00 after October 1, 1983.

If you have any further questions regarding your radon analysis please contact the Division of Health Engineering at 289-3826.

APPENDIX C

D. L. MAHER CO. LOG OF TEST WELL

Log of Well for Exeter Test No. 11-1-82
 Address
 Well located at Grapponne Sand Pit Exeter County, State of N.H.
 Date Drilling started 8/12/82 Date Test Hole Completed 8/13/82
 Total depth to bottom of Well 71' Diameter Test Hole 2 1/2"
 Water stands when not pumping feet inches from the surface of the ground.

EACH STRATUM	DEPTH OF STRATA	FORMATION FOUND EACH STRATUM	
0'	21'	Fine brn sand mixed with gray clay	Did Well Clear Up?
21'	56'	Fine brn sand, Traces of clay + silt	How Long?
56'	63'	Fine gray sand mixed with gray clay, some coarse sand + broken gravel	Time Pumped?
63'	71'	Fine To med gray sand some coarse sand	Drawdown Ft. In.
			Capacity
			Time Required for Recovery?
			Was Well Pulled? Yes
			Observation What Depth?
			Was Observation Well Pulled?
			Map of Location
			<p>The map shows a 'Gravel Pit' with an 'Access Rd' leading to it. To the right is a 'Pond'. The area is labeled 'Woods' and 'Drentwood'. A 'Town line' is indicated on the right side, with 'Exeter' written below it. A 'Pine Rd' is labeled on the left side. A small '11-1-82' is written in the top right corner of the map area.</p>

Remarks and opinion of Test

Driller Joe Anderson
 Helpers Bill Callahan

D. L. MAHER CO.

LOG OF TEST WELL

Log of Well for Exeter N.H. Test No. # 2-3 # 4

Address

Well located at Grapponee Sand Pit, Exeter County, State of N.H.

Date Drilling started 8/16/82 Date Test Hole Completed 8/16/82

Total depth to bottom of Well Diameter Test Hole 2 1/2"

Water stands when not pumping feet inches from the surface of the ground.

EACH STRATUM	DEPTH OF STRATA	FORMATION FOUND EACH STRATUM	
Well # 2			Did Well Clear Up?
0'	28'	Clay, some fine brn sand + silt, 28' Refusal	How Long?
		Pulled well	Time Pumped?
Well # 3	19'	Refusal, pulled well	Drawdown Ft. In.
			Capacity
Well # 4	18'	Refusal, pulled well	Time Required for Recovery?
			Was Well Pulled?
			Observation What Depth?
			Was Observation Well Pulled?
			Map of Location
			<p>The map shows a rectangular area labeled 'Gravel Pit' with an 'Access Rd' leading to it from the bottom. To the right is an area labeled 'Woods' containing a 'Pond'. A vertical line on the right side is labeled 'Town Line'. The bottom right corner is labeled 'Brentwood Ex'.</p>

Remarks and opinion of Test Pulled all casing

Driller Joe Anderson
 Helpers Bill Callahan

D. L. MAHER CO. LOG OF TEST WELL

Log of Well for Exeter N. H. Test No. # 5-82
 Address Pine Road
 Well located at L.P. Trucking in Exeter County, State of N.H.
 Date Drilling started 8/17/82 Date Test Hole Completed 8/18/82
 Total depth to bottom of Well 48' Diameter Test Hole 2 1/2"
 Water stands when not pumping feet inches from the surface of the ground.

EACH STRATUM	DEPTH OF STRATA	FORMATION FOUND EACH STRATUM	
0'	2'	Peat	Did Well Clear Up?
2'	35'	Fine brn sand + clay, some silt	How Long?
35'	42'	Fine brn sand + clay, some coarse sand + fine gravel	Time Pumped?
42'	48'	Fine To med brn sand, some coarse sand, Fine To med gravel, Traces of silt + clay	Drawdown Ft. In.
			Capacity
			Time Required for Recovery?
			Was Well Pulled? Yes
			Observation What Depth?
			Was Observation Well Pulled?
			Map of Location
			# 5-82

Remarks and opinion of Test

Driller Joe Anderson
 Helpers Bill Callahan

APPENDIX D

D. L. MAHER CO.

LOG OF TEST WELL

T3-0-56

Log of Well for EXETER N.H. Test No. 83-1
 Address _____
 Well located at OFF PICK POCKET RD in EXETER County, State of N.H.
 Date Drilling started 3-3-83 Date Test Hole Completed 3-4-83
 Total depth to bottom of Well 81' Diameter Test Hole 2 1/2"
 Water stands when not pumping 24' feet 6" inches from the surface of the ground.

EACH STRATUM	DEPTH OF STRATA	FORMATION FOUND EACH STRATUM	
0'	21'	BROKEN STONES WITH HARD BRN CLAY	Did Well Clear Up? - - - -
21'	28'	BRN CLAY & FINE BRN SAND	How Long? -
35'	49'	FINE BRN SAND	Time Pumped? -
49'	63'	FINE BRN SAND & BRN CLAY	Drawdown - Ft. In.
63'	80'	FINE BRN SAND & BRN SILT	Capacity -
	81'	REFUSAL.	Time Required for Recovery?
			Was Well Pulled? <u>Yes</u>
			Observation <u>No</u> What Depth?
			Was Observation Well Pulled?
			Map of Location
		Pulled Pipe out.	

Remarks and opinion of Test Pipe drove very hard the first 35'

Driller T. PELZAR
 Helpers B. P. BISHOP

D. L. MAHER CO.

LOG OF TEST WELL

T3-0-56

Log of Well for EXETER N.H. Test No. 83-1

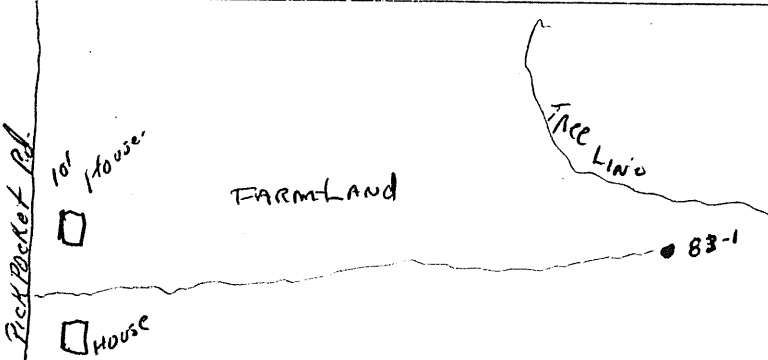
Address

Well located at OFF Pick Pocket Rd in EXETER County, State of N.H.

Date Drilling started 3-3-83 Date Test Hole Completed 3-4-83

Total depth to bottom of Well 81' Diameter Test Hole 2 1/2

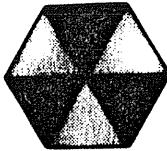
Water stands when not pumping 24' feet 6" inches from the surface of the ground.

EACH STRATUM	DEPTH OF STRATA	FORMATION FOUND EACH STRATUM	
0'	21'	BROKEN STONES WITH HARD BRN CLAY	Did Well Clear Up? -
21'	28'	BRN CLAY & FINE BRN SAND.	How Long? -
35'	49'	FINE BRN SAND	Time Pumped? -
49'	63'	FINE BRN SAND & BRN CLAY	Drawdown - Ft. In.
63'	80'	FINE BRN SAND & BRN SILT	Capacity -
	81'	REFUSAL.	Time Required for Recovery?
			Was Well Pulled? <u>Yes</u>
			Observation <u>No</u> What Depth?
			Was Observation Well Pulled?
			Map of Location
		Pulled Pipe out.	

Remarks and opinion of Test Pipe drove very hard the first 35'

Driller T. PELZAR
 Helpers B. P. Bishop

D.L. MAHER CO.



GROUND WATER DEVELOPMENT

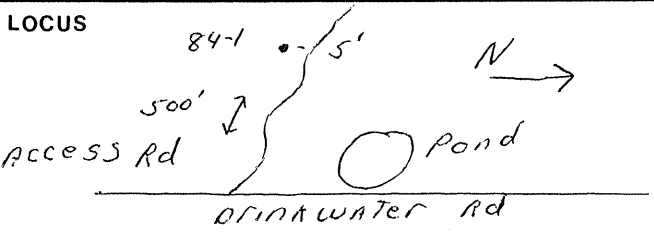
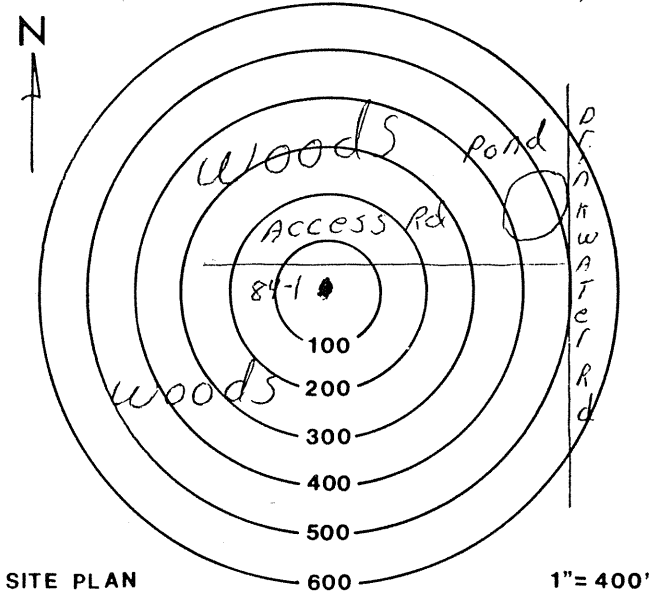
P.O. BOX 127

71 CONCORD STREET

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Test Well No. 84-1	D.L.M. Job No. T12-304
Driller B. Callahan	Helper T. Pelczar
Client EXETER N.H.	
Location EXETER Academy land	
Owner's Representative	
Date Started: 1/10/84	Date Finished: 1/13/84

DEPTH		Soil Classification	Loss of Wash Water
From	To		
0'	18'	Fine Brown Sand SLIT TRACES GRAY CLAY	NO
18'	97'	GRAY CLAY	NO
97'	114'5"	Fine Gray Sand with Coarse sand	yes
	114'6"	REFUSAL	



TIME AND MATERIALS

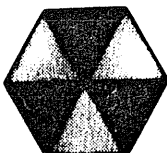
Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen			Hours Dev.	Hours Pumped	
					Length	Exposed	Material			
84-1	2 1/2	114'6"	113'2"	105'	6'	6'	GAU 40	5'3"	1/2	0
84-1	2 1/2	106'2"	106'2"	98'	6'	6'	GAU 20	5'3"	1 1/2	2

REMARKS:

Pump Test on Hole No. 84-1	Date 1/16/84			
Water Levels		Obs. No.	Obs. No.	Obs. No.
Time	G.P.M.	Vac		
Static	8'5"			
8'5"	50	19		

Water Sample	
Date 1/16/84	Time 1030
Sent To: Gary Smith	
Field Quality	
CO ₂	Taste
Fe	Odor
Mn	Hardness
Ph	Color

D.L. MAHER CO.
GROUND WATER DEVELOPMENT
P.O. BOX 127
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71 CONCORD STREET

Test Well No *84-2, 3, 4* D.L.M. Job No. *712-304-*

Driller *J Anderson* Helper *B Callahan*

Client *Exeter N.H.*

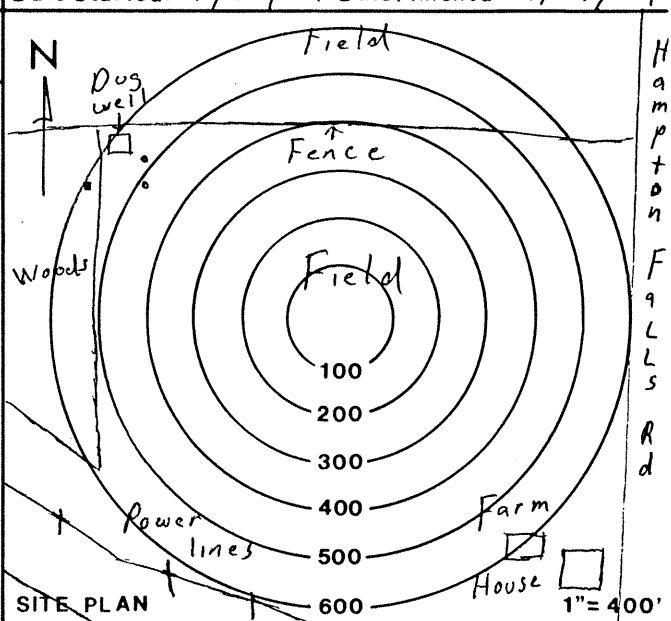
Location *Bennett Prop, Hampton Falls Rd*

Owner's Representative

Date Started: *1/16/84* Date Finished: *1/17/84*

2
3
4

DEPTH		Soil Classification	Loss of Wash Water
From	To		
0'	1'	Top soil	
1'	8'	brn clay, fine brn sand	
8'	20'6"	Fine To med brn sand, some fine gravel + clay	
	20'6"	Refusal	
	9'6"	Hardpan, pulled well	
	21'	went off boulder, pulled well	



TIME AND MATERIALS

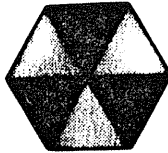
Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen				Hours Dev.	Hours Pumped
					Length	Exposed	Material	Slot Size		

REMARKS: *Did not set a screen # 2, pulled well*

Time	G.P.M.	Water Levels			Obs. No.	Obs. No.	Obs. No.
		Vac	Obs. No.	Obs. No.			
Static							

Water Sample	
Date	Time
Sent To:	
Field Quality	
CO ₂	Taste
Fe	Odor
Mn	Hardness
Ph	Color

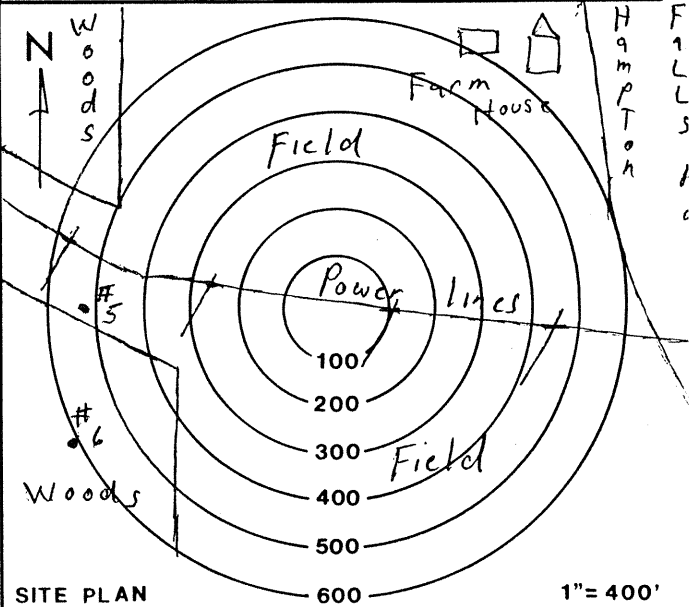
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GROUND WATER DEVELOPMENT



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Test Well No. # 84-5, 6 D.L.M. Job No. T12-204-2
Driller J Anderson Helper B Callahan
Client Exeter N.H.
Location Bennett Prop, Hampton Falls Rd
Owner's Representative _____
Date Started: 1/17/84 Date Finished: 1/18/84

DEPTH		Soil Classification	Loss of Wash Water
From	To		
# 5	17'	Hardpan, pulled well	
# 6	17'6"	Hardpan, pulled well	



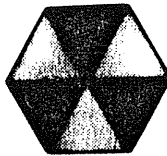
TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen			Hours Dev.	Hours Pumped
					Length	Exposed	Material		

REMARKS: Did not set any screens

Pump Test on Hole No. _____ Date _____						Water Sample	
Time	G.P.M.	Water Levels Vac	Obs. No.	Obs. No.	Obs. No.	Date	Time
						Static	
						Sent To:	
						Field Quality	
						CO ₂	Taste
						Fe	Odor
						Mn	Hardness
						Ph	Color

D.L. MAHER CO.



GROUND WATER DEVELOPMENT

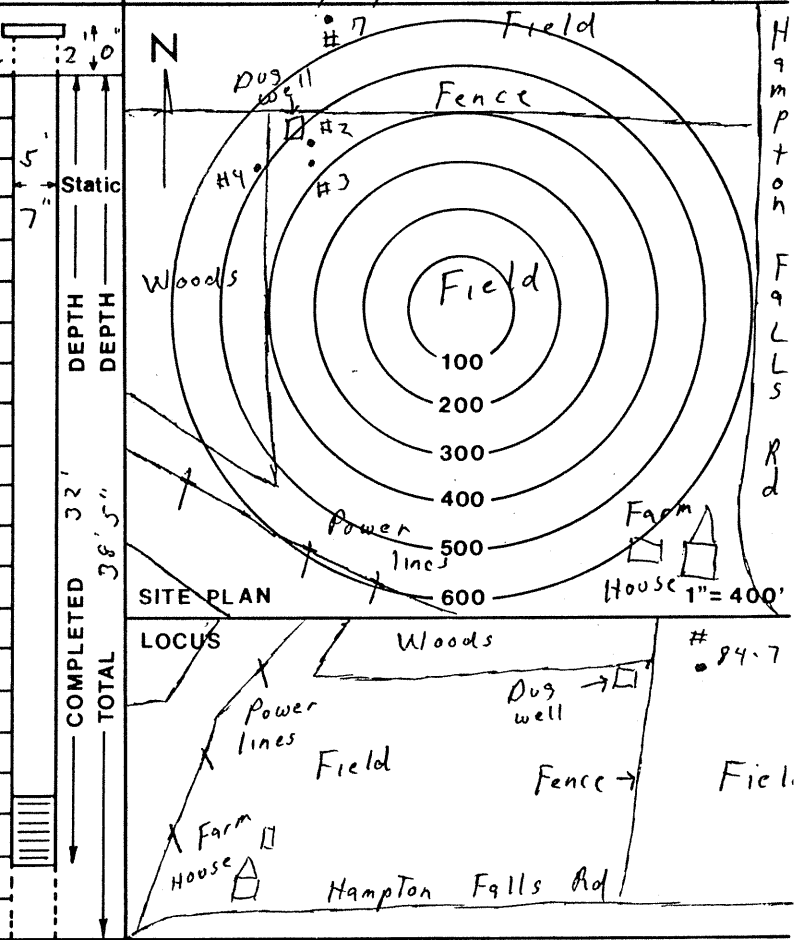
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Test Well No. 84-7 D.L.M. Job No. T12-304-8
 Driller J Anderson Helper B Callahan
 Client Exeter N.H.
 Location Bennett Prop, Hampton Falls Rd
 Owner's Representative
 Date Started: 1/18/84 Date Finished: 1/20/84

DEPTH	From	To	Soil Classification	Loss of Wash Water
	0'	1'	Top soil	
	1'	9'	Fine brn sand + silt, some coarse sand + gravel	No
	9'	20'	Fine To med brn sand, some sharp gravel + silt	No
	20'	32'	Fine To med brn sand some coarse sand + fine gravel, Traces of silt	Yes
	32'	38'5"	Fine To coarse brn sand + silt, some fine + bro gravel	Yes
	38'5"		Refusal	



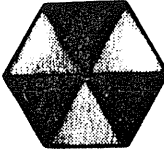
TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen					Hours Dev.	Hours Pumped
					Length	Exposed	Material	Slot Size	Riser		
84-7	2 1/2"	38'5"	35'	28'4"	6	6	1 1/4" galv	80	5'3"	1	0
Reset 84-7	2 1/2"	32'	32'	28'4"	6	6	1 1/4" galv	60	5'3"	2	0

REMARKS: Removed casing and screen

Pump Test on Hole No. <u>No</u> Date _____						Water Sample <u>No</u>		
Time	G.P.M.	Water Levels		Obs. No.	Obs. No.	Obs. No.	Date _____	Time _____
		Vac					Sent To:	
Static	5'7"							
	1 1/2"	28"						
Field Quality								
CO ₂ _____				Taste _____				
Fe _____				Odor _____				
Mn _____				Hardness _____				
Ph _____				Color _____				

D.L. MAHER CO.



GROUND WATER DEVELOPMENT

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Test Well No. 84-8 D.L.M. Job No. T12-304-83

Driller J. Anderson Helper B. Callahan

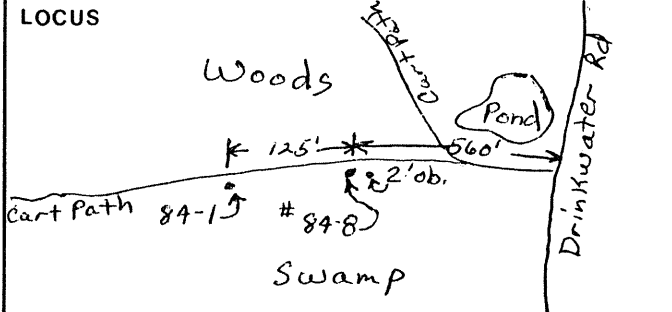
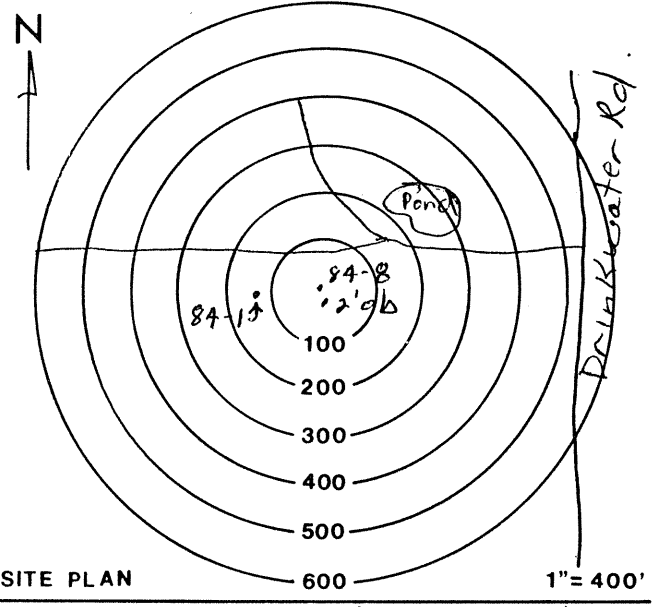
Client Exeter, N.H.

Location Exeter Academy Prop

Owner's Representative _____

Date Started: 1/23/84 Date Finished: 2/2/84

DEPTH		Soil Classification	Loss of Wash Water	Static
From	To			
0	1 1/2'	Top Soil		
1 1/2'	15'	Fine-med brn sand	yes	
15'	78'	Gray Clay	No	
78'	82'	Fine-Coarse gray sand-lenses sharp gravel/mixed w/clay	No	
82'	86'	Fine gray sand	No	
86'	89'	Fine-Med gray sand-Traces clay	No	
89'	98'	Fine gray sand/some coarse sand-traces of clay	Yes	
98'	121'	Fine-Coarse gray sand, fine gravel	Yes	
121'	124'	Fine-Coarse gray sand, fine gravel traces of clay	No	
	124'	Hardpan		



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen		Material	Slot Size	Riser	Hours Dev.	Hours Pumped
					Length	Exposed					
84-8	2 1/2"	124'	120'	119' 2"	6	6	1 1/4" gal	40	5'-3"	1	7 1/4
2'-0b	2 1/2"	120'	120'	112' 8"	6	6	1 1/4" gal	60	5'-3"	1 1/2	1/2

REMARKS: Pump test well 1/2 hr 2' ob dd. 2'-2 1/2", pump 2' ob 1/2 hr test well dd 2'-2 1/2" (60 gpm)

Pump Test on Hole No. 84-8 Date 2/2/84

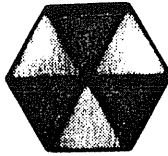
hr. Time	G.P.M.	Water Levels		
		Vac	Obs. No. 2' ob	Obs. No. 84-1 No.
Static	8'-10 1/2"			9'-3 1/2"
0845	60		2'-2 1/2"	4 1/2"
0915	60		2'-3"	6 1/2"
1015	60		2'-4 1/2"	8 1/2"
1115	60		2'-6"	11"
1245	60		2'-7 1/2"	1'-1"
1345	60		2'-8 1/2"	1'-2"
1505	60		2'-9"	1'-2 1/2"

up + 15'
tdown 1505
every 1510

1'-1" 9 1/2"
2' 1/2" 2 1/2"

Water Sample	
Date	<u>2/2/84</u> Time <u>3:00 P.M.</u>
Sent To:	<u>Gary L. Smith</u>
Field Quality	
CO ₂	Taste _____
Fe	Odor _____
Mn	Hardness _____
Ph	Color _____

D.L. MAHER CO.



GROUND WATER DEVELOPMENT

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Test Well No. 84-9 D.L.M. Job No. 712-304-83

Driller J Anderson Helper B Callahan

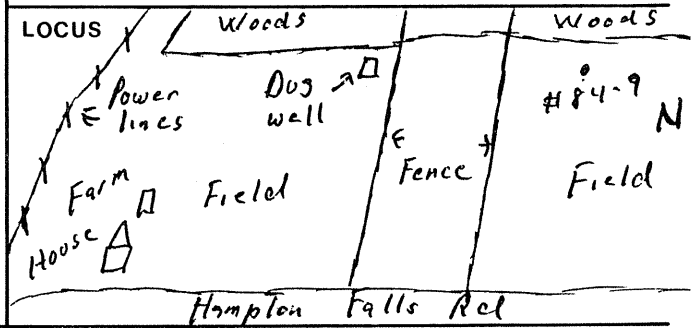
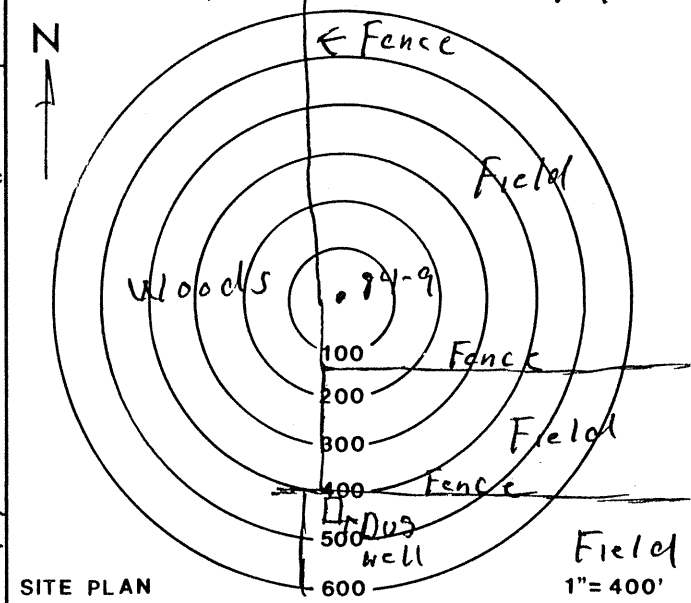
Client Exeter N.H.

Location Bennett Prop, Hampton Falls R.

Owner's Representative

Date Started: 2/2/84 Date Finished: 2/6/84

DEPTH		Soil Classification	Loss of Wash Water
From	To		
0'	1'	Top soil	
1'	12'	Fine brn sand, some coarse sand + fine gravel + brn silt	No
12'	23'	Fine To med brn sand some coarse sand + fine To med gravel	No
23'	28'	Fine To med brn sand some coarse sand + fine To med gravel, grayish brn silt	No
28'	44'	Fine To med brn sand + fine gravel mixed with gray silt	No
44'		Hard pan	



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen					Hours Dev.	Hours Pumped
					Length	Exposed	Material	Slot Size	Riser		
84-9	2 1/2"	44'	25'	21'4"	6'	6'	1 1/4" galv	40	5'3"	1/2	0
Reset 84-9	2 1/2"	19'	19'	14'2"	6'	6'	1 1/4" galv	40	5'3"	1/2	15 min

REMARKS: Well pump 10 gpm 28" vac at 19', pulled well

Pump Test on Hole No. <u>No</u> Date						Water Sample <u>No</u>		
Time	G.P.M.	Water Levels		Obs. No.	Obs. No.	Obs. No.	Date	Time
		Vac						
Static								

Sent To:

Field Quality

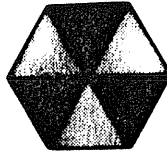
CO₂ _____ Taste _____

Fe _____ Odor _____

Mn _____ Hardness _____

Ph _____ Color _____

D.L. MAHER CO.



GROUND WATER DEVELOPMENT

P.O. BOX 127

71 CONCORD STREET

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Test Well No. # 84-10 D.L.M. Job No. T12-304-8

Driller J Anderson Helper B Callahan

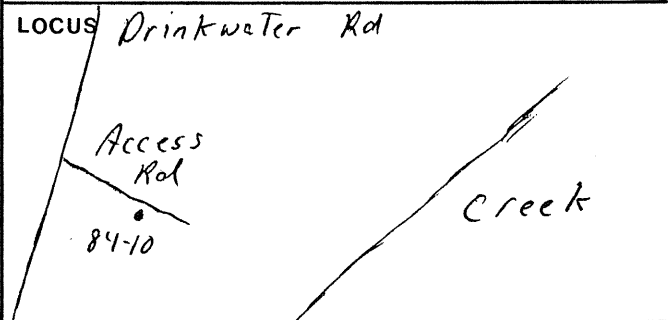
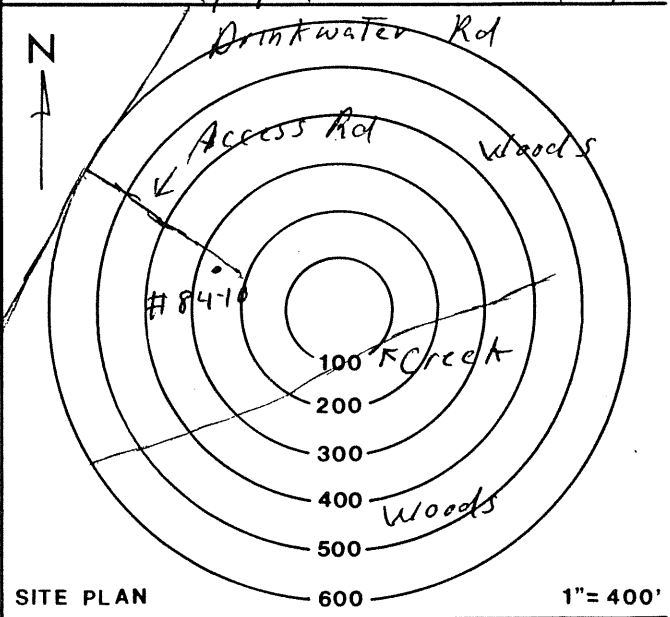
Client Exeter NH

Location Collishaw Prop., Drinkwater Rd

Owner's Representative

Date Started: 2/6/84 Date Finished: 2/10/84

DEPTH		Soil Classification	Loss of Wash Water
From	To		
0'	1 1/2'	Top soil	
1 1/2'	19'	Silty fine brn sand, some med sand	No
19'	112'	Gray clay, some gray silty sand	No
112'	116'	Fine brn + gray sand some med sand + fine gravel	No
116'	126'	Fine To med brn sand + fine gravel, some sharp + bro gravel	No
126'	137'	Fine To med gray sand, fine angular gravel, Trace of silt	No
137'	141'	Fine gray sand, some fine gravel	No
141'		NOT Refusal	



TIME AND MATERIALS

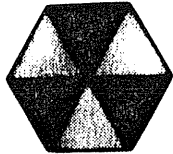
Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen					Hours Dev.	Hours Pumped
					Length	Exposed	Material	Slot Size	Riser		
10	2 1/2"	141'	125'	0'	12'	12'	1 1/4" galv	30 over 40	5'3"	1/2	0

REMARKS: Well was flowing, Polled well

Pump Test on Hole No. _____ Date _____						Water Sample No. _____		
Time	G.P.M.	Water Levels		Obs. No.	Obs. No.	Obs. No.	Date	Time
		Vac						
Static							Sent To:	
							Field Quality	
							CO ₂	Taste
							Fe	Odor
							Mn	Hardness
							Ph	Color

50' obs

D.L. MAHER CO.



GROUND WATER DEVELOPMENT

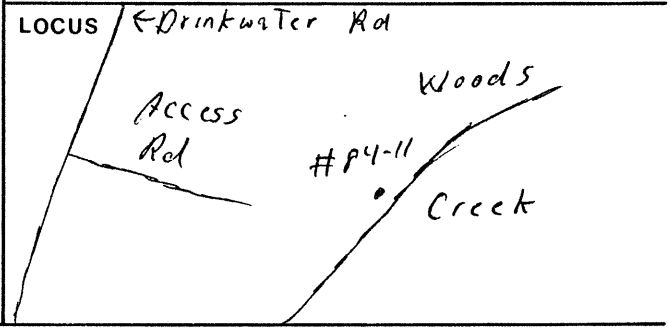
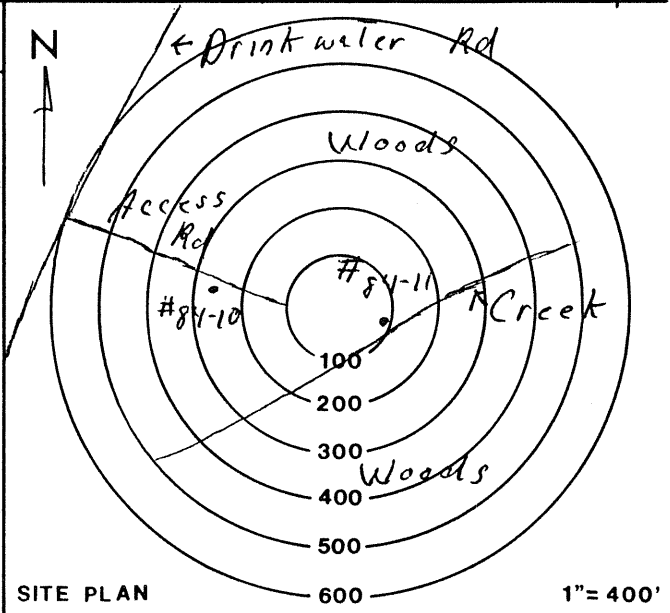
P.O. BOX 127

71 CONCORD STREET

NORTH READING • MA. 01864 • 617/933-3210

Test Well No. 84-11 D.L.M. Job No. 712-304-8
 Driller J Anderson Helper B Callahan
 Client Exeter N.H.
 Location Collishaw Prop, Drinkwater Rd
 Owner's Representative _____
 Date Started: 2/10/84 Date Finished: 2/22/84

DEPTH		Soil Classification	Loss of Wash Water	Static
From	To			
0'	1 1/2'	Top soil		1 1/2' 2' 5' 127' 132' COMPLETED TOTAL
1 1/2'	20'	Fine brn sand + silt some med sand	No	
20'	88'	gray clay + silt	No	
88'	96'	Silty fine gray sand traces of gray clay	No	
96'	109'	Fine brn sand + silt traces of gray clay	No	
109'	117'	Fine brn sand, some med + coarse sand	No	
117'	120'	Fine To med brn sand, some fine gravel Traces of brn silt	Yes	
120'	129'	Fine To coarse brn sand, some fine + bro gravel	Yes	
129'	132'	Hardpan	No	



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen					Hours Dev.	Hours Pumped
					Length	Exposed	Material	Slot Size	Riser		
84-11	2 1/2"	132'	127'	120' 5"	6'	6'	1 1/4" galv	50	5' 3"	2 1/2	7
206	2 1/2"	127'	127'	120' 2"	6'	6'	1 1/4" galv	60	5' 3"	1	1/2

REMARKS: Cross check 1/2 hr each, del 1 1/2" each, 5hr pump Test

Pump Test on Hole No. 84-11 Date 2/22/84

Water Sample

Time	G.P.M.	Water Levels		
		Vac	Obs. No. 2	Obs. # No. 84-8 No.
Static	2' 5"		del	del
0830	55	13"	1' 11"	
0900			2' 3"	
0930			2' 5 1/2"	2 1/2"
1030			2' 8"	
1130			2' 10 1/4"	
1230			3' 1"	6 1/2"
1300			3' 1 1/2"	

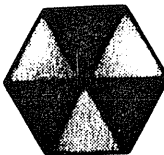
Date 2/17/84 Time 1230
 Sent To: Gary Smith
2/22/84, 1300 Gary Smith
 Field Quality _____
 CO₂ _____ Taste _____
 Fe _____ Odor _____
 Mn _____ Hardness _____
 Ph _____ Color _____

Started 0900

Recovered within 1' 6" after 5 min, after 2 hr 15 min

rec 1"

D.L. MAHER CO.



GROUND WATER DEVELOPMENT

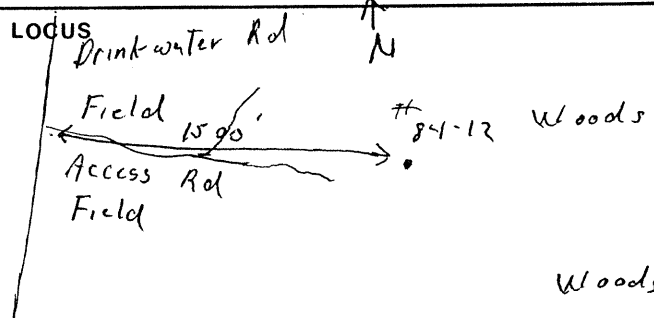
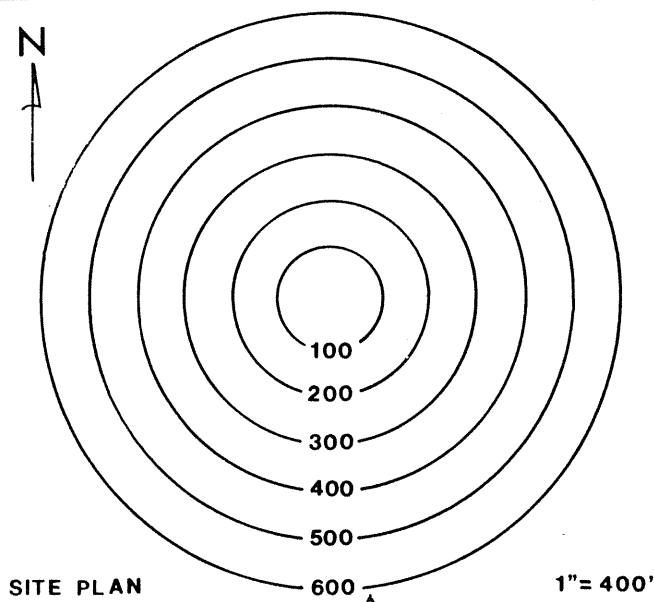
P.O. BOX 127

71 CONCORD STREET

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Test Well No. # 84-12 D.L.M. Job No. 712-304-83
 Driller J Anderson Helper B Callahan
 Client Exeter N.H.
 Location Town's Prop Drinkwater Rd
 Owner's Representative
 Date Started: 2/22/84 Date Finished: 2/27/84

DEPTH		Soil Classification	Loss of Wash Water	DEPTH	DEPTH
From	To				
0'	2'	Top soil		4'	Static
2'	19'	Fine brn sand, some med sand + silt	No	11"	
19'	113'	Gray clay + silt	No		
113'	121'	Fine To med sand, some coarse sand, Traces of fine gravel	Yes		
121'	123'	Hardpan			
				COMPLETED 119'	TOTAL 123'



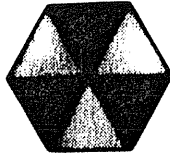
TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen					Hours Dev.	Hours Pumped
					Length	Exposed	Material	Slot Size	Riser		
84-12	2 1/2"	123'	119'	116'3"	6'	5'	1/4" 9914	30	5'3"	2	15 min

REMARKS: Pulled well

Pump Test on Hole No. _____ Date _____						Water Sample No. _____			
Time	G.P.M.	Water Levels			Obs. No.	Obs. No.	Obs. No.	Date	Time
		Vac	Obs. No.	Obs. No.				Sent To:	
Static	4' 11"								
	30	25"							
Field Quality									
CO ₂				Taste					
Fe				Odor					
Mn				Hardness					
Ph				Color					

D.L. MAHER CO.



GROUND WATER DEVELOPMENT

P.O. BOX 127

71 CONCORD STREET

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Test Well No. #84-13 D.L.M. Job No. T12-304-8

Driller J Anderson Helper B Callahan

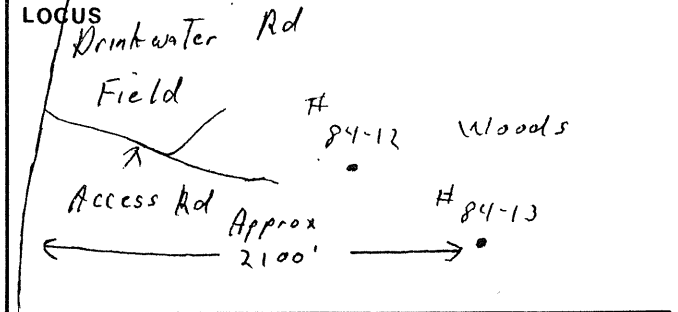
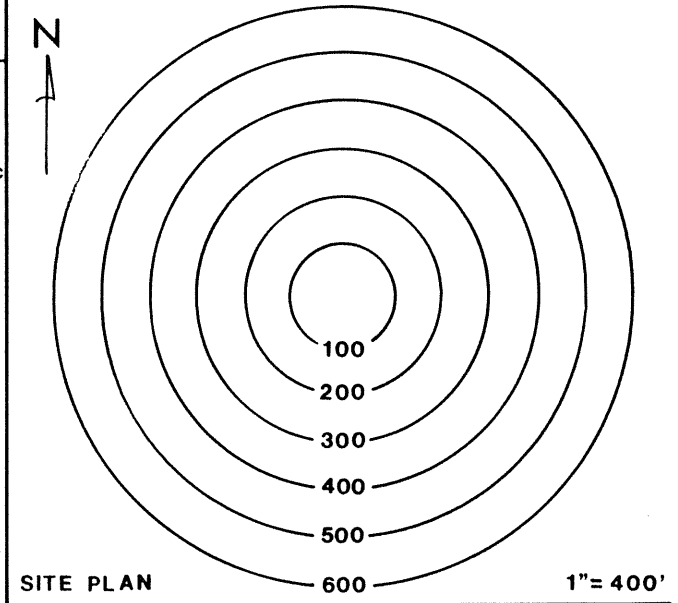
Client Exeter N.H.

Location Town's Prop Drinkwater Rd

Owner's Representative

Date Started: 2/29/84 Date Finished: 3/1/84

DEPTH		Soil Classification	Loss of Wash Water	Static
From	To			
0'	2'	Top soil		2'
2'	21'	Fine brn sand, some brn silt	No	
21'	29'	Fine gray sand, some silt + clay	No	5'
29'	92'	Gray clay + silt	No	
92'	96'	Fine to med gray sand some coarse sand + flat gravel	Yes	97'
96'	97'	Hardpan		
				COMPLETED
				TOTAL



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Length	Exposed	Screen Material	Slot Size	Riser	Hours Dev.	Hours Pumped

REMARKS: Did not set a screen, pulled well

Pump Test on Hole No. _____ Date _____						Water Sample No _____	
Time	G.P.M.	Water Levels			Date _____	Time _____	
		Vac	Obs. No.	Obs. No.			
Static							

Sent To: _____

Field Quality

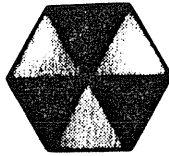
CO₂ _____ Taste _____

Fe _____ Odor _____

Mn _____ Hardness _____

Ph _____ Color _____

D.L. MAHER CO.

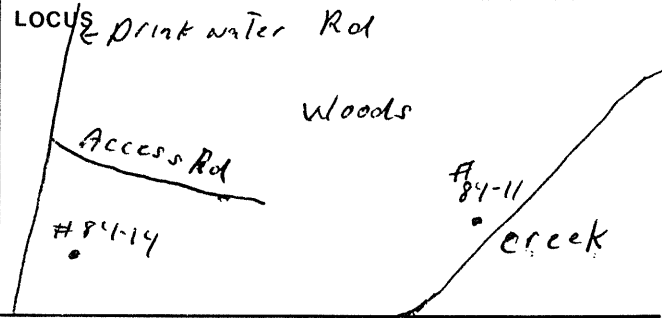
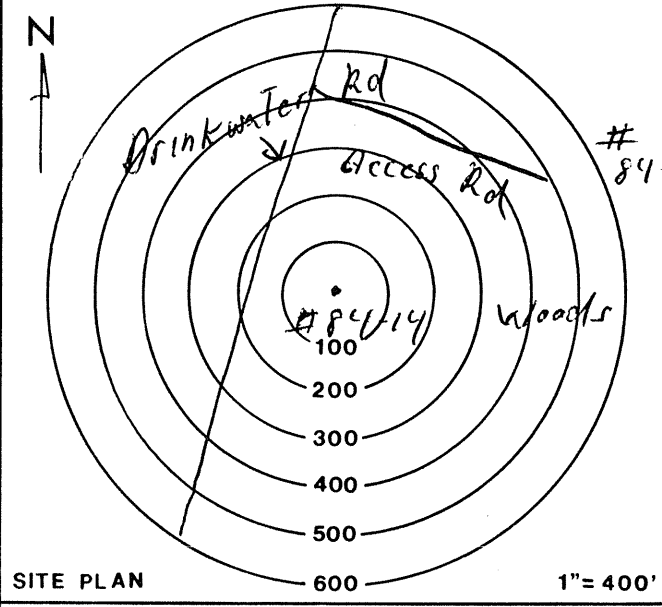


GROUND WATER DEVELOPMENT

P.O. BOX 127 71 CONCORD STREET
NORTH READING • MA. 01864 • 617/933-3210

Test Well No. # 84-14 D.L.M. Job No. T12-304-8
Driller J Anderson Helper B Callahan
Client Exeter N.H.
Location Collishaw Prop. Drinkwater
Owner's Representative
Date Started: 3/7/84 Date Finished: 3/8/84

DEPTH		Soil Classification	Loss of Wash Water
From	To		
0'	14'6"	Fine brn sand, some med sand + silt	No
14'6"	75'	Gray clay + silt	No
75'	77'6"	Fine To coarse brn sand + brn clay, some fine + bro gravel	No
77'6"	92'	Fine To coarse brn sand, some flat + broken gravel, trace of silt	Yes
92'		NOT Refusal	



TIME AND MATERIALS

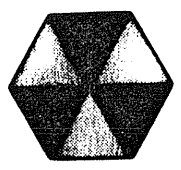
Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen			Riser	Hours Dev.	Hours Pumped	
					Length	Exposed	Material				
84-14	2 1/2"	92'	89'6"	84'9"	5'	5'	1 1/4" galv	50	5'3"	2	15 min

REMARKS: Well drove hard from 88'-92'

Pump Test on Hole No. _____ Date _____					Water Sample No. _____	
Time	G.P.M.	Water Levels			Date	Time
		Vac	Obs. No.	Obs. No.		
Static	6'6"					
	10	26"				
Field Quality						
CO ₂ _____			Taste _____			
Fe _____			Odor _____			
Mn _____			Hardness _____			
Ph _____			Color _____			

300' 06"

D.L. MAHER CO.



GROUND WATER DEVELOPMENT

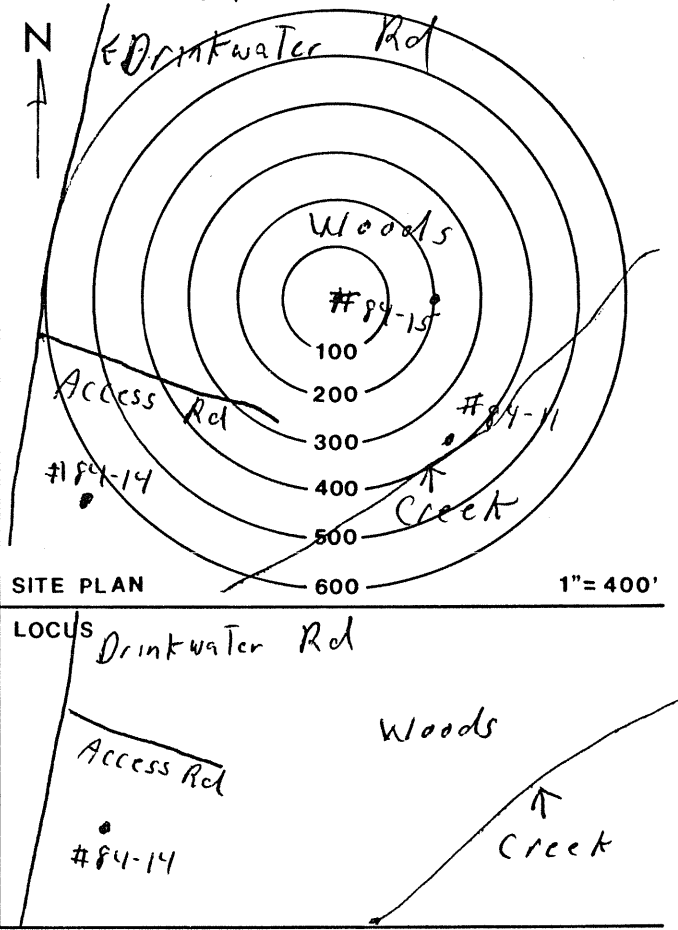
P.O. BOX 127

71 CONCORD STREET

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Test Well No. #84-15 D.L.M. Job No. T12-304-8
 Driller J Anderson Helper B Callahan
 Client Exeter N.H.
 Location Collishaw Prop, Drinkwater Rd
 Owner's Representative
 Date Started: 3/9/84 Date Finished: 3/19/84

DEPTH		Soil Classification	Loss of Wash Water	1' 10"
From	To			
0'	1 1/2'	Top soil		
1 1/2'	26'	Fine brn sand, some med sand + brn silt	No	2'
26'	39'	Fine gray sand, silt + clay	No	4"
39'	117'	Gray clay + silty sand	No	
117'	124'	Fine gray sand, some clay	No	
124'	130'	Fine To med gray sand, some coarse sand	Yes	
130'	151'	Fine To coarse gray sand, Traces of fine gravel	Yes	
151'		NOT Refusal		



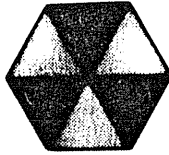
TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen					Hours Dev.	Hours Pumped
					Length	Exposed	Material	Plot Size	Riser		
84-15	2 1/2"	151'	148'	141' 4"	6'	6'	1 1/4" galv	40	5' 3"	2	15 min

REMARKS:

Pump Test on Hole No.						Date		Water Sample			
Time	G.P.M.	Water Levels		Obs. No.	Obs. No.	Obs. No.	Date	Time	Sent To:		
		Vac							Gave To Gary Smith		
Static	2' 4"						3/19/84	1000			
	22	27"							Field Quality		
									CO ₂	Taste	
									Fe	Odor	
									Mn	Hardness	
									Ph	Color	

D.L. MAHER CO.



GROUND WATER DEVELOPMENT

P.O. BOX 127

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Test Well No. 16-84 D.L.M. Job No. T12-3048

Driller Paul Bishop Helper Phil McManus

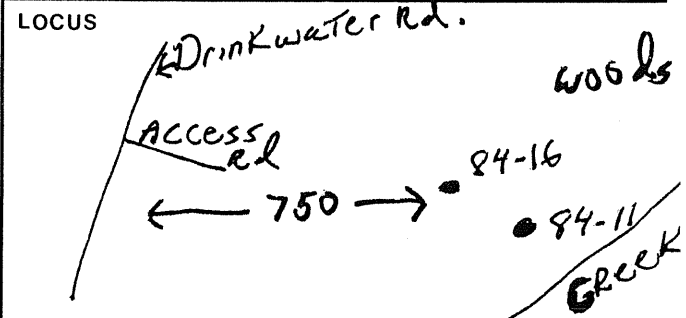
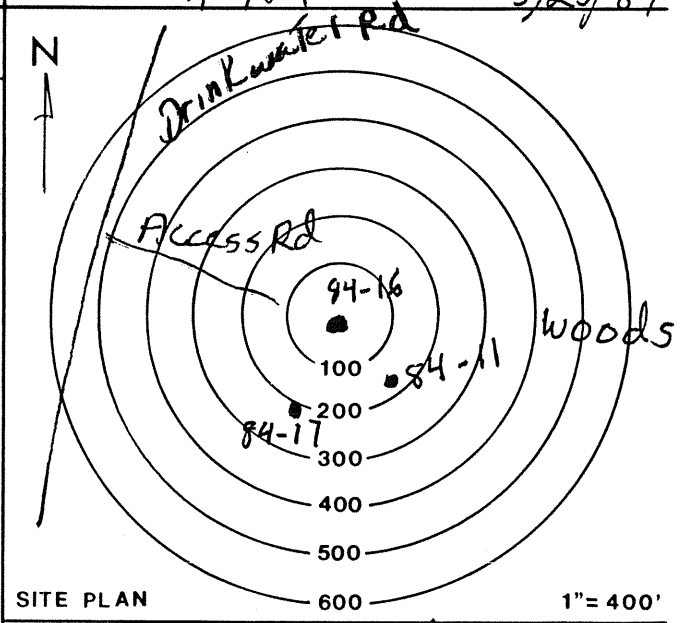
Client Exciter N.H.

Location Collishaw Pop. Drinkwater R.

Owner's Representative

Date Started: 3/13/84 Date Finished: 3/23/84

DEPTH		Soil Classification	Loss of Wash Water	Static
From	To			
0'	84'	Grey Clay	NO	
84'	91'	Grey Clay with Traces of SAND	NO	
99'	105'	Fine Brown SAND with CLAY	NO	
105'	112'	Fine Brown Sand with Fine Gravel	NO	
112'	119'	Fine Brown SAND with Fine Gravel	NO	
119'	126'	Fine to coarse Sand with Fine to Med. Gravel		
126'	134'	Fine to Med Sand Fine Gravel (Broken Gravel)	yes	
134'	140'	Med Brown Sand with Med Gravel (Broken Gravel) Refusal	yes	



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen				Hours Dev.	Hours Pumped	
					Length	Exposed	Material	Slot Size			Riser
84-16	2 1/2	140	140	134	12	12	1 1/4 galv	30s	5 FT 3	2	2
84-16	2 1/2	139	130, 6 in, 126	6	6	1 1/4 galv	60	5 FT 3	1 hr	45 min	

REMARKS: pump for 2 hrs 55 gpm draw down 3-11" set 12' of 40 slot in 2' ob at 139', reset 6' of 60 slot at 130.6"

Pump Test on Hole No.		Date		
Time	G.P.M.	Water Levels		
		Vac	Obs. No.	Obs. No.
Static	3 FT 4 in	2 FT		
	55 gpm	16 in vac		

Water Sample yes

Date 3/22/84 Time 14:30

Sent To: Gary Smith

Field Quality

CO₂ _____ Taste _____

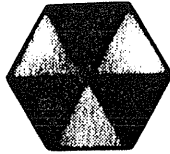
Fe _____ Odor _____

Mn _____ Hardness _____

Ph _____ Color _____

125' Obs

D.L. MAHER CO.



GROUND WATER DEVELOPMENT

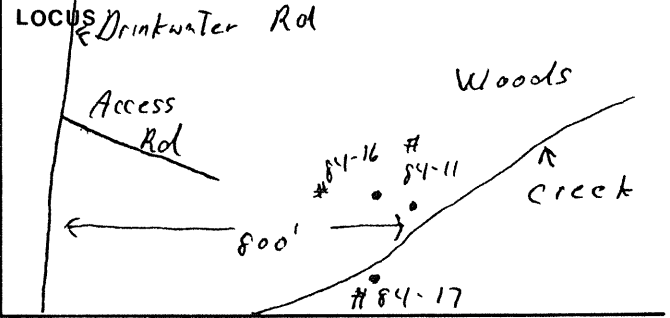
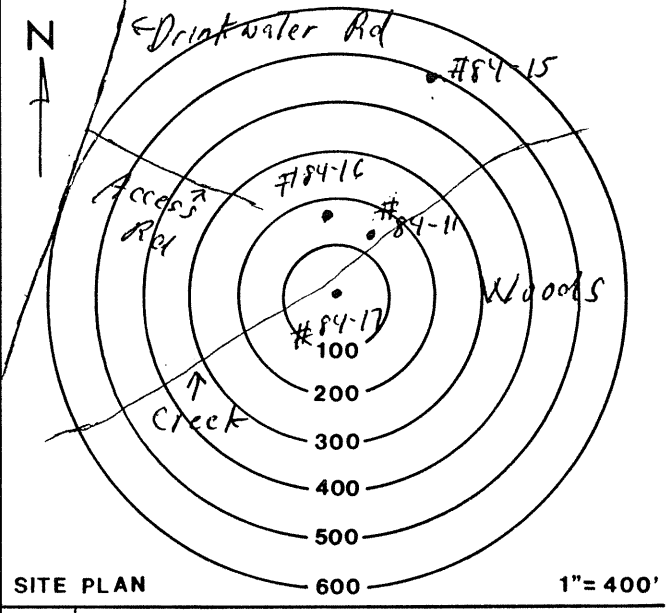
P.O. BOX 127

71 CONCORD STREET

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Test Well No. #84-17 D.L.M. Job No. T12-304-8
 Driller J Anderson Helper B Callahan
 Client Exeter N.H.
 Location Collishaw Prop, Drinkwater Rd
 Owner's Representative
 Date Started: 3/19/84 Date Finished: 3/21/84

DEPTH		Soil Classification	Loss of Wash Water	Static
From	To			
0'	18'	Fine brn sand + silt, some med sand	No	1' 9" 9" 126' 127' COMPLETED TOTAL
18'	82'	Gray clay + silt	No	
82'	92'	Fine gray sand, some med sand + silt	No	
92'	110'	Fine brn sand, some brn silt	No	
110'	115'	Fine brn sand, some med sand + silt	No	
115'	122'	Fine To med brn sand, some coarse sand	No	
122'	127'	Fine To coarse gray sand, some fine + bro gravel	Yes	
127'		Refusal		



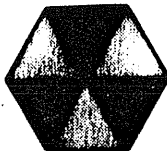
TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen					Hours Dev.	Hours Pumped
					Length	Exposed	Material	Plot Size	Riser		
84-17	2 1/2"	127'	126'	119'6"	6'	6'	1 1/4" 3/16"	50	5'3"	2	15 min

REMARKS:

Pump Test on Hole No. _____ Date _____						Water Sample No _____	
Time	G.P.M.	Water Levels			Date _____	Time _____	
		Vac	Obs. No.	Obs. No.			
Static	1' 9"				Sent To: _____		
	28	27"			Field Quality _____		
					CO ₂ _____	Taste _____	
					Fe _____	Odor _____	
					Mn _____	Hardness _____	
					Ph _____	Color _____	

D.L. MAHER CO.



GROUND WATER DEVELOPMENT

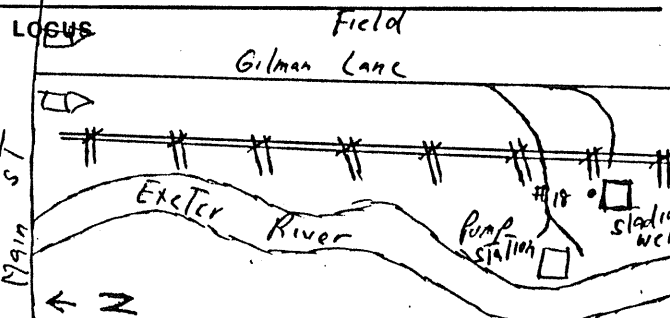
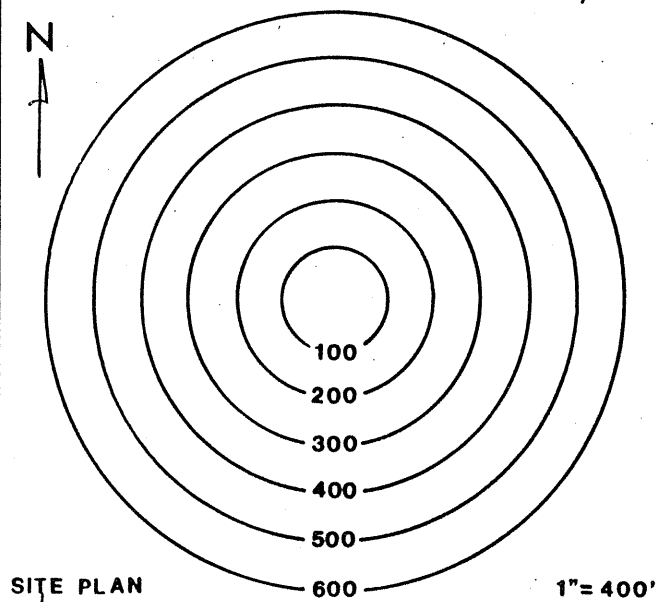
P.O. BOX 127

71 CONCORD STREET

NORTH READING • MA. 01864 • 617/933-3210

Test Well No. #84-18 D.L.M. Job No. T12-304-8
 Driller J Anderson Helper B Callahan
 Client Exeter N.H.
 Location Academy Prop, Stadium well
 Owner's Representative
 Date Started: 3/22/84 Date Finished: 3/23/84

DEPTH		Soil Classification	Loss of Wash Water	3' 0"
From	To			
0'	5'	Solid Fill		
5'	22'	Gray clay	No	2'
22'	42'	coarse brn sand, Fine To med gravel, some fine sand + bro gravel	Yes	3'
42'	48'	med To coarse gray sand, fine To med gravel, some fine sand + bro gravel	Yes	
48'	49'	Fine To med gray sand		
49'		NoT Refusal		



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen			Riser	Hours Dev.	Hours Pumped
					Length	Exposed	Material			
#84-18	2 1/2	49'	30'	28'5"	6'	5'	1 1/4" galv	80	5'3"	1 1/2

REMARKS: Set 6' of 80 slot screen at 48'; reset at 42' + 30', developed 1/2 hr apiece + pump 1/2 hr apiece, Took water samples at 48', 42', 30'

Pump Test on Hole No.		Date			
Time	G.P.M.	Water Levels		Obs. No.	Obs. No.
		Vac	Obs. No.		
Static	2'3"				
At 48'	70	14"			
At 42'	70	6"			
At 30'	65	8"			

Water Sample Yes
 Date 3/23/84 Time _____
 Sent To: Gary Smith
 Field Quality
 CO₂ _____ Taste _____
 Fe _____ Odor _____
 Mn _____ Hardness _____
 Ph _____ Color _____

At 48'
 At 42'
 At 30'

APPENDIX E

FEB 13 1984

FILE NO.	EJL	DLM	RJA	JTM	GLP	AGJ	FJK	TC	PAR	AT

REITZEL ASSOCIATES

Consulting Engineers Waste & Water Analysis
 10 Kendall Place, Boylston, Massachusetts 01505 U.S.A.
 Phone (617) 869-2893

Nicolas M. Reitzel, R.P.E. - Mass. No. 19701

Name D.L. MAHER CO
 Address P.O. BOX 127
NORTH READING, MASS
01864

R.A. Invoice No. 8573
 Sample Date & Time 2/5/84
 Sampler GARY SMITH
 Sample Receipt 2/6/84

SAMPLE : EXETER N.H.

NEED : Fe, Mn, Na, Hardness, NO₃, P.H., F

*Please phone at 1-933-3210
 Academy Property*

TEST RESULTS

	Units	Test Well 84-8	(6 1/2 hr test)		
IRON	MG/L	0.11			
MANGANESE	"	<0.05			
Sodium	"	7.1			
Hardness	"	104			
Nitrate	"	<0.5			
pH	S.U	7.6			
FLUORIDE	MG/L	<0.2			

D.A.M.

JAN 26 1984

FILE NO.	DATE	TIME	INITIALS	REMARKS
	1/27/84			
	1/30/84			

 NORTHERN ANALYTICAL LABORATORY INC

3 Northern Boulevard, B2, Amherst, New Hampshire 03031
(603)673-1420

January 25, 1984

Mr. Gary Smith
D. L. Maher Co.
Concord Road
North Reading, MA 01864

What will do

Dear Mr. Smith,

I have listed below the results of our analyses on the Exeter, New Hampshire water sample which you delivered to this laboratory today.

84-8 Academy Property - 1hr test


Iron 0.17 parts per million

Manganese 0.04 parts per million

These determinations were performed in accordance with all USEPA quality control procedures.

If there are any questions regarding these analyses please feel free to call at any time.

Sincerely yours,


Fredric D. Leipziger

REITZEL ASSOCIATES
 Consulting Engineers Waste & Water Analysis
 10 Kendall Place, Boylston, Massachusetts 01505 U.S.A.
 Phone (617) 869-2893

Nicolas M. Reitzel, R.P.E. - Mass. No. 19701

Name D.L. MAHER
 Address 71 CONCORD ST.
N. READING, MA 01864
 ATTN: GARY SMITH

R.A. Invoice No. 8682
 Sample Date & Time 2-23-84
 Sampler G. SMITH
 Sample Receipt 2-23-84

EXETER, N.H. Test Well

T.W. 84-11

TEST RESULTS

	Units				
<u>pH</u>	<u>S.U.</u>	<u>7.4</u>			
<u>NITRATE - N</u>	<u>MG/L</u>	<u><0.1</u>			
<u>IRON</u>	<u>"</u>	<u>0.08</u>			
<u>MANGANESE</u>	<u>"</u>	<u><0.02</u>			
<u>TOT. HARDNESS</u>	<u>MG/L as CaCO₃</u>	<u>76</u>			
<u>SODIUM</u>	<u>MG/L</u>	<u>5.3</u>			

L. Patullo

RAI

JAN 26 1984

FILE NO.	ELISE	COLL	ANAL	TEST	REP	DATE	TIME	INITIALS
	✓				✓	✓		✓
	1/26				1/27	1/27		1/30

Resource Analysts, Incorporated

Box 4778 Hampton, NH 03842

(603) 926-7777

TO:

Mr. Gary Smith
 DL Maher
 71 Concord Street
 North Reading, MA 01864

PO #Exeter

Date Received: 1-16-84

Lab Number: 2975

Date Reported: 1-25-84

IDENTIFICATION

Water sample from Exeter, NH 84-1

Academy Property

PARAMETER

SAMPLE DESIGNATION

method

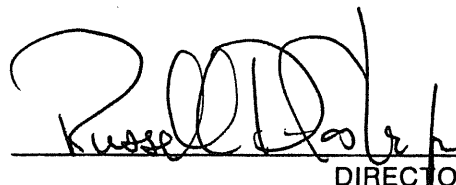
84-1

Nitrate Nitrogen (mg/L)	418C,419	<0.2
Iron, total (mg/L)	303A	0.10
Manganese, total (mg/L)	303A	0.084

Method numbers reference Standard Methods for the Examination of Water and Wastewater

Steven P. Van Kouwenberg

ANALYST



DIRECTOR

MAR 29 1984

FILE NO.	E.J.M.	D.L.M.	R.M.	J.T.M.	S.L.B.	A.C.J.	F.I.R.	T.C.	P.H.E.	B.F.S.

 NORTHERN ANALYTICAL LABORATORY INC.

3 Northern Boulevard, B2, Amherst, New Hampshire 03031
(603)673-1420

March 26, 1984

Mr. Gary Smith
D. L. Maher Company
71 Concord Street
North Reading, MA 01864

T.W. 16-84

Dear Mr. Smith:

We have completed the analyses you requested today on Exeter, New Hampshire water samples identified as "16-84" and "150' ". 150'

The results are as follows:

<u>Sample</u>	<u>Iron, ppm</u>	<u>Manganese, ppm</u>
16-84	0.18	less than 0.03
150'	0.56	0.05

If there are any questions please feel free to call at any time.

Sincerely yours,



Fredric D. Leipziger

FDL/hs

FEB 22 1984

FILE NO.	EJM	D.L.M.	R.L.M.	J.T.M.	W.L.R.	P.S.	F.A.M.	T.C.	P.H.R.	B.F.M.
	✓	✓	✓	✓	✓	✓	✓		✓	✓
	2/23	2/23	2/23	3/1	2/23	2/23	2/23		2/23	2/23

 NORTHERN ANALYTICAL LABORATORY INC

3 Northern Boulevard, B2, Amherst, New Hampshire 03031
(603)673-1420

February 21, 1984

Mr. Gary Smith
D. L. Maher Co.
71 Concord Street
North Reading, MA 01864

Dear Mr. Smith,

I have listed below the results of our analyses on the water sample identified as "Exeter #". All determinations have been performed in accordance with USEPA quality assurance guidelines.

Exeter well #

Iron = 0.04 ppm

Manganese = Less than 0.01 ppm

If there are any questions regarding these determinations please feel free to call at any time.

Sincerely yours,


Fredric D. Leipziger

MAR 28 1984

✓	✓	✓	✓	✓	✓	✓	✓
4/6	3/24/84	3/24/84	3/24/84	3/24/84	3/24/84	3/24/84	3/24/84

REITZEL ASSOCIATES

Consulting Engineers Waste & Water Analysis
 10 Kendall Place, Boylston, Massachusetts 01505 U.S.A.
 Phone (617) 869-2893
 Nicolas M. Reitzel, R.P.E. - Mass. No. 19701

Name D.L. Maher
 Address 71 Concord St
North Reading, MA, 01864

R.A. Invoice No. 8860
 Sample Date & Time 3/23/84
 Sampler D.L. Maher
 Sample Receipt 3/23/84

Exeter, N.H.
STADIUM - Gravel pack well

TEST RESULTS

	Units	30'	42'	48'	30' unpreserved
<u>Iron</u>	<u>MG/L</u>	0.55	1.07	1.15	0.39
<u>MANGANESE</u>	<u>"</u>	0.15	0.42	0.37	0.16

T. Reitzel

APPENDIX F

APR 10 1984

FILE NO.	E.J.M.	D.L.M.	R.L.M.	J.T.M.	R.L.B.	R.C.J.	F.A.K.	T.C.	F.M.P.	F.P.

The State of New Hampshire

STAFF

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- BRUCE A. HOMER., P.E. Vice Chairman
- CHARLES E. BARRY
- JOHN C. COLLINS, P.E.
- DELBERT F. DOWNING
- RUSSELL DUMAIS
- HERBERT A. FINCHER
- RICHARD M. FLYNN
- JAMES J. PAGE
- WAYNE L. PATENAUDE
- DAVID G. SCOTT
- WILLIAM T. WALLACE., M.D., M.P.H.



WILLIAM A. HEALY, P.E.
Executive Director

DANIEL COLLINS, P.E.
Deputy Executive Director and
Chief Engineer

Water Supply and Pollution Control Commission
Hazen Drive — P.O. Box 95
Concord, N.H. 03301

April 6, 1984

Gary L. Smith, Hydrogeologist
 D.L. Maher Company
 P.O. Box 127
 71 Concord Street
 North Reading, Massachusetts 01864

Subject: M.W.S., EXETER WATER DEPARTMENT: GROUND WATER DEVELOPMENT

Dear Gary:

Reference is made to the proposed well site on the Collishaw property, east of Drinkwater Road in Exeter.

The proposed site was inspected by me March 7, 1984, and is acceptable to this office. The proposed site is located in an outlying area presently protected from future growth and development. There appears to be no sources of potential contamination near the Collishaw property.

As you are aware, the Commission's approval procedures for new municipal wells have become more stringent as outlined in the enclosed letter dated December 15, 1983.

The Commission also requires a five-day pump test of all municipal wells to define well yield and water quality. If multiple wells are developed in the same aquifer the well should be pumped simultaneously to define the interrelationships between the wells.

If you have any questions, please do not hesitate to call me at 271-3139.

Very truly yours,

Thomas C. Andrews,
 Sanitary Engineer
 Water Supply Division

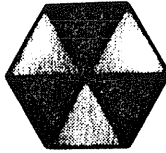
Enclosure

cc: Evelyn Zarnowski, Chairperson
 Board of Selectmen
 10 Front Street
 Exeter, N.H. 03833

TCA/11b

APPENDIX G

D.L. MAHER CO.



GROUND WATER DEVELOPMENT

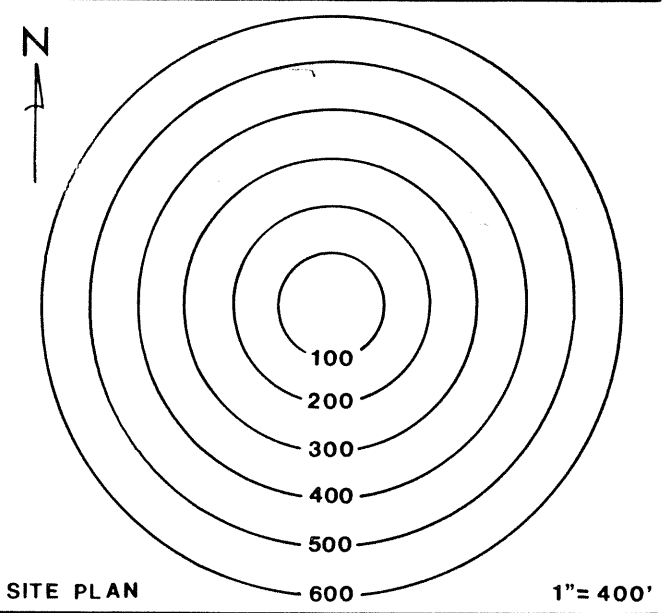
P.O. BOX 127

71 CONCORD STREET

NORTH READING • MA. 01864 • 617/933-3210

Test Well No. #1 D.L.M. Job No. 712-304-83
 Driller Steve Kelly Helper Peter Seal
 Client Town of Exeter N.H.
 Location Collishaw Prop. Off Driveway Rd.
 Owner's Representative
 Date Started: 4-2-84 Date Finished: 4-5-84

DEPTH		Soil Classification	Loss of Wash Water
From	To		
0	2'	TOP Soil	
2'	11'	Silty gray sand	
11'	90'	Blue gray clay	
90'	122'6"	hard packed silty sand Sand Traces of clay	
122'6"	128'	COARSE Brown gravel	
128'	137'	COARSE Brown gravel Traces of silt	
137'	-	Fine silty sand	



TIME AND MATERIALS

Test Well No.	Diam.	Total Depth	Comp. Depth	Casing Left	Screen			Hours Dev.	Hours Pumped
					Length	Exposed	Material		
1	8"	141'-3"	137'-128'	10'	10'	SS.	80	3'	15

REMARKS:

Pump Test on Hole No. 1 Date 4/11/84

Time	G.P.M.	Water Levels			Water Sample	
		Vac	Obs. No.	Obs. No.	Date	Time
Static						

Sent To: _____

Field Quality

CO₂ _____ Taste _____

Fe _____ Odor _____

Mn _____ Hardness _____

Ph _____ Color _____

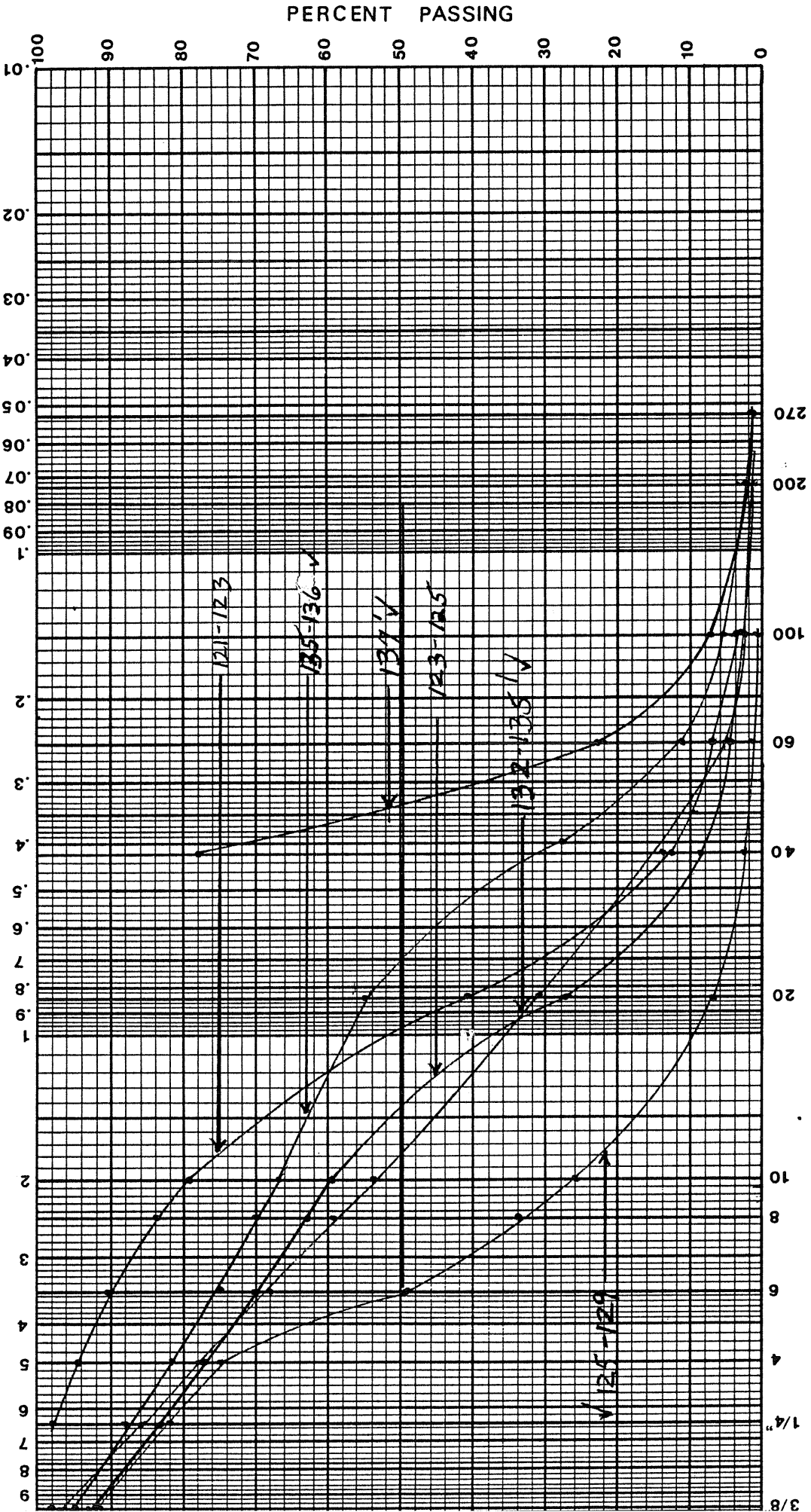
121-123 - 0.98 - 40
 125-129 - 3.5 - 135
 132-135 - 1.8 - 80

Exeter, N.H.
 8-inch well

GRAIN SIZE ANALYSIS

PROJECT LOCATION PROJECT NO.

MILLIMETERS



SEIVE NUMBERS	CUMULATIVE PERCENT PASSED
3/8	
1/4	
4	
6	
8	
10	
20	
40	
60	
100	
200	

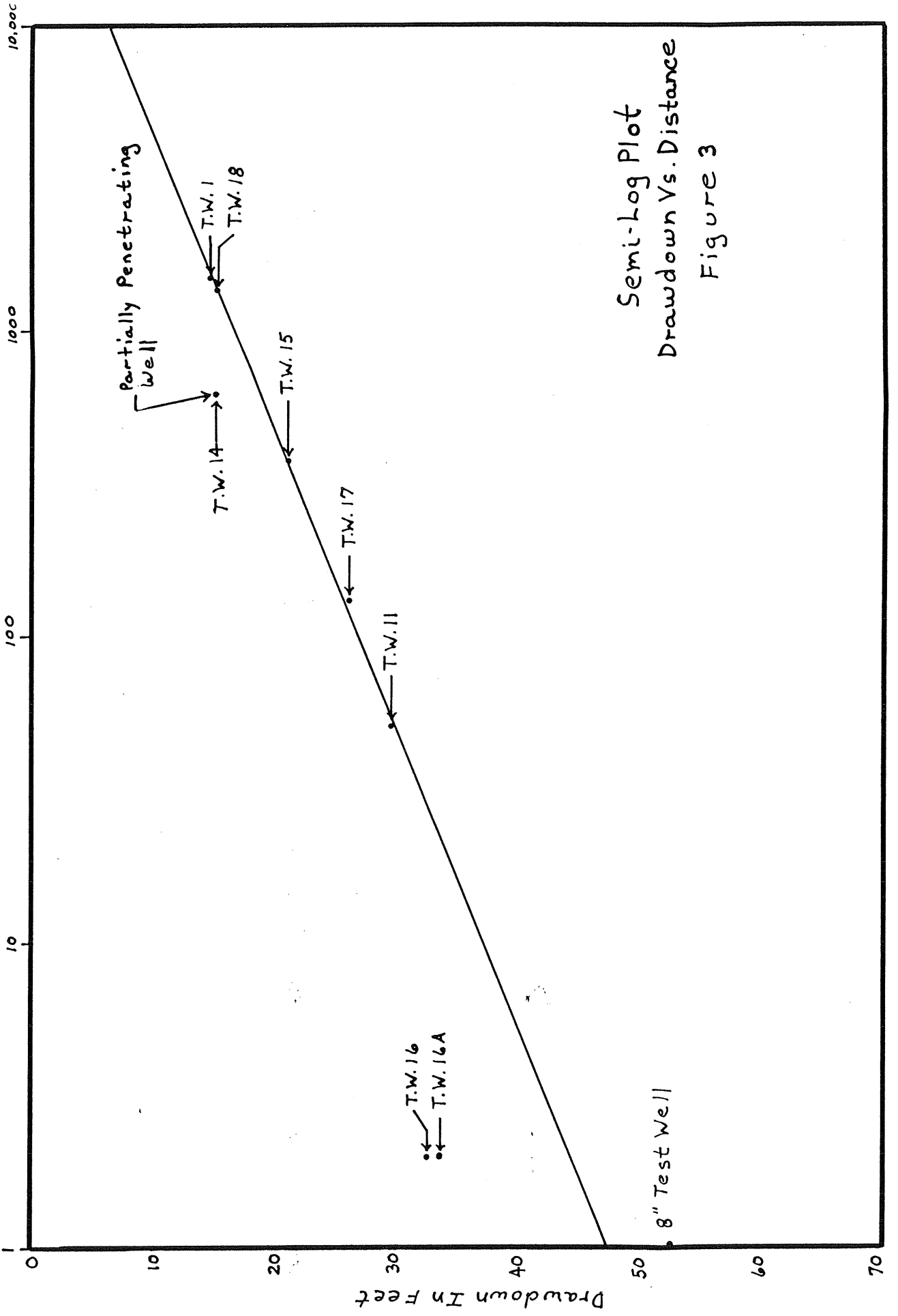
U.S. STANDARD SIEVES

50%
 $\frac{D_{10}/D_{10}}{D_{50}/D_{50}} = \frac{0.038 \text{ slot}}{0.075 \text{ slot}} = 0.507$
 $\frac{D_{10}/D_{10}}{D_{50}/D_{50}} = \frac{0.055 \text{ slot}}{0.075 \text{ slot}} = 0.733$
 $\frac{D_{10}/D_{10}}{D_{50}/D_{50}} = \frac{0.136 \text{ slot}}{0.075 \text{ slot}} = 1.813$
 $\frac{D_{10}/D_{10}}{D_{50}/D_{50}} = \frac{0.070 \text{ slot}}{0.075 \text{ slot}} = 0.933$
 $\frac{D_{10}/D_{10}}{D_{50}/D_{50}} = \frac{0.627}{0.075} = 8.36$

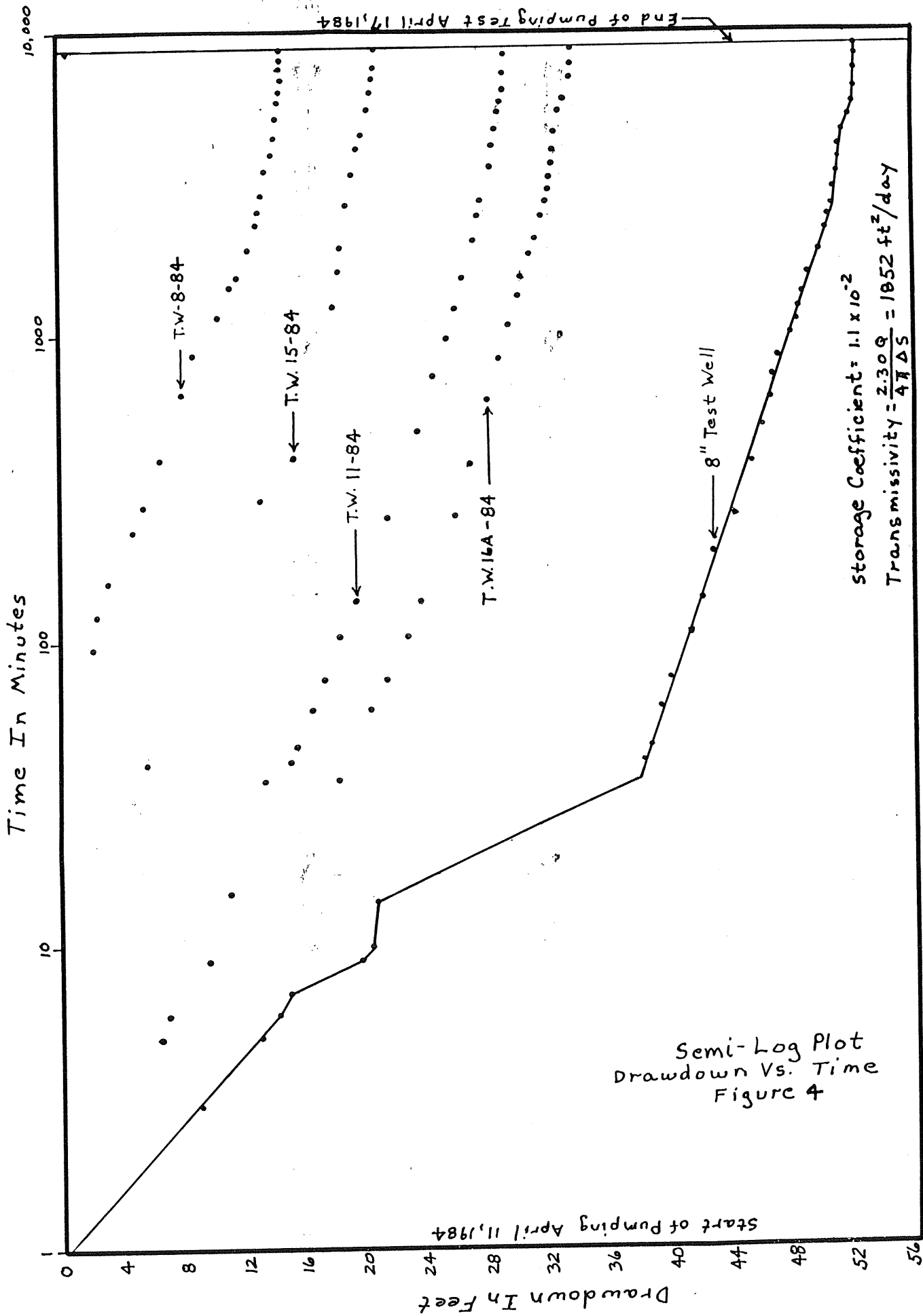
D.L. MAHER CO.
 GROUND WATER DEVELOPMENT
 NORTH READING, MA.

APPENDIX H

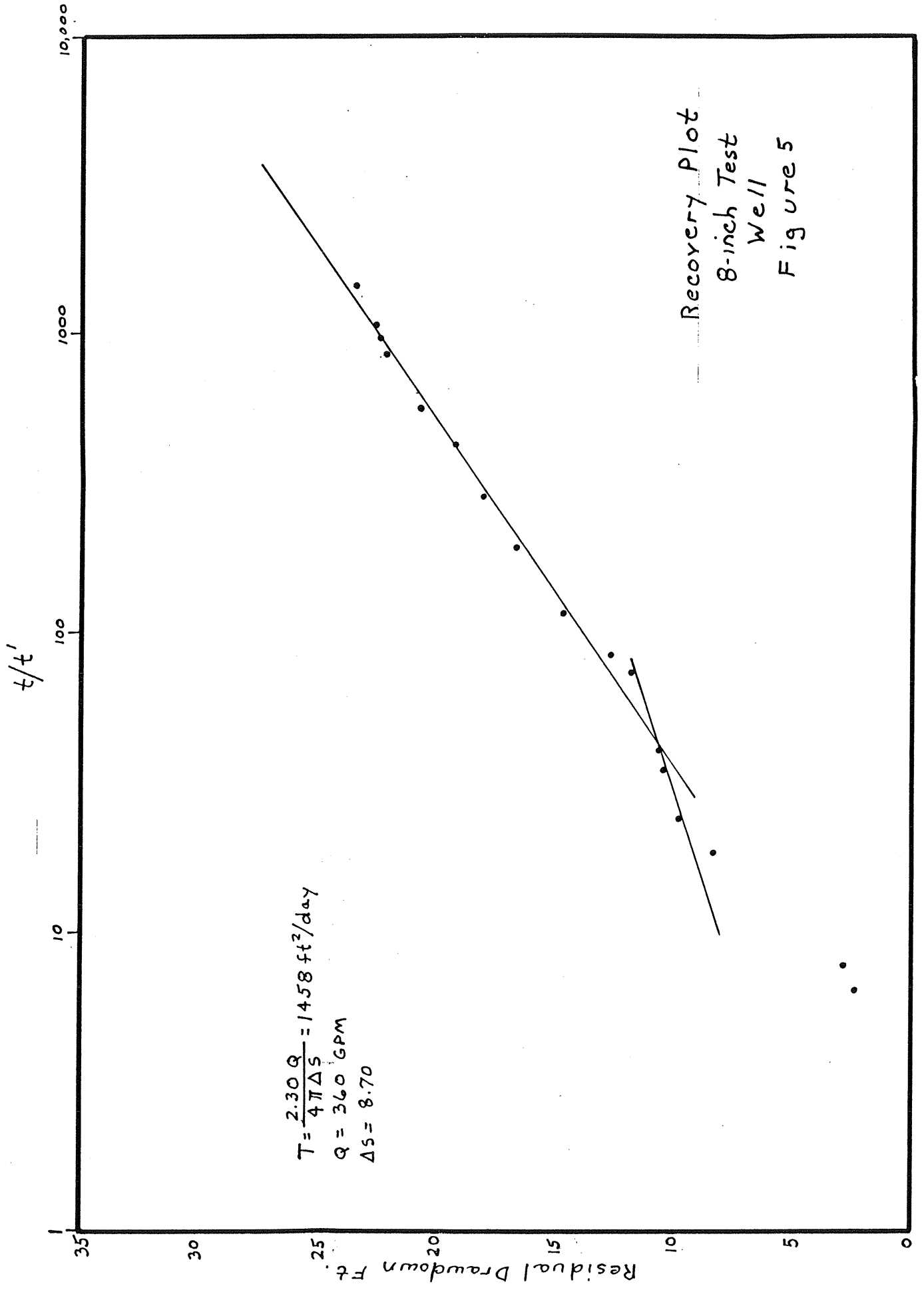
Distance In Feet

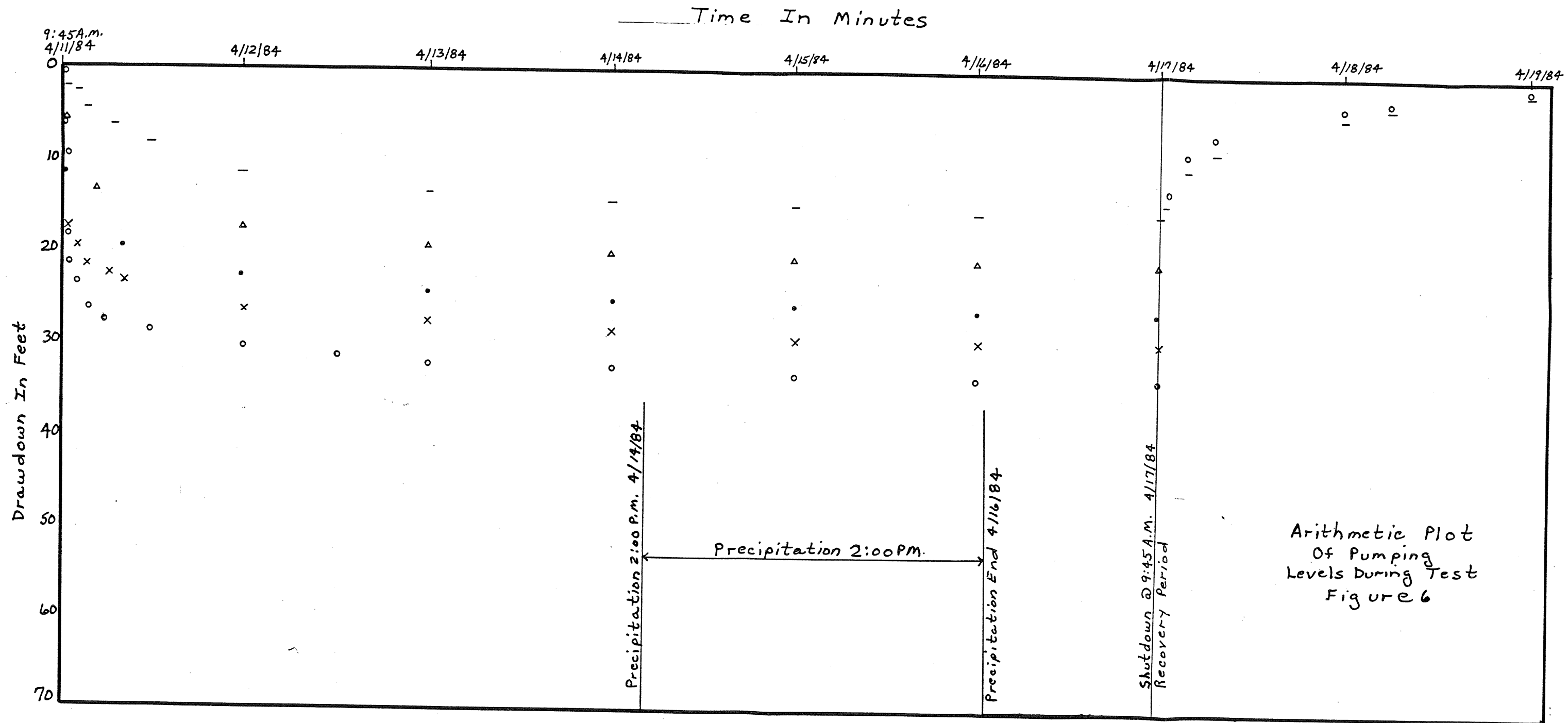


Semi-Log Plot
Drawdown Vs. Distance
Figure 3



Semi-Log Plot
 Drawdown Vs. Time
 Figure 4





APPENDIX I

25488

SAMPLE NUMBER = 25218
 RECORD No. M = 3728
 RECORD No. D = 5514
 NO. OF RECORDS = 2
 EPA NUMBER -- = 801010
 TYPE OF SAMPLE -- = COMMUNITY
 YOUR NAME -- = RJP
 DATE SAMPLED = 04-11-84
 DATE SUBMITTED = 04-11-84
 DATE COMPLETED = 05-11-84
 PERSON TAKING SAMPLE = GARY SMITH
 SYSTEM = EXETER WATER DEPARTMENT
 OWNERS NAME =
 CITY OR TOWN = EXETER
 PHONE No. = 617-933-3210

NO CHARGE - - - - - = NO
 FULL PAYMENT RECEIVED, but SEND BILL = NO
 MONEY DUE TO STATE, --- SEND BILL = YE
 CHECK, CASH or NEITHER [CK, \$ or N] =

AMOUNT PAID (amt. to credit) - = \$ 0.00
 COST OF ANALYSES TO PERSON - = \$ 30.00

D.L. MAHER
 71 CONCORD ST.
 NORTH READING, MASS 01864
 ATT: GARY SMITH

1. 8" TEST WELL
 AFTER HALF HOUR

ID #	TEST NAME	RESULT	ANALYST	DATE
22	Coliform, Tot. 'cts/100mL	EQ 0.0000	SCHMAELING	04-12-84
28	Non-Coliform (if needed)	deleted !	SCHMAELING	04-13-84
37	Nitrogen, NO2+NO3, N	EQ .4500	ODDENS	04-16-84
46	Copper	LT .1000	HAWORTH	04-17-84
47	Iron	LT .1000	HAWORTH	04-17-84
55	Sodium	EQ 5.0000	HAWORTH	04-17-84
58	Alkalinity	EQ 70.0000	HAWORTH	04-12-84
59	Chloride	EQ 13.0000	ODDENS	04-16-84
61	Fluoride	EQ .0800	HAWORTH	04-13-84
62	Total Hardness	EQ 88.0000	HAWORTH	04-12-84
63	Ph - Units	EQ 7.9000	HAWORTH	04-12-84
84	Manganese	LT .0300	HAWORTH	04-17-84
272	Calcium Hardness	EQ 48.0000	CHWASCIAK	05-04-84

SAMPLE NUMBER = 25219
 RECORD No. M = 3729
 RECORD No. D = 5516
 NO. OF RECORDS = 2
 EPA NUMBER -- = 801010
 TYPE OF SAMPLE -- = COMMUNITY
 YOUR NAME -- = RJP
 DATE SAMPLED = 04-11-84
 DATE SUBMITTED = 04-11-84
 DATE COMPLETED = 05-04-84
 PERSON TAKING SAMPLE = GARY SMITH
 SYSTEM = EXETER WATER DEPARTMENT
 OWNERS NAME =
 CITY OR TOWN = EXETER
 PHONE No. = 617-933-3210

NO CHARGE - - - - - = NO
 FULL PAYMENT RECEIVED, but SEND BILL = NO
 MONEY DUE TO STATE, --- SEND BILL = YE
 CHECK, CASH or NEITHER [CK, \$ or N] =

AMOUNT PAID (amt. to credit) - = \$ 0.00
 COST OF ANALYSES TO PERSON - = \$ 30.00

46	Copper	LT	.1000	HAWORTH	04-17-84
47	Iron	LT	.1000	HAWORTH	04-17-84
55	Sodium	EQ	5.0000	HAWORTH	04-17-84
58	Alkalinity	EQ	70.0000	HAWORTH	04-12-84
59	Chloride	EQ	13.0000	ODDENS	04-16-84
61	Fluoride	EQ	.0800	HAWORTH	04-13-84
62	Total Hardness	EQ	88.0000	HAWORTH	04-12-84
63	Ph - Units	EQ	7.8000	HAWORTH	04-12-84
84	Manganese	LT	.0300	HAWORTH	04-17-84
272	Calcium Hardness	EQ	48.0000	CHWASCIAK	05-04-84

SAMPLE NUMBER = 25219
 RECORD No. M = 3729
 RECORD No. D = 5516
 NO. OF RECORDS = 2
 EPA NUMBER -- = 801010
 TYPE OF SAMPLE -- = COMMUNITY
 YOUR NAME -- = RJP
 DATE SAMPLED = 04-11-84
 DATE SUBMITTED = 04-11-84
 DATE COMPLETED = 05-04-84
 PERSON TAKING SAMPLE = GARY SMITH
 SYSTEM = EXETER WATER DEPARTMENT
 OWNERS NAME =
 CITY OR TOWN = EXETER
 PHONE No. = 617-933-3210

NO CHARGE ----- = NO
 FULL PAYMENT RECEIVED, but SEND BILL = NO
 MONEY DUE TO STATE, --- SEND BILL = YE
 CHECK, CASH or NEITHER [CK, \$ or N] =

AMOUNT PAID (amt. to credit) - = \$ 0.00
 COST OF ANALYSES TO PERSON - = \$ 30.00

D.L. MAHER
 71 CONCORD ST.
 NORTH READING, MASS 01864
 ATT: GARY SMITH

2, 8" TEST WELL
AFTER 4 HOURS

ID #	TEST NAME	RESULT	ANALYST	DATE
22	Coliform, Tot. cts/100mL	EQ 0.0000	SCHMAELING	04-12-84
28	Non-Coliform (if needed)	deleted !	SCHMAELING	04-13-84
37	Nitrogen, NO2+NO3, N	EQ .4500	ODDENS	04-16-84
46	Copper	LT .1000	HAWORTH	04-17-84
47	Iron	LT .1000	HAWORTH	04-17-84
55	Sodium	EQ 4.0000	HAWORTH	04-17-84
58	Alkalinity	EQ 71.0000	HAWORTH	04-12-84
59	Chloride	LT 10.0000	ODDENS	04-16-84
61	Fluoride	EQ .0800	HAWORTH	04-13-84
62	Total Hardness	EQ 88.0000	HAWORTH	04-12-84
63	Ph - Units	EQ 7.8800	HAWORTH	04-12-84
84	Manganese	LT .0300	HAWORTH	04-17-84
272	Calcium Hardness	EQ 50.0000	CHWASCIAK	05-04-84

SAMPLE NUMBER = 25408
 RECORD No. M = 3918
 RECORD No. D = 5780
 NO. OF RECORDS = 2
 EPA NUMBER --- = 001010
 TYPE OF SAMPLE -- = COMMUNITY
 YOUR NAME -- = RJP
 DATE SAMPLED = 04-13-84
 DATE SUBMITTED = 04-17-84
 DATE COMPLETED = 06-11-84
 PERSON TAKING SAMPLE = GARY SMITH
 SYSTEM = EXETER WATER DEPARTMENT
 OWNERS NAME = EXETER WW
 CITY OR TOWN = EXETER
 PHONE No. =

NO CHARGE - - - - - = NO
 FULL PAYMENT RECEIVED, but SEND BILL = NO
 MONEY DUE TO STATE, --- SEND BILL = YE
 CHECK, CASH or NEITHER [CK, \$ or N] =

AMOUNT PAID (amt. to credit) - = \$ 0.00
 COST OF ANALYSES TO PERSON - = \$ 30.00

BILL EXETER WW

PUMP TEST SAMPLE
 PREVIOUS # 25218-25219

ID #	TEST NAME	RESULT	ANALYST	DATE
22	Coliform, Tot. cts/100mL	EQ 0.0000	DRAGON	04-18-84
28	Non-Coliform (if needed)	deleted !	DRAGON	04-19-84
37	Nitrogen, NO2+NO3, N	EQ .3700	ODDENS	04-19-84
46	Copper	LT .1000	CHWASCIAK	05-02-84
47	Iron	LT .1000	HAWORTH	04-30-84
55	Sodium	EQ 6.0000	CHWASCIAK	05-02-84
58	Alkalinity	EQ 70.5000	THOMPSON	04-18-84
59	Chloride	LT 10.0000	ODDENS	04-19-84
61	Fluoride	EQ .0800	CHWASCIAK	04-18-84
62	Total Hardness	EQ 76.0000	CHWASCIAK	04-18-84
63	Ph - Units	EQ 7.7400	THOMPSON	04-18-84
84	Manganese	LT .0300	CHWASCIAK	04-30-84
272	Calcium Hardness	EQ 46.0000	HAWORTH	06-11-84

SAMPLE NUMBER = 25409

RECORD No. M = 3919
 RECORD No. D = 5782
 NO. OF RECORDS = 6
 EPA NUMBER -- = 801010
 TYPE OF SAMPLE -- = COMMUNITY
 YOUR NAME -- = RJP
 DATE SAMPLED = 04-15-84
 DATE SUBMITTED = 04-17-84
 DATE COMPLETED = 05-15-84
 PERSON TAKING SAMPLE = GARY SMITH
 SYSTEM = EXETER WATER DEPARTMENT
 OWNERS NAME = EXETER WW
 CITY OR TOWN = EXETER
 PHONE No. =

NO CHARGE - - - - - = NO
 FULL PAYMENT RECEIVED, but SEND BILL = NO
 MONEY DUE TO STATE, --- SEND BILL = YE
 CHECK, CASH or NEITHER [CK, \$ or N] =

AMOUNT PAID (amt. to credit) - = \$ 0.00
 COST OF ANALYSES TO PERSON - = \$100.00

PUMP TEST 4-1 PRIMARY 4-16

ZN= 0.03; ;HAWORTH

SAMPLE OVER EPA HOLD TIME BY 3 DAYS

Mo=<0.01 ; Sb=<0.01 ; V=0.027 : G.A.H.

ID #	TEST NAME	RESULT	ANALYST	DATE
22	Coliform, Tot.' cts/100mL	EQ 0.0000	DRAGON	04-19-84
28	Non-Coliform (if needed)	deleted !	DRAGON	04-19-84
37	Nitrogen, NO2+NO3, N	EQ .3300	QUIGENS	04-19-84
40	Aluminum	EQ .0200	HAWORTH	05-15-84
41	Arsenic	LT .0050	ECKERSON	05-02-84
42	Barium	LT .5000	THOMPSON	05-10-84
43	Cadmium	LT .0010	HAWORTH	05-10-84
45	Chromium	LT .0100	HAWORTH	05-02-84
46	Copper	LT .1000	CHWASCIAK	05-02-84
47	Iron	LT .1000	HAWORTH	04-30-84
48	Lead	LT .0100	ECKERSON	05-10-84
50	Mercury	LT .0010	HAWORTH	05-10-84
51	Nickel	LT .0300	QUIGENS	05-09-84
53	Selenium	LT .0050	ECKERSON	05-10-84
54	Silver	LT .0010	CHWASCIAK	05-09-84
55	Sodium	EQ 6.0000	CHWASCIAK	05-02-84
58	Alkalinity	EQ 70.5000	THOMPSON	04-18-84
59	Chloride	LT 10.0000	QUIGENS	04-19-84
61	Fluoride	EQ .0800	CHWASCIAK	04-18-84
62	Total Hardness	EQ 80.0000	CHWASCIAK	04-18-84
63	Ph - Units	EQ 7.7600	THOMPSON	04-18-84
64	Specific Conductance	EQ 205.0000	CHWASCIAK	04-18-84
66	Sulfate	EQ 16.0000	THOMPSON	05-02-84
84	Manganese	LT .0300	CHWASCIAK	04-30-84
85	Methane, dichloro-	ND	RICE	05-04-84
87	Methane, tribromo-	ND	RICE	05-04-84
88	Methane, trichloro-	ND	RICE	05-04-84
90	Methane, chlorodibromo-	ND	RICE	05-04-84
91	Ethane, chloro-	ND	RICE	05-04-84
92	Ethane, 1,1 dichloro	ND	RICE	05-04-84
93	Ethane, 1,2 dichloro	ND	RICE	05-04-84
94	Ethane, 1,1,1 trichloro	ND	RICE	05-04-84
95	Ethane, 1,1,2 trichloro	ND	RICE	05-04-84
96	Ethane, 1,1,2,2 tetrachloro	ND	RICE	05-04-84
97	Ethylene, 1,1 dichloro	ND	RICE	05-04-84
98	Ethylene, trans-dichloro	ND	RICE	05-04-84
99	Ethylene, trichloro	ND	RICE	05-04-84
100	Ethylene, tetrachloro	ND	RICE	05-04-84
101	Propane, 1,2 dichloro	ND	RICE	05-04-84
102	Propene, 1,3 dichloro (cis +ND		RICE	05-04-84
103	Benzene	ND	RICE	05-04-84
104	Benzene, chloro	ND	RICE	05-04-84
105	Benzenes, dichloro	ND	RICE	05-04-84
106	Benzene, ethyl	ND	RICE	05-04-84

SAMPLE NUMBER = 25488
 RECORD No. M = 3998
 RECORD No. D = 5909
 NO. OF RECORDS = 4
 EPA NUMBER -- = 801010
 TYPE OF SAMPLE -- = COMMUNITY
 YOUR NAME -- = PAC
 DATE SAMPLED = 04-17-84
 DATE SUBMITTED = 04-18-84
 PERSON TAKING SAMPLE = GARY SMITH
 SYSTEM = EXETER WATER DEPARTMENT
 OWNERS NAME =
 CITY OR TOWN = EXETER
 PHONE No. =

NO CHARGE - - - - - = NO
 FULL PAYMENT RECEIVED, but SEND BILL = NO
 MONEY DUE TO STATE. --- SEND BILL = YE
 CHECK, CASH or NEITHER [CK, \$ or N] =

AMOUNT PAID (amt. to credit) - = \$ 0.00
 COST OF ANALYSES TO PERSON - = \$ 90.00

BILL TO EXETER WATER DEPT

SAMPLE TAKEN: D.L. MAYER
 71 CONCORD ST
 NORTH READING, MASS 01864
 TEST WELL

ZN= 0.03 ; HAWORTH

ID #	TEST NAME	RESULT	ANALYST	DATE
1	Gross Alpha	uncompleted !		
2	Uranium	uncompleted !		
3	Radium 226	uncompleted !		
22	Coliform, Tot. cts/100mL	EQ 0.0000	DRAGON	04-19-84
28	Non-Coliform (if needed)	deleted !	DRAGON	04-19-84
37	Nitrogen, NO2+NO3, N	EQ .3600	PEPIN	04-19-84
40	Aluminum	LT .0100	HAWORTH	05-15-84
41	Arsenic	LT .0050	CHWASCIAK	05-02-84
42	Barium	LT .5000	THOMPSON	05-10-84
43	Cadmium	LT .0010	HAWORTH	05-10-84
45	Chromium	LT .0100	HAWORTH	05-02-84
46	Copper	LT .1000	CHWASCIAK	05-02-84
47	Iron	LT .1000	HAWORTH	04-30-84
48	Lead	LT .0100	ECKERSON	05-10-84
50	Mercury	LT .0010	HAWORTH	05-10-84
51	Nickel	LT .0300	QUDENS	05-05-84
53	Selenium	LT .0050	ECKERSON	05-10-84
54	Silver	LT .0010	CHWASCIAK	05-09-84
55	Sodium	EQ 6.0000	CHWASCIAK	05-02-84
58	Alkalinity	EQ 74.0000	HAWORTH	04-19-84
59	Chloride	LT 10.0000	PEPIN	04-19-84
61	Fluoride	EQ .0700	CHWASCIAK	04-19-84
62	Total Hardness	EQ 84.0000	HAWORTH	04-19-84
63	Ph - Units	EQ 7.8000	HAWORTH	04-19-84
64	Specific Conductance	EQ 186.0000	CHWASCIAK	05-07-84
66	Sulfate	EQ 16.2000	THOMPSON	05-02-84
84	Managnese	LT .0300	CHWASCIAK	04-30-84
200	Antimony	LT .0100	HAWORTH	05-14-84
201	Mobyldenium	LT .0100	HAWORTH	05-14-84
202	Vanadium	LT .0300	HAWORTH	05-14-84
272	Calcium Hardness	EQ 50.0000	CHWASCIAK	05-04-84

107	Toluene	ND		RICE	05-04-84
108	Xylene meta isomer	ND		RICE	05-04-84
113	Methane, bromo	ND		RICE	05-04-84
114	Methane, chloro	ND		RICE	05-04-84
115	Methane, trichlorofluoro	ND		RICE	05-04-84
203	Total trihalomethanes	ND		RICE	05-04-84
272	Calcium Hardness	EQ	51.0000	CHWASCIAK	05-04-84
274	Acetone	ND		RICE	05-04-84
275	Tetrahydrofuran	ND		RICE	05-04-84
276	Diethyl ether	ND		RICE	05-04-84
277	Methyl ethyl ketone	ND		RICE	05-04-84
278	Methyl isobutyl ketone	ND		RICE	05-04-84
279	Propene 1,3 dimethyl (trans	ND		RICE	05-04-84
280	xlenes (ortho and para)	ND		RICE	05-04-84

SAMPLE NUMBER = 25410
RECORD No. M = 3920
RECORD No. D = 5788
NO. OF RECORDS = 3
EPA NUMBER -- = 801010
TYPE OF SAMPLE -- = COMMUNITY
YOUR NAME -- = RJP
DATE SAMPLED = 04-16-84
DATE SUBMITTED = 04-17-84
PERSON TAKING SAMPLE = GARY SMITH
SYSTEM = EXETER WATER DEPARTMENT
OWNERS NAME =
CITY OR TOWN = EXETER
PHONE No. =

NO CHARGE - - - - - = YE
FULL PAYMENT RECEIVED, but SEND BILL = NO
MONEY DUE TO STATE, --- SEND BILL = NO
CHECK, CASH or NEITHER [CK, \$ or N] =

AMOUNT PAID (amt. to credit) - = \$ 0.00
COST OF ANALYSES TO PERSON - = \$ 0.00

VOA DUPLICATE

ID #	TEST NAME	RESULT	ANALYST	DATE
85	Methane, dichloro-	uncompleted	!	
87	Methane, tribromo-	uncompleted	!	
88	Methane, trichloro-	uncompleted	!	
90	Methane, chlorodibromo-	uncompleted	!	
91	Ethane, chloro-	uncompleted	!	
92	Ethane, 1,1 dichloro	uncompleted	!	
93	Ethane, 1,2 dichloro	uncompleted	!	
94	Ethane, 1,1,1 trichloro	uncompleted	!	
95	Ethane, 1,1,2 trichloro	uncompleted	!	
96	Ethane, 1,1,2,2 tetrachloro	uncompleted	!	
97	Ethylene, 1,1 dichloro	uncompleted	!	
98	Ethylene, trans-dichloro	uncompleted	!	
99	Ethylene, trichloro	uncompleted	!	
100	Ethylene, tetrachloro	uncompleted	!	
101	Propane, 1,2 dichloro	uncompleted	!	
102	Propene, 1,3 dichloro (cis +	uncompleted	!	
103	Benzene	uncompleted	!	
104	Benzene, chloro	uncompleted	!	
105	Benzenes, dichloro	uncompleted	!	
106	Benzene, ethyl	uncompleted	!	
107	Toluene	uncompleted	!	
108	Xylene meta isomer	uncompleted	!	
113	Methane, bromo	uncompleted	!	
114	Methane, chloro	uncompleted	!	
115	Methane, trichlorofluoro	uncompleted	!	
203	Total trihalomethanes	uncompleted	!	
274	Acetone	uncompleted	!	
275	Tetrahydrofuran	uncompleted	!	
276	Diethyl ether	uncompleted	!	
277	Methyl ethyl ketone	uncompleted	!	
278	Methyl isobutyl ketone	uncompleted	!	
279	Propene 1,3 dimethyl (trans	uncompleted	!	
280	Xylenes (ortho and para)	uncompleted	!	

SAMPLE NUMBER = 25411
 RECORD No. M = 3921
 RECORD No. D = 5791
 NO. OF RECORDS = 3
 EPA NUMBER -- = 801010
 TYPE OF SAMPLE -- = COMMUNITY
 YOUR NAME -- = RJP
 DATE SAMPLED = 04-16-84
 DATE SUBMITTED = 04-17-84
 PERSON TAKING SAMPLE = GARY SMITH
 SYSTEM = EXETER WATER DEPARTMENT
 OWNERS NAME =
 CITY OR TOWN = EXETER
 PHONE No. =

NO CHARGE - - - - - = YE
 FULL PAYMENT RECEIVED, but SEND BILL = NO
 MONEY DUE TO STATE, --- SEND BILL = NO
 CHECK, CASH or NEITHER [CK, \$ or N] =

AMOUNT PAID (amt. to credit) - = \$ 0.00
 COST OF ANALYSES TO PERSON - = \$ 0.00

VOA BLANK

ID #	TEST NAME	RESULT	ANALYST	DATE
85	Methane, dichloro-	uncompleted	!	
87	Methane, tribromo-	uncompleted	!	
88	Methane, trichloro-	uncompleted	!	
90	Methane, chlorodibromo-	uncompleted	!	
91	Ethane, chloro-	uncompleted	!	
92	Ethane, 1,1 dichloro	uncompleted	!	
93	Ethane, 1,2 dichloro	uncompleted	!	
94	Ethane, 1,1,1 trichloro	uncompleted	!	
95	Ethane, 1,1,2 trichloro	uncompleted	!	
96	Ethane, 1,1,2,2 tetrachloro	uncompleted	!	
97	Ethylene, 1,1 dichloro	uncompleted	!	
98	Ethylene, trans-dichloro	uncompleted	!	
99	Ethylene, trichloro	uncompleted	!	
100	Ethylene, tetrachloro	uncompleted	!	
101	Propane, 1,2 dichloro	uncompleted	!	
102	Propene, 1,3 dichloro (cis +	uncompleted	!	
103	Benzene	uncompleted	!	
104	Benzene, chloro	uncompleted	!	
105	Benzenes, dichloro	uncompleted	!	
106	Benzene, ethyl	uncompleted	!	
107	Toluene	uncompleted	!	
108	Xylene meta isomer	uncompleted	!	
113	Methane, bromo	uncompleted	!	
114	Methane, chloro	uncompleted	!	
115	Methane, trichlorofluoro	uncompleted	!	
203	Total trihalomethanes	uncompleted	!	
274	Acetone	uncompleted	!	
275	Tetrahydrofuran	uncompleted	!	
276	Diethyl ether	uncompleted	!	
277	Methyl ethyl ketone	uncompleted	!	
278	Methyl isobutyl ketone	uncompleted	!	
279	Propene 1,3 dimethyl (trans	uncompleted	!	
280	Xylenes (ortho and para)	uncompleted	!	

DATE SAMPLED = 05-09-84
 DATE SUBMITTED = 05-09-84
 DATE COMPLETED = 06-01-84
 PERSON TAKING SAMPLE = D.L. MAYER CO
 SYSTEM = EXETER WATER TREATMENT PLANT
 OWNERS NAME = STADIUM WELL
 CITY OR TOWN = EXETER
 PHONE No. =

Stadium Well
"Test Well"

NO CHARGE - - - - - = NO
 FULL PAYMENT RECEIVED, but SEND BILL = NO
 MONEY DUE TO STATE, --- SEND BILL = YE
 CHECK, CASH or NEITHER [CK, \$ or N] =

AMOUNT PAID (amt. to credit) - = \$ 0.00
 COST OF ANALYSES TO PERSON - = \$ 30.00

TEST WELL

ID #	TEST NAME	RESULT	ANALYST	DATE
22	Coliform, Tot, cts/100mL	EQ 0.0000	SCHMAELING	05-10-84
28	Non-Coliform (if needed)	deleted !	SCHMAELING	05-10-84
37	Nitrogen, NO2+NO3, N	LT .2500	GREENWOOD	05-11-84
46	Copper	LT .1000	OUDENS	05-23-84
47	Iron	EQ .1900	OUDENS	05-16-84
55	Sodium	EQ 13.0000	OUDENS	05-22-84
58	Alkalinity	EQ 121.0000	HAWORTH	05-09-84
59	Chloride	EQ 20.0000	GREENWOOD	05-11-84
61	Fluoride	EQ .1400	GREENWOOD	05-09-84
62	Total Hardness	EQ 147.0000	CHWASCIAK	05-09-84
63	Ph - Units	EQ 7.9900 ✓	HAWORTH	05-09-84
84	Manganese	EQ .5000	OUDENS	05-16-84
272	Calcium Hardness	EQ 90.0000	CHWASCIAK	05-29-84

SAMPLE NUMBER = 26568
 RECORD No. M = 5078
 RECORD No. D = 7639
 NO. OF RECORDS = 2
 EPA NUMBER --- = 801010
 TYPE OF SAMPLE --- = COMMUNITY
 YOUR NAME --- = RJP
 DATE SAMPLED = 05-15-84
 DATE SUBMITTED = 05-17-84
 DATE COMPLETED = 06-11-84
 PERSON TAKING SAMPLE = D.L. MAYER
 SYSTEM = EXETER WATER TREATMENT PLANT
 OWNERS NAME = STADIUM WELL
 CITY OR TOWN = EXETER
 PHONE No. =

NO CHARGE - - - - - = NO
 FULL PAYMENT RECEIVED, but SEND BILL = NO
 MONEY DUE TO STATE, --- SEND BILL = YE
 CHECK, CASH or NEITHER [CK, \$ or N] =

AMOUNT PAID (amt. to credit) - = \$ 0.00
 COST OF ANALYSES TO PERSON - = \$ 30.00

2 1/2' TEST WELL
 PUMPING FOR 3 HRS.
 DEPTH 120'

ID #	TEST NAME	RESULT	ANALYST	DATE
22	Coliform, Tot, cts/100mL	EQ 0.0000	DRAGON	05-19-84
28	Non-Coliform (if needed)	deleted !	DRAGON	05-19-84
37	Nitrogen, NO2+NO3, N	LT .2500	PEPIN	05-18-84
46	Copper	LT .1000	HAWORTH	06-07-84
47	Iron	EQ .1000	OUDENS	06-06-84
55	Sodium	EQ 8.0000	HAWORTH	06-07-84
58	Alkalinity	EQ 89.0000	OUDENS	05-18-84
59	Chloride	LT 10.0000	PEPIN	05-23-84
61	Fluoride	EQ .4400	HAWORTH	05-21-84
62	Total Hardness	EQ 109.0000	CHWASCIAK	05-18-84
63	Ph - Units	EQ 8.1200	HAWORTH	05-18-84
84	Manganese	EQ .0500	OUDENS	06-06-84
272	Calcium Hardness	EQ 69.0000	HAWORTH	06-11-84

SAMPLE NUMBER = 26569
 RECORD No. M = 5079
 RECORD No. D = 7641
 NO. OF RECORDS = 3
 EPA NUMBER = 801010
 TYPE OF SAMPLE = COMMUNITY
 SOURCE NAME = RJP
 DATE SAMPLED = 05-16-84
 DATE SUBMITTED = 05-17-84
 DATE COMPLETED = 06-11-84
 PERSON TAKING SAMPLE = D.L. MAYER
 SYSTEM = EXETER WATER TREATMENT PLANT
 OWNERS NAME =
 CITY OR TOWN = EXETER
 PHONE No. =

Academy Property
 T.W. 8-84

01970

NO CHARGE - - - - - = NO
 FULL PAYMENT RECEIVED, but SEND BILL = NO
 MONEY DUE TO STATE, SEND BILL = YES
 CHECK, CASH or NEITHER [CK, \$ or N] =
 AMOUNT PAID (amt. to credit) - = \$ 0.00
 COST OF ANALYSES TO PERSON - = \$ 60.00

PUMP 24 1/2 HR
 2 1/2'
 96 GPM
 DEPTH 120'

ID #	TEST NAME	RESULT	ANALYST	DATE
22	Coliform, Tot. (cts/100mL)	EQ 0.0000	DRAGON	05-19-84
28	Non-Coliform (if needed)	deleted !	DRAGON	05-19-84
37	Nitrogen, NO2+NO3, N	LT .2500	PEPIN	05-18-84
40	Aluminum	LT .0100	HAWORTH	06-11-84
41	Arsenic	LT .0050	CHWASCIAK	06-01-84
42	Barium	LT .5000	CHWASCIAK	06-01-84
43	Cadmium	LT .0020	CHWASCIAK	05-23-84
45	Chromium	LT .0300	CHWASCIAK	06-01-84
46	Copper	LT .1000	CHWASCIAK	06-01-84
47	Iron	EQ .1200 ✓	CHWASCIAK	05-24-84
48	Lead	LT .0100	CHWASCIAK	05-22-84
50	Mercury	LT .0010	LOUDENS	06-11-84
51	Nickel	LT .0300	CHWASCIAK	06-11-84
53	Selenium	LT .0050	CHWASCIAK	06-01-84
54	Silver	LT .0010	CHWASCIAK	05-23-84
55	Sodium	EQ 8.0000	LOUDENS	06-01-84
57	Zinc	LT .0300	LOUDENS	06-01-84
58	Alkalinity	EQ 86.0000	LOUDENS	05-18-84
59	Chloride	LT 10.0000	PEPIN	05-23-84
61	Fluoride	EQ .4400	HAWORTH	05-21-84
62	Total Hardness	EQ 107.0000	CHWASCIAK	05-18-84
63	Ph - Units	EQ 8.1600	LOUDENS	05-18-84
64	Specific Conductance	EQ 251.0000	HAWORTH	05-23-84
66	Sulfate	EQ 32.0000	HAWORTH	05-23-84
84	Manganese	EQ .0500 ✓	CHWASCIAK	05-24-84
200	Antimony	LT .0100	CHWASCIAK	05-23-84
201	Molybdenum	LT .0100	CHWASCIAK	06-01-84
202	Vanadium	LT .0100	PEPIN	06-11-84
272	Calcium Hardness	EQ 65.0000	CHWASCIAK	05-31-84

APPENDIX J

Well No. 8 West Well

Location Exeter, N.H.

D. L. MAHER CO.

RECORD OF TEST

Contract 114-207-23

Orifice 6" x 4"

19

20

	8"	16	16A	19	11	17	15	14	20	8	1	Stake	G.P.M.	Remarks
Static Water Levels	4.82	4.68	5.40	2.80	2.80	2.35	3.20	10.23	1.70	7.02	7.40			
Time	9:45													
0950	18.0		11.63										195	Start of Pump Test
0951	19.31		12.17											
0952	20.0													
0953	20.11													
0954	24.31		14.42											
0955	25.0													
1000	25.20	21.28	15.18	2.75	12.0									
1005													375	Increase G.P.M.
1020	41.98	22.20	23.45	2.80	16.20									
1025	42.58	23.44	24.83	2.80	18.09		8.80							
1030	43.17	23.87	25.22	2.80	18.48	14.30								
1045	44.03	24.72	26.07	2.82	19.45									
1100	44.87	25.67	27.06	2.82	20.37									
1112								13.04						
1117									1.72					
1120										9.16				
1122											9.32			
1130	46.15	26.85	28.26	2.84	21.57									
1140								13.83						
1144									1.72					
1147										9.78				
1148											9.91			
1200	47.06	27.88	29.21	2.84	22.47									
1211								14.58						
1217									1.72					

Well No. 8" Test Well
 Location Exeter, N.H.

D. L. MAHER CO.

RECORD OF TEST

Contract / 12-304-83
 Office 6" x 4"

Time	8"	16	16A	11	17	15	14	8	1	Stake	G.P.M.	Remarks
1220	4/11/54							10.48				
1221									10.56			
1300	47.49	29.02	30.31	2.85	23.61						363	
1330							15.96					
1336								1.71				
1339												
1340								11.77				
1400	49.08	29.86	31.16	2.85	24.43				11.87	No Change	363	
1415							16.49					
1419								1.72				
1423												
1424								12.39				
1438									12.45			
1600	50.11	30.96	32.27	2.87	25.60						360	
1612							17.72					
1615												
1618								1.72				
1619												
1636					22.25							
1800	50.82	31.73	32.98	2.87	26.32						360	
1814							18.62					
1817								1.73				
1820												
1821								14.65				
2000	51.60	32.30	33.56	2.90	26.90				14.72			
2018							19.35					
2022								1.74				

Well No. 8" Test Well

Location Exeter, N.H.

D. L. MAHER CO.

RECORD OF TEST

Contract 712-304-83

Orifice 6" x 4"

Time	8"	16	16A	11	17	15	14	8	1	Stake	G.P.M.	Remarks
2028	4/10/84							15.10				
2031									15.11			
2200	51.80	32.70	33.96	2.90	27.30						360	
2216						19.88						
2221							1.74					
2227								15.32				
2229									15.73			Adjust G.P.M.
2400	4/12/84	52.30	32.90	34.27	2.91	27.70						
2416							20.21					
2420								1.76				
2425								15.91				
2427									16.51			
0200	52.91	33.34	34.50	2.92	28.11						360	
0212							20.70					
0218								1.79				
0223								16.64				
0224									17.10			
0400	53.62	33.72	35.12	2.92	28.43							
0419							21.03					
0424								1.79				
0430								17.76				
0433									17.83			
0600	53.78	34.37	35.60	2.92	28.90						360	
0612							21.49					
0617								1.80				
0623								17.97				
0624									18.10			

Well No. 8" Test Well
 location Exeter, N.H.

D. L. MAHER CO.

RECORD OF TEST

Contract T12-304-83

Orifice 6" x 4"

④

Time	8"	16	16A	11	17	15	14	8	1	Stake	G.P.M.	Remarks
0636	4/12/84					20.82						
0647					25.40							
0800	53.90	34.58	35.85	29.10			21.89				357	
0812												
0814							1.79					
0818								18.47				
0819									18.54	No Change		Took water sample at 0950
1000	54.07	34.77	36.05	29.31							357	
1011							22.13					
1013								1.79				
1016								18.72				
1017									18.82			
1200	54.14	34.84	36.15	29.41							357	
1212							22.31					
1214								1.78				
1217								18.96				
1218									19.04			
1231							21.33					
1237					25.85							
1400	64.54	35.10	36.43	29.66							360	Increase G.P.M. to 360 at 12:58
1412							22.49					
1414								1.78				
1417								19.17				
1418									19.25			
1600	54.77	35.31	36.58	29.81							360	
1613							22.68					
1616								1.78				

Well No. 8 Test Well
 Location Exeter, N.H.

D. L. MAHER CO.

RECORD OF TEST

Contract 112-304-83
 Orifice 6" x 4"

Time	8"	16A	16	16A	11	17	15	14	8	1	Stake	G.P.M.	Remarks
1620	4/12/84								19.35	19.43	No Change		
1621													
1800	55.00	36.79	2.94	30.01								360	
1809								22.88					
1811									1.78				
1814													
1815										19.64			
1823							21.87						
1829						26.41							
2000	55.21	36.94	2.95	30.14				22.97					
2012													
2019									1.78				
2023													
2025										19.79			
2200	55.45	37.01	2.97	30.28								357	
2211								23.00					
2217									1.79				
2221													
2223										19.94			
2400	4/13/84	55.71	37.11	2.98	30.36								
2413								23.21					
2418									1.80				
2422													
2425										20.10			
2200		55.85	35.10	2.98	30.42								
2213								23.38					
2218									1.82				

Well No. 8" Test Well

Location Exeter, N.H.

D. L. MAHER CO.

RECORD OF TEST

Contract 112-304-83

Office 6" x 4"

Time	8"	16	16A	11	17	15	14		8	1	Stake	G.P.M.	Remarks
0223	4/13/84								20.21				
0225										20.23			
0400	55.94	36.00	37.26	2.98	30.53								
0414							23.46						
0418								1.84					
0423									20.28				
0425										20.31			
0600	55.10	36.22	37.38	2.98	30.62						357		
0611							23.53						
0617								1.85					
0621									20.35				
0622										20.40			
0635													
0643						27.00							
0800	55.68	36.14	37.45	2.97	30.78							357	
0809													
0811							23.67						
0814								1.86					
0816									20.49				
1000	55.68	36.17	37.48	2.98	30.72					20.59			
1014							23.78						
1016								1.86					
1019									20.59				
020										20.68	Note		
1200	55.73	36.21	37.52	2.99	30.75							357	Water level down slightly in pond
1212							23.85						
1215								1.86					

Vell No. 8" Test Well
 Location Exeter, N.H.

D. L. MAHER CO.

RECORD OF TEST

Contract 112-3041-83
 Orifice 6" x 4"

②

Time	8"	16	16A	11	17	15	14	8	1	Stake	G.P.M.	Remarks
1218	4/13/84							20.65				
1219									20.74			
1231						22.64						
1237					27.14							
1400	55.85	36.21	37.52	30.76							357	Water temp. 48°F
1414							23.88					
1417							1.86					
1419								20.70				G.P.M. just under 357
1600	55.96	36.35	37.66	30.89					20.79		350	Picked up to 360
1612							23.94					
1614							1.88					
1617								20.78	2			
1618									20.87			
1800	56.12	36.48	37.75	30.99								
1808						24.01						
1810								1.88				
1813								20.86				
1814									20.96			
1823												
1829					27.38							
2000	56.20	36.70	37.90	31.10								
2012							24.15					
2015								1.88				
2019								20.89				
2021									21.05			
2200	56.27	36.70	37.93	31.15								
2213							24.23					

Well No. 8" Test Well
 Location Exeter, N.H.

D. L. MAHER CO.

RECORD OF TEST

Contract 712-304-83
 Orifice 6" x 4"

⑧

Time	8"	16	16A	11	17	15	14		8	1	Stake	G.P.M.	Remarks
2216	4/13/84						1.89		20.92	21.13			
2220													
2223													
2900	4/14/84	36.71	37.97	31.18			24.23						
2413													
2415							1.89		20.95	21.18			
2419													
2421													
0200	56.41	36.72	37.99	31.20			24.30						
0212													
0215							1.89		20.98	21.24			
0220													
0222													
0400	56.48	36.73	38.00	31.22									
0413							24.32						
0416							1.90						
0420									21.04				
0422										21.26			
0600	56.55	36.74	38.02	31.24									
0612							24.35						
0616									1.90				
0620													
0622									21.20				
0622										21.30			
0640					27.65								
0646													
0800	56.33	36.74	38.03	31.29									
0815							24.42					357	

Well No. 8" Test Well
 Location Exeter, N.H.

D. L. MAHER CO.

RECORD OF TEST

Contract 712-304-83

Orifice 6" x 4"

Time	8"	16	16A	11	17	15	14	8	1	Stake	G.P.M.	Remarks
2818	4/14/84						1.92					
2821								21.32				
2823									21.40			
1000	56.31	36.76	38.04	3.03	31.30						357	
1010							24.46					
1013							1.92					
1016								21.35				
1017									21.45			
1200	56.43	36.84	38.15	3.05	31.36						357	
1208							24.52					
1210							1.92					
1213								21.39				
1214									21.49			
1224						23.25						
1229					27.74							Water temp. 48° F
1400	56.60	36.91	38.22	3.03	31.43						357	Showers
1408							24.55					
1410							1.92					
1413								21.41				
1414									21.51	Note		Water level in pond
1600	56.60	36.91	38.22	3.04	31.45						357	down approx. 3/4
1610							24.58					since start of test
1612							1.92					
1615								21.45				
1616									21.54			
1800	56.60	36.92	38.23	3.04	31.48						357	
1809							24.61					

Well No. 8" Test Well

Location Exeter, N.H.

D. L. MAHER CO.

RECORD OF TEST

Contract 115-2011-02

Orifice 6" x 4"

Time	8"	16	16A	11	17	15	14		8	1	Stake	G.P.M.	Remarks
1811	4/14/84							1.92	21.48				
1814										21.58			
1815						23.32						357	
1827					27.81								
1833													
2000	56.80	37.02	38.30	31.55			24.65					360	Adjust GPM from just below 357
2012								1.93					
2016									21.52				
2019										21.61			
2022													
2200	56.86	37.08	38.36	31.61			24.69						
2211								1.93					
2215									21.57				
2219										21.66			
2221													
2400	4/15/84	56.93	37.15	38.42	31.64		24.73						
2412													
2415								1.94					
2419									21.64				
2421										21.69			
0200		57.14	37.19	38.49	31.67								
0212							24.78						
0216								1.94					
0220									21.68				
0222										21.74			
0400		57.22	37.20	38.51	31.70								
0413							24.83						

D. L. MAHER CO.

RECORD OF TEST

Well No. 8" Test Well

Location Exeter, N.H.

Contract _____

Orifice 6" x 4"

Time	8"	16	16A	8	11	17	15	14	8	1	Stake	G.P.M.	Remarks
0417	4/15/84			1.95					21.74				
0422										21.78			
0424													
0600	57.30	37.25	38.58	3.04	31.74			24.87					
0611													
0615				1.95									
0619									21.75				
0621										21.80			
0637						28.16							
0645							23.61						
0800	57.29	37.33	38.65	3.05	31.85						360		Showers
0812								24.92					
0814				1.96									
0817									21.92				
0818										21.89			
1000	57.26	37.37	38.68	3.07	31.90						360		Water level in pond
1013								24.99					down approx. 1" since beginning of test
1019				1.95									
1022									21.85				
1023										21.95			Took water sample
1200	57.26	37.39	38.71	3.07	31.94						360		at 1036
1208								25.03					
1210				1.95									
1213									21.89				Showers
1214										21.98			
1224							23.73						
1229						28.29							Water Temp 48°F

Well No. 8" Test Well

Location Exeter, N.H.

D. L. MAHER CO.

RECORD OF TEST

Contract 112-304-83

Orifice 6" x 4"

Time	8"	16	16A	11	17	15	14	8	1	Stake	G.P.M.	Remarks
1400	4/15/84 57.36	37.46	38.78	3.05	31.96							
1411						25.05						
1413							1.95					
1416								21.92				
1417									22.00			
1600	57.39	37.46	38.76	3.07	31.97						360	
1614						25.07						
1616							1.96					
1619								21.93				
1620									22.02			
1800	57.46	37.50	38.80	3.06	32.01						360	Drizzle
1811						25.09						
1813								1.96				
1815									21.96			
1816										22.05		
1825						23.80						
1830					28.39							
2000	57.48	37.54	38.83	3.04	32.04							
2012							25.12					
2015								1.96				
2018									21.97			
2020										22.09		
2200	57.51	37.58	38.86	3.02	32.06							
2213						25.16						
2217										1.92		
2220										21.98		
2221											22.13	

Well No. 8" Test Well
 Location Exeter, N.H.

D. L. MAHER CO.

RECORD OF TEST

Contract 112-304-83
 Orifice 6" x 4"

Time	8"	16	16A	19	11	17	15	14	20	8	1	Stake	G.P.M.	Remarks
2400	57.53	37.62	38.89	3.0	32.09			25.18					360	
2412									1.88					
2416										21.98				
2420											22.14			
2422														
0200	57.55	37.66	38.91	2.98	32.11			25.21						
0212														
0215								1.84						
0219										21.99				
0221											22.17			
0400	57.56	37.68	38.93	2.97	32.13									
0413								25.25						
0415									1.79					
0419										22.02				
0421											22.19			
0600	57.58	37.70	38.95	2.96	32.15									
0612								25.27						
0615									1.75					
0619										22.00				
0621											22.20			
0635						28.52								
0640							23.95							
0800	57.61	37.66	38.94	2.94	32.15			25.28					360	Showers - Drizzle
0810														
0812									1.72					
0815										22.16				Rain
0816											22.21			

Well No. 8" Test Well

Location Exeter, N.H.

D. L. MAHER CO.

RECORD OF TEST

Contract 112-304-83

Orifice 6" x 4"

(14)

Time	8"	16	16A	19	11	17	15	14	20	8	1	Stake	G.P.H.	Remarks
1000	4/16/84 57.67	37.67	38.97	2.82	32.20			25.29					360	Water temp 48°F
1009														
1011								1.47						
1014										22.15				
1015											22.24	Note		Water level in pond
1200	57.62	37.67	38.97	2.62	32.17								360	back to within 1/2"
1210								25.29						of starting point
1212									1.28					
1215										22.13				
1216											22.23			
1231							23.94							
1238						28.53								
1400	57.55	37.62	38.88	2.45	32.10								360	Water level in pond
1408								25.26						up approx. 3/4" from
1410									1.22					starting point
1413										22.12				
1414											22.21			
1600	57.45	37.52	38.83	2.44	32.09								360	
1613								25.25						
1615									1.26					
1618										22.08				
1619											22.17			
1800	57.45	37.51	38.80	2.48	32.06									
1808								25.24						
1810									1.32					
1813										22.07				
1815											22.17			

Well No. 8" Test Well

Location Exeter, N.H.

D. L. MAHER CO.

RECORD OF TEST

Contract 112-304-83

Office 6" x 4"

Time	8"	16	16A	19	11	17	15	14	20	8	1	Stake	G.P.M.	Remarks
1827	4/16/84						23.83							
1834						27.46								
2000	57.46	37.52	38.81	2.51	32.08									
2012								25.24						
2015									1.35					
2018										22.08				
2020											22.18			
2200	57.48	37.53	38.82	2.53	32.09									
2213								25.25						
2216									1.37					
2220										22.08				
2222											22.18			
2400	4/17/84	57.50	37.55	38.83	2.56	32.11								
2412								25.26						
2416									1.39					
2420										22.09				
2422											22.19			
0200	57.52	37.59	38.85	2.58	32.13									
0212								25.27						
0215									1.42					
0219										22.10				
0221											22.20			
0400	57.54	37.61	38.87	2.61	32.14									
0413								25.29						
0416									1.44					
0420										22.11				
0422											22.20			

