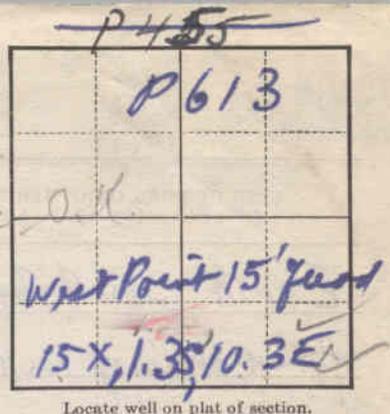


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES BRANCH

Contract 311
Boring 20

RECORD OF WELL



1. Location: State New York County Putnam
 Nearest P. O. _____ Direction from P. O. _____
 Distance from P. O. _____ miles; _____ 1/4 sec. _____, T. _____, R. _____
 If in city, give street and number Rent Top.

sheet 1

2. Owner: New York City Board of Water Supply Board of Water Supply
 Address 120 Wall Street, N.Y. City
 Driller: E. Claesson Sprague and Henwood Address _____

3. Situation: Is well on upland, in valley, or on hillside? ravine

4. Elevation of top of well: 841.6 ft. above the level of sea
(Above or below) (Sea, depot, lake, or stream)

5. Type of well: drilled; kind of drilling rig used diamond drill (chop from 6.5' to 6.8')
(Dug, driven, bored, or drilled) (Solid tool, jetting, rotary, etc.)

6. Depth of well: 664 ft.; year in which well was finished started 8-25-31; ended 9-24-31
 Does well enter rock? yes; if so, at what depth? 6.5 ft.; kind of rock Gneiss

7. Diameter: At top 4" inches; at bottom 4" inches.

8. Principal water bed: _____
(Gravel, sand, clay, or rock. If rock, state kind)
 Depth to principal water bed _____ ft.; thickness of bed _____ ft.

If other water supplies were found, give depth to each _____
 9. Casings: Kind steel; size 2 1/2"; length 17 ft.; between depths of 0 and 4 ft.
 Kind none; size _____; length _____ ft.; between depths of _____ and _____ ft.
 Kind _____; size _____; length _____ ft.; between depths of _____ and _____ ft.

Packers (if any): Depth at which packers were used None; kind _____

Screen or Strainer: Was well finished with screen? No; kind of screen _____;
 length of screen _____ ft.; diameter _____ inches; size of openings _____

10. Head: Does well at present overflow without pumping? No; did it overflow when new? No;
 if flowing, give pressure _____ lb. per sq. inch; or height water will rise in a pipe _____ ft. above surface;
 original pressure or head _____; if not flowing, give water level in well _____ ft. below surface.

11. Pump: Is the well pumped? No; kind of pump _____;
 size or capacity of pump _____; kind of power _____

12. Yield: Natural flow at present (if any) _____ gallons per minute; original flow _____ gallons per minute;
 well has been pumped at _____ gallons per minute continuously for _____ hours;
 quantity of water ordinarily obtained from well 0 gallons per day.

13. Use: For what purpose is the ^{well} ~~water~~ used? Test boring for New York City Aqueduct

14. Quality of the water: _____; is there an analysis? _____
(Hard or soft, fresh or salty, etc.)

15. Cost of well, not including pump: _____ Temperature of water _____ ° F.

Name of person filling blank J. G. Grossman from Board of Water Supply
 Date 4-26-50 Address U.S.S. at Albany

LOG OF WELL

10/22/19
10/23/19

21
582
26
586
23
29/004

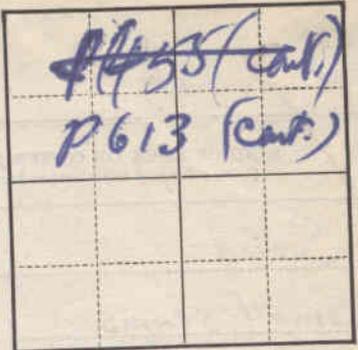
KIND OF ROCK OR OTHER MATERIAL (Give color and tell whether hard or soft)	DEPTH, IN FEET		THICKNESS, IN FEET	REMARKS (Especially information as to water found)	
	From—	To—			
Pieces 21", 21", 16", 15" and less	566.3	576.0	9.5	<p>93 21/664 57/84</p>	
Irregularly marked with hornblende and biotite	576.0	585.7	9.7		
Uniform Pieces 14", 13", 10", 8", 7"	585.7	595.5	9.8		
Solid	595.5	599.0	5.5		
Broken up in short pieces	599.0	601.8			
Darkened with hornblende & biotite	601.8 606.8	611.5 610.0	9.7		
Pieces 14", 10", 8", 7" and less	601.8	611.5			
4.5' light colored. 5.4' irregularly marked with hornblende	611.5	621.3	9.8		formation at a 45° dip
Some hornblende. At 625.6 a 3" layer of quartz & at 627.4 a 6" layer of quartz & small amount of feldspar	621.3	631.0	9.7		
Considerable biotite in rock, causing it to be slightly softer & fracture more readily. Pieces 14", 10", 8", 6" & less.	631.0	639.0	7.9		<p>Chert (to bottom)</p>
8.4' streaked with layers of biotite and hornblende at 60° to 70° dip. 1.4' of nearly pure quartz in short pieces	639.0	649.0	9.8		
1.9' irregularly marked with biotite biotite and hornblende	649.0	658.7	9.7	7.8', uniform, solid.	
0.4' containing much biotite and hornblende. 4.6, light colored	658.7	664.0	5.0	↓	

601.2' core recovered from total run of 657.2' (chipping from 6'5" to 6'8" not included)
 91.6% of core recovered. Lost water as indicated. No dynamite used.
 Used 4 1/4 barrels of cement to grout hole in rock. All casing removed

LOG OF WELL

KIND OF ROCK OR OTHER MATERIAL (Give color and tell whether hard or soft)	DEPTH, IN FEET		THICKNESS, IN FEET <i>core rec'd.</i>	REMARKS (Especially information as to water found)
	From—	To—		
Solid	399.8	407.3	8.6	Resulting in short pieces and fragments.
Small seams	407.3	409.0		
All in short pieces. Contains some serpentine	409.0	414.4	4.4	
With breaks occurring at a 45° dip	414.4	418.5	2.6	
In short pieces and fragments	418.5	422.7	8.9	
Solid, uniform, in long pieces	422.7	428.1		
Uniform ←	428.1	438.0	9.6	
Pieces 28", 10", 9" & less				
Solid, uniform	438.0	446.6	8.6	1 piece 6'-8" and others less
Solid	446.6	456.0	9.4	
Solid, uniform	456.0	465.7	9.7	
Solid	465.7	475.5	9.7	Pieces 30", 10", 10" and less
Solid with varying composition	475.5	485.3	9.6	
High percentage of biotite and hornblende (dark in color)	485.3	495.3	9.5	
High percentage of feldspar	495.3	495.8		
	495.3	505.0	9.7	
Solid. In long pieces. 50° dip	505.0	514.7	9.7	
Uniform, solid. 1 piece 7'-0" long	514.7	523.4	8.7	
Pieces 18", 10", 4" & less.	523.4	528.5	4.3	
Solid, uniform	528.5	537.1	8.6	
Uniform. Breaks and formation at about 45°	537.1	546.8	9.7	
A high percentage of quartz	546.8	556.5	9.5	
& 1.7% in short pieces. 7-8' uniform				
Uniform. 561.5 to 562.0, many disc like pieces caused by small horizontal seams	556.5	566.3	9.4'	

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES BRANCH



Contract 311
Boring 20 (cont.)

RECORD OF WELL

sheet 4

1. Location: State _____ County _____
Nearest P. O. _____ Direction from P. O. _____
Distance from P. O. _____ miles; _____ 1/4 sec. _____, T. _____, R. _____
If in city, give street and number _____

Locate well on plat of section.

2. Owner: _____ Address _____

Driller: _____ Address _____

3. Situation: Is well on upland, in valley, or on hillside? _____

4. Elevation of top of well: _____ ft. _____ the level of _____ (Sea, depot, lake, or stream)
(Above or below)

5. Type of well: _____; kind of drilling rig used _____ (Solid tool, jetting, rotary, etc.)
(Dug, driven, bored, or drilled)

6. Depth of well: _____ ft.; year in which well was finished _____

Does well enter rock? _____; if so, at what depth? _____ ft.; kind of rock _____

7. Diameter: At top _____ inches; at bottom _____ inches.

8. Principal water bed: _____ (Gravel, sand, clay, or rock. If rock, state kind)
Depth to principal water bed _____ ft.; thickness of bed _____ ft.

If other water supplies were found, give depth to each _____

9. Casings: Kind _____; size _____; length _____ ft.; between depths of _____ and _____ ft.

Kind _____; size _____; length _____ ft.; between depths of _____ and _____ ft.

Kind _____; size _____; length _____ ft.; between depths of _____ and _____ ft.

Packers (if any): Depth at which packers were used _____; kind _____

Screen or Strainer: Was well finished with screen? _____; kind of screen _____

length of screen _____ ft.; diameter _____ inches; size of openings _____

10. Head: Does well at present overflow without pumping? _____; did it overflow when new? _____

if flowing, give pressure _____ lb. per sq. inch; or height water will rise in a pipe _____ ft. above surface;

original pressure or head _____; if not flowing, give water level in well _____ ft. below surface.

11. Pump: Is the well pumped? _____; kind of pump _____

size or capacity of pump _____; kind of power _____

12. Yield: Natural flow at present (if any) _____ gallons per minute; original flow _____ gallons per minute;

well has been pumped at _____ gallons per minute continuously for _____ hours;

quantity of water ordinarily obtained from well _____ gallons per day.

13. Use: For what purpose is the water used? _____

14. Quality of the water: _____; is there an analysis? _____
(Hard or soft, fresh or salty, etc.)

15. Cost of well, not including pump: _____ Temperature of water _____ ° F.

Name of person filling blank _____

Date _____ Address _____

LOG OF WELL

OF ROCK OR OTHER MATERIAL (color and tell whether hard or soft)	DEPTH, IN FEET		THICKNESS, IN FEET <i>core recovered</i>	REMARKS (Especially information as to water found)
	From—	To—		
ore banded with hornblende	288.3	298.1	9.8'	↑
50° dip. A high % of quartz from	294.4	296.4'		
12", 9", 3" and less. 40° dip	298.1	303.5	5.4	Lost 50% of water from 298.1 to 664.0' in openings at 52.5' and 63.7'
hard gneiss	303.5	307.0	5.3'	
ter gneiss containing	307.0	310.8		
fine & broken in short pieces				
soft gneiss	310.8'	317.0	2.4	Fractured at 60° dip which accounted for poor recovery.
broken up gneiss	317.0	321.8	12	↓ gneiss
pieces 15", 13", 9", 8", & less	321.8	329.0	7.0	
ft. m. 48° dip	329.0	325.1	5.9	
ft. 20", 11", 3" + less	335.1	341.4'	6.1	
with varying composition	341.4'	346.4'	4.2'	
	346.4	348.4	4.5	
Kenup. Poor recovery	348.4	354.0		
5° dip	354.0	356	1.8	
pieces 8", 6", 4", 3" + less 45° dip	356	361.5	5.1	
pieces 10", 8", 7", 5" & less	361.5'	368.8'	6.3'	
Broken up gneiss. One piece of ^{pure} quartz	368.8	371.5	30.7	
Solid except for small seam at	371.3	381.0	9.7	
373.7' (dip 60°). Pieces 22", 24", 12", 8", & less				
Pieces 52", 18", 13" and less	381.0	390.6	9.6	
All hard. Dip 47°				
form, hard	390.6	399.8	9.2	

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES BRANCH

P455 (cont.)	
P613 (cont.)	

Contract 311

Boring 20 (Cont.)

RECORD OF WELL

Sheet 3

1. Location: State _____ County _____
 Nearest P. O. _____ Direction from P. O. _____
 Distance from P. O. _____ miles; _____ 1/4 sec. _____, T. _____, R. _____
 If in city, give street and number _____

Locate well on plat of section.

2. Owner: _____ Address _____

Driller: _____ Address _____

3. Situation: Is well on upland, in valley, or on hillside? _____

4. Elevation of top of well: _____ ft. _____ (Above or below) the level of _____ (Sea, depot, lake, or stream)

5. Type of well: _____; kind of drilling rig used _____ (Dug, driven, bored, or drilled) (Solid tool, jetting, rotary, etc.)

6. Depth of well: _____ ft.; year in which well was finished _____ Does well enter rock? _____; if so, at what depth? _____ ft.; kind of rock _____

7. Diameter: At top _____ inches; at bottom _____ inches.

8. Principal water bed: _____

Depth to principal water bed _____ ft.; thickness of bed _____ ft. (Gravel, sand, clay, or rock. If rock, state kind)

If other water supplies were found, give depth to each _____

9. Casings: Kind _____; size _____; length _____ ft.; between depths of _____ and _____

Kind _____; size _____; length _____ ft.; between depths of _____ and _____

Kind _____; size _____; length _____ ft.; between depths of _____ and _____

Packers (if any): Depth at which packers were used _____; kind _____

Screen or Strainer: Was well finished with screen? _____; kind of screen _____

length of screen _____ ft.; diameter _____ inches; size of openings _____

10. Head: Does well at present overflow without pumping? _____; did it overflow when new? _____

if flowing, give pressure _____ lb. per sq. inch; or height water will rise in a pipe _____ ft. above surface

original pressure or head _____; if not flowing, give water level in well _____ ft. below surface

11. Pump: Is the well pumped? _____; kind of pump _____

size or capacity of pump _____; kind of power _____

12. Yield: Natural flow at present (if any) _____ gallons per minute; original flow _____ gallons per minute;

well has been pumped at _____ gallons per minute continuously for _____ hours;

quantity of water ordinarily obtained from well _____ gallons per day.

13. Use: For what purpose is the water used? _____

14. Quality of the water: _____; is there an analysis? _____ (Hard or soft, fresh or salty, etc.)

15. Cost of well, not including pump: _____ Temperature of water _____ ° F.

Name of person filling blank _____

Date _____ Address _____

LOG OF WELL

KIND OF ROCK OR OTHER MATERIAL
(Give color and tell whether hard or soft)

DEPTH, IN FEET

From— To—

THICKNESS,
IN FEET
core recovered

REMARKS
(Especially information as to water found)

pieces 8", 7", 6" and smaller	151'	155.5	4.0	
fractures occurring at a 50° dip	155.5'	161.0	5.2	
short pieces & fragments	161	164	1.5	
gneiss, a little quartz	164	167.5	2.7	
amount of quartz	167.5'	171.5	1.4'	Poor recovery due to tendency of core to split
pieces 7", 10", 8" and smaller	171.5'	181.2	9.2'	
	173	173.6	} core split in thin pieces along planes of weakness at 45° & 60° dip respectively	
	179	180.4		
pieces 7", 10", 8" and smaller	181.2	189.7	7.8'	
solid	189.7'	198.2	8.5	
white gneiss,	198.2'	206.5	7.2'	Pieces 13", 11", 8" and smaller
13", 11", 8" and smaller				
fractures at a 60° to 70° dip	206.5	216.5	8.8'	Fractures occurring at same dip
	211.4	216.5	4.9' thick	In short pieces and breaking horizontally
Uniform, solid	216.5	226.5	9.9	
Formation and fractures at 50° dip	226.5'	233.6'	7.0'	
pieces 9", 18", 9" and less	233.6	243.3	9.7	
Uniform	243.3'	252.2'	8.9'	
solid, uniform	252.2	262.0'	9.6'	
gneiss with about 90% of quartz	262.0'	265.1'	3.1'	
1.7' gneiss with a high percentage of quartz, 2.3" of a darker gneiss in short pieces	265.1	269.7	4.0	
Uniform	269.7'	279.6'	9.9'	
Gneiss with varying composition	279.6	282.7	2.7'	lost all water from 279.6 to 298.1 in openings at 50 & 51 and 63.7'
Dip 62°				

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES BRANCH

P 155 (cont.)	
P 613 (cont.)	

Contract 311

Boring 20 (cont.) **RECORD OF WELL**

1. Location: State _____ County _____
 sheet 2 Nearest P. O. _____ Direction from P. O. _____
 Distance from P. O. _____ miles; _____ 1/4 sec. _____, T. _____, R. _____
 If in city, give street and number _____

Locate well on plat of section.

2. Owner: _____ Address _____
 Driller: _____ Address _____

3. Situation: Is well on upland, in valley, or on hillside? _____

4. Elevation of top of well: _____ ft. _____ the level of _____ (Sea, depot, lake, or stream)

5. Type of well: _____; kind of drilling rig used _____
(Dug, driven, bored, or drilled) (Solid tool, jetting, rotary, etc.)

6. Depth of well: _____ ft.; year in which well was finished _____
Does well enter rock? _____; if so, at what depth? _____ ft.; kind of rock _____

7. Diameter: At top _____ inches; at bottom _____ inches.

8. Principal water bed: _____ (Gravel, sand, clay, or rock. If rock, state kind)
Depth to principal water bed _____ ft.; thickness of bed _____ ft.
If other water supplies were found, give depth to each _____

9. Casings: Kind _____; size _____; length _____ ft.; between depths of _____ and _____
Kind _____; size _____; length _____ ft.; between depths of _____ and _____
Kind _____; size _____; length _____ ft.; between depths of _____ and _____

Packers (if any): Depth at which packers were used _____; kind _____

Screen or Strainer: Was well finished with screen? _____; kind of screen _____
length of screen _____ ft.; diameter _____ inches; size of openings _____

10. Head: Does well at present overflow without pumping? _____; did it overflow when new? _____
if flowing, give pressure _____ lb. per sq. inch; or height water will rise in a pipe _____ ft. above surface
original pressure or head _____; if not flowing, give water level in well _____ ft. below surface.

11. Pump: Is the well pumped? _____; kind of pump _____;
size or capacity of pump _____; kind of power _____

12. Yield: Natural flow at present (if any) _____ gallons per minute; original flow _____ gallons per minute;
well has been pumped at _____ gallons per minute continuously for _____ hours;
quantity of water ordinarily obtained from well _____ gallons per day.

13. Use: For what purpose is the water used? _____

14. Quality of the water: _____; is there an analysis? _____
(Hard or soft, fresh or salty, etc.)

15. Cost of well, not including pump: _____ Temperature of water _____ ° F.

Name of person filling blank _____

Date _____ Address _____

8109

LOG OF WELL

KIND OF ROCK OR OTHER MATERIAL (Give color and tell whether hard or soft)	DEPTH, IN FEET		THICKNESS, IN FEET <i>or core recovered</i>	REMARKS (Especially information as to water found)
	From—	To—		
Earth. Small stones. Loose	0	6.5'	6.5'	
Patten, broken up rock.	6.5	10	3.5	Many vertical & horizontal seams
Very hard. High percentage of quartz	10	14	14	Pieces 9", 4", & smaller.
Hard	14	16	2	
Uniform in one piece (1.9')	16	17.9 17.9	1.9 1.9	2" sand seam at 17 ft.
Broken up in short pieces (1.7')	17.9 17.9	19.6	1.7	
Light colored granite gneiss	20	28	8	
Hard uniform gneiss	28	63.8	35.8	streaked with hornblende 28 to 37.6' & 55.2 to 63.8'
streaked with hornblende 28				Lost all water in 1/4" open seam at 52.5'
to 37.6' and 55.2 to 63.8'				Lost all water from 52.5' to 57'
				Lost 50% of water from 57' to 63.7'
				Lost all water in 1" seam at 63.7'
	63.7	73	9.3	Lost all water
Granite gneiss. Small amount of serpentine	73	73.6	0.6	Lost 50% of water from 73' to 77.6'
Solid, uniform	77.6'	82'	4.4'	
Layer with a pronounced cleavage which split at a 75° dip	84'	84' 2"	2" inches.	
Large percentage of quartz	91	91.8	0.8'	
Solid	91.8'	101.4'	9.6'	
Uniform	101.4'	111.4'	9.7'	
Pieces 32", 17", 7", 6" and smaller	111.4'	121.3'	9.8'	
Pieces 52", 46", 9", & smaller. 50° dip	121.3'	131.0'	9.7'	
Uniform	131.0'	140.8'	9.8'	
Pieces 16", 9", 5" and smaller	140.8'	145.5'	4.6'	
Fractures occurring at a 45° to 50° dip	145.5'	151.0'	5.5'	