



WATER-RIGHT DOCKET

Richmond National Battlefield Park

Docket No: 3

WATT HOUSE

Supporting Hydro Data

11-00-1958: fixed property record

Form 10-559
(Nov. 1958)

U. S. DEPARTMENT OF THE INTERIOR - NATIONAL PARK SERVICE

FIXED PROPERTY RECORD

DESCRIPTION OF PROPERTY (Include reference to the location within the Park, how the asset was acquired, name of contractor, etc.)

1. One shallow well, located at Fort Harrison, pumped. 1000' of pipe. Maintained by NPS. Water has a high natural carbon dioxide and required treatment as follows: Water is pumped from well to top of a coke-tray aerator, trickles through the aerator into a collecting basin, and is pumped through a neutralizer into a 300 gallon hydro-pneumatic tank. Donated. Rawls plumbing Co., Mechanicsville, Va. installed pump in Watt House.
- One shallow well at Garthright House, pumped, with no treatment. Length of pipe maintained by NPS is 45'. Donated.
2. Pump and power house. building # 8. One story building constructed of frame on concrete base. Exterior walls are siding covered with tar paper. Flooring is concrete and roof is tar paper. Building is used as a pump house and distribution point for electricity. Measures 91 square feet. Donated. Constructed by CCC.
3. Water System, Watt House - Hand dug well 30' deep, 2 1/2 ft. in diameter. Lined with concrete tile. Gould two pipe system, 1/3 H.P. pump, s/p, 60 cycle. System includes 40 gallon pressure tank and 140' of flexible plastic pipe.

Line	DATE	REFERENCE		Unit	QUANTITY		COST		
		Journal	Vou.		No. of Units	Accumulated Total	Direct Costs	Indirect Costs	Accumulated Cost
1	7/13/60	31-181		Each	2	2	\$ 1,082.00		\$ 1,082.00
2	7/13/60	31-181		Each	1	3	\$ 150.00		\$ 1,232.00
3	12/15/60	31-112	331.1	"	1	4	922.00	111.13	2,295.13
4									
5									
G.L. Acct. No.		General Classification			Sub-Classification		Region	State	Park or Office
100.0		UTILITIES			Water Systems		One	Virginia	Richmond NE

Region One
Richmond 20, Virginia

L54

DEC 11 1961

Virginia Division of Mineral Resources
Natural Resources Building
McCormick Road
Charlottesville, Virginia

Attention: Dr. James L. Calver, State Geologist

Gentlemen:

In compliance with your request we have today made shipment to you, express collect, of material samples from the deep well drilled at the Watt House, Richmond National Battlefield Park. Enclosed is a sketch indicating general location. Since we have not made any determination of the soil samples we would appreciate notification of material type after completion of your analysis.

The well was drilled by Sydnor Pump and well of Richmond, Virginia to a depth of 189 feet and the yield after four hours of pump testing was a maximum of 6 gpm. The static water level was 120 feet. A ten foot bronze, standard screen was set in the water bearing zone at a 180 - 190 feet. No drawdown or recovery curve data are available.

Attached also for your information is a copy of chemical analysis report prepared by Froehling & Robertson, Inc.

Your interest and cooperation in this water development is greatly appreciated.

Sincerely yours,

(Signed)

H. Boone Smith
Regional Chief of Operations

Attachments

Copy to: Mr. Paul C. Henderson, U.S. Public Health Service
Mr. Alfred Vick, III, Region One Hydraulic Engineer

GSEverhardt:mtt:12/11/61

General

Daily

SINCE



1881

FROEHLING & ROBERTSON, INC.

INSPECTION ENGINEERS • CHEMISTS • BACTERIOLOGISTS

CABLE ADDRESS—"FROEHLING"

AM
MAIN OFFICE AND LABORATORIES
814 WEST CARY STREET
RICHMOND, VIRGINIA
PHONE 844-3885

BRANCH LABORATORIES
NORFOLK, CHARLOTTE, RALEIGH
WASHINGTON, BALTIMORE
GREENVILLE, ROANOKE, WILMINGTON

CHEMICAL ANALYSIS OF WATER

RICHMOND, VA.
DECEMBER 6, 1961

50.39

NO. J-626-12-A

MADE FOR: REGIONAL DIRECTOR, REGION 1, NATIONAL PARK SERVICE,
900 N. LOMBARDY ST., RICHMOND, VA. ATTN: MR. A. H. McDILL

PROJECT: ~~DEEP WELL~~ DEEP WELL, WATT HOUSE, RICHMOND NATIONAL BATTLEFIELD PARK
SAMPLE SUBMITTED BY MR. ALFRED VICK

pH VALUE (ELECTROMETRIC)

8.3

PARTS PER MILLION

7.0

USPHS
Limits

~~DISCOVERED~~—TOTAL SOLIDS AT 103°C.
LOSS ON IGNITION (ORGANIC AND VOLATILE MATTER)
MINERAL RESIDUE (NON-VOLATILE MATTER)
SUSPENDED (INSOLUBLE) MATTER
FREE CARBON DIOXIDE (CO₂)
PHENOLPHTHALEIN (CARBONATE) ALKALINITY as CaCO₃
METHYL ORANGE (BICARBONATE) ALKALINITY as CaCO₃
TOTAL HARDNESS (BY CALCULATION) as CaCO₃
SOAP HARDNESS as CaCO₃

162.0
28.8
133.2
-
0.0
4.0
116.0
68.2 moderately hard
70.0

ANALYSIS OF MINERAL RESIDUE:

SILICA (SiO₂) AND INSOLUBLE MATTER
IRON (Fe)
ALUMINUM (Al)
CALCIUM (Ca)
MAGNESIUM (Mg)
SODIUM AND POTASSIUM as SODIUM (Na)
BICARBONATE (HCO₃) (BY CALC. FROM ALKALINITY)
CARBONATE (CO₃) (BY CALC. FROM ALKALINITY)
CHLORIDE (Cl)
SULFATE (SO₄)
NITRATE (NO₃)
PHOSPHATE (PO₄)
COPPER (Cu)
FLUORIDE (F)

1.2
0.1 0.3
0.9
18.4
5.4 125
29.1
141.5
2.4
5.0 250
9.1 250
0.1
-
0.0
0.15 1.5

REMARKS:

✓	Rec'd. of Other	8.12.8
✓	Amount of Other	
✓	Reg. Analysis	
✓	Reg. Lined Arch.	8.12.15
✓	Concessions	
✓	Land	
✓	Maintenance	
✓	Other	

Vick 12/11

RESPECTFULLY,

FROEHLING & ROBERTSON, INC.

WATER SYSTEM DATA

DATE

AREA Richmond Battlefield NM COLLECTED 7 Dec. 1961 COLLECTED BY GEE

1. Name of System: Watt House Water System
2. Location: State Virginia County Henrico General Area Mechanicsville
Reference to permanent landmark _____
3. Source of Supply: Deep Well * Capacity 360
(Well, Spring, Stream, Impoundment, etc.) gph
4. Type of System: Pumped (Pneumatic)
(Pumped, Gravity, etc.)
5. Treatment: None
(Filtration, Chlorination, Aeration, etc.)
6. Distribution Mains: Size **1 1/4" Length 10' ; Size _____ Length _____
Size _____ Length _____ ; Size _____ Length _____
Size _____ Length _____ ; Size _____ Length _____
7. Pump Unit: Make Sumo *** ; Type W11B11/180 ; Model No. W45221
Serial No. - - ; Outlet 1 1/4 in. ; Inlet - - in.
(Size) (Size)
8. Power Source: Electric Motor: Make - - ; HP 1/2 ;
(Elec., Gas, Generator)
Serial No. _____ ; Voltage 220 ; Amps 4.65 ;
RPM 60 ; Type - - ; Phase one ;
Cycles - - ; Others Mark I ; Stages II
9. Control: Automatic Pressure **** ; Manual _____ ;
(Float, Electrode, Pressure, Time)
Other _____
(Explain)

*Drilled Nov. 27-30th by Sydnor Pump & Well to a depth of 199 feet below ground surface.
Casing 4 inch 180 feet long. Standard bronze screen 10 feet in length set at 180-190 feet. Chemical analysis performed Dec. 6, 1961 by Froehling & Robertson.

**House distribution 3/4 inch copper, Type L Hard.

***Submersible, Head limits 220/130 feet.

****Square D. Class 9013, Type ASG9 closes @ 30# opens @ 40#, No. 4038B1G3-361.

COMMONWEALTH OF VIRGINIA



J. M. SUTHERLAND
Director

ACHAL, JR.
Executive Assistant
DIVISIONS

BY
TRIAL DEVELOPMENT
AL RESOURCES

RELATIONS AND ADVERTISING
RESOURCES

DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

DIVISION OF MINERAL RESOURCES
NATURAL RESOURCES BUILDING
BOX 3667, CHARLOTTESVILLE, VA.

JAMES L. CALVER, State Geologist
December 28, 1961

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REGION ONE

DEC 29 1961

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Asst. Exec. Dir.

Ch. Operations

Ch. Ranger Asst.

Ch. Interpretation

Ch. Adm.

Ch. Rec. Mgmt.

Ch. Training

Ch. Public Affs.

Mr. H. Reese Smith
Regional Chief of Operations
National Park Service
Region 1
Richmond 20, Virginia

Dear Mr. Smith:

Ref: L54

Microscopic examination of the sample cuttings from the Richmond National Battlefield Park (Watt House) water well has been completed, and in answer to your request a copy is enclosed. If we can be of further assistance, please do not hesitate to contact us.

Very truly yours,

DIVISION OF MINERAL RESOURCES

Richard H. DeKay
Richard H. DeKay
Geologist

RHD/sh

Enclosure

Water Well
(Watt House)

VDMR 611
Hanover 30

RICHMOND NATIONAL BATTLEFIELD PARK SERVICE (WATT HOUSE)

5-10	Sand, fine-medium, sub-rounded-rounded, white-clear, with some tan brown clay.
10-15	Sand, medium, sub-rounded-round, white-clear.
15-20	Sand, as above with some tan clay.
20-25	Sand, as above, some very coarse rounded grains.
25-30	Sand, poorly sorted, fine-very coarse, rounded-angular, white-clear-gray-yellow, some brown clay.
30-35	Sandstone, poorly consolidated, fine grained, micaceous, white-dark gray, some dark gray-black mafic material.
35-40	Sand, fine grained as above.
40-45	Sand as above with traces of gray feldspar.
45-50	Sand, very poorly sorted, fine-pebble size angular-rounded grains, white-green-gray, traces of gray feldspar, mica, black mafic material, dolomite concretion with pyrite specks.
50-55	Sand as above.
55-60	Sand as above.
60-65	Sand as above.
65-70	Sand as above.
70-75	Sand, fine grained-coarse, clear-light gray with fragments of biotite gneiss and some light green clay material.
75-80	Sand with biotite gneiss fragments as above.
80-85	Sand as above.
85-90	Sand as above.
90-95	Sand as above.
95-100	Sand, medium-coarse, very glauconitic, white-clear grains, sub-angular, trace of fossil fragments and considerable black, vitreous dolomite, conchoidal fracturing, some silvery phyllite fragments. (TOP OF PAMUNKEY GROUP)

-2-

100-105	Greensand, medium grained, considerable fossil fragments, and mica flakes.
105-110	Greensand and fossil fragments, increase in mica content.
110-115	Greensand as above with some biotite gneiss and phyllite fragments.
115-120	Greensand, with considerable amounts of fossil fragments, sharks teeth, and black, concretionary, vitreous dolomitic material, traces of gneiss and phyllite.
120-125	Greensand with fossil fragments, coarse quartz grains, and black dolomitic material - about 90% glauconite.
125-130	Greensand, with fossil fragments and gray siltstone, mica.
130-135	Greensand as above.
135-140	Greensand as above.
140-145	Greensand as above.
145-150	Clay, pink, with glauconite and quartz grains imbedded in it.
150-155	Greensand, fossil fragments, coarse quartz grains.
155-160	Greensand as above.
160-165	Clay, pink, with quartz grains and glauconite imbedded in it.
165-170	Greensand, fine grained, micaceous, some fossil fragments, with traces of buff silty clay.
170-175	Greensand as above.
175-180	Greensand as above with considerable fossil fragments.
180-185	Greensand as above with some silty gray clay.
185-190	Sand, medium-very coarse grained, sub-angular, white-clear, arkosic, traces of fossils and glauconite (TOP OF POTOMAC GROUP) - probably a good water sand.
190-195	Sand, coarse-very coarse, white-buff-yellow, sub-angular, arkosic, - probably a good water sand.
195-200	Sand as above - with uphole cavings.
200-ID	Sand, arkosic as above, many uphole cavings of fossil fragments and glauconite etc.

-3-

GEOLOGIC LOG

Chesapeake Gp = surf
Pamunkey Gp = 95 feet
Potomac Gp = 185 feet

Tops & Samples Examined by
L. H. Gardner - Va. Div. Min. Res.
12/28/61

Other Supporting Information



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
Region One
Richmond 20, Virginia

IN REPLY REFER TO:

D5039

Memorandum

Richmond

JAN 11 1962

To: Superintendent, Richmond NBP

From: Regional Chief of Operations

Subject: Completion Report, Deep Well Watt House, Richmond National Battlefield Park

This deep well (see attached location sketch) was drilled and developed by Sdnor Pump & Well Company of Richmond, Virginia between November 26, 1961 and December 1, 1961.

The well was drilled to a total depth of 199 feet. During drilling soil samples were collected at regular intervals and forwarded to the State Division of Mineral Resources at Charlottesville, Virginia for analysis. Attached is a log of samples and determination as to sample identification. Once drilling operation was completed the next step was to install wash valve assembly and tail section, ten (10) foot stainless steel screen (#20 slot), and 187 linear feet of four (4) inch black steel casing. After developing well head which included flushing out aquagel bonding mixture the contractor filled around screen perimeter with No. 2 graded gravel (George F. Pettines, Mineral Products).

A four (4) hour pump test was made to gather drawdown and capacity data. The maximum capacity was determined to be 5 gpm with a drawdown of approximately 170 feet from top of well casing. The static water level was measured at 120 feet from top of casing. During the pump test a sample was collected for chemical analysis. Attached is chemical analysis of water sample collected, by Froehling and Robertson, Inc. of Richmond, Virginia.

The final step of the drilling operation was placement of a neat cement grout mixture $1\frac{1}{2}$ inches thick around the remaining 187 feet of casing.

AND CONSTRUCTION
wrb Copy
STRATTON
MURPHY
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2
Dreake
FILES
FILE FILES

RICH

This necessary and usable system was completed with the installation of a $\frac{1}{2}$ HP submersible pump (Sumo Model W11B11) at a depth of 180 feet, required $1\frac{1}{2}$ inch drop pipe, pitless adapter connection, 82 gallon steel pressure tank, pressure switch and controls, and necessary fittings and connections.


H. Reese Smith
Regional Chief of Operations

Attachments 2,

Copy to: Engineering Technician (Management Assistant) McDill
Hydraulic Engineer Alfred Vick, III
Paul Henderson, U.S. Public Health Service Sanitary Engineer
WASO
EODC

DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
REGION ONE
RICHMOND, VIRGINIA

MAY 13 1957

Memorandum

To: Chief, Eastern Office, Division of Design and Construction
From: Regional Chief of Operations
Subject: Watt House Well - Richmond National Battlefield Park

The construction of the well at the Watt House has been completed, as follows:

Depth of well - 33 feet
Diameter of shaft - 30 inches
Water level - 14 feet (19 feet below ground surface)
Flow - 5 gal. per min. (approximately)

The contractor advises that, in the event the flow decreases to the extent that a sufficient quantity of water is not available, the depth can be increased 20 feet with 14 inch shaft at a cost of \$6.00 per foot.

We shall appreciate your sending us specifications for the water pump, motor, pressure tank, and related equipment.

(SIGNED)

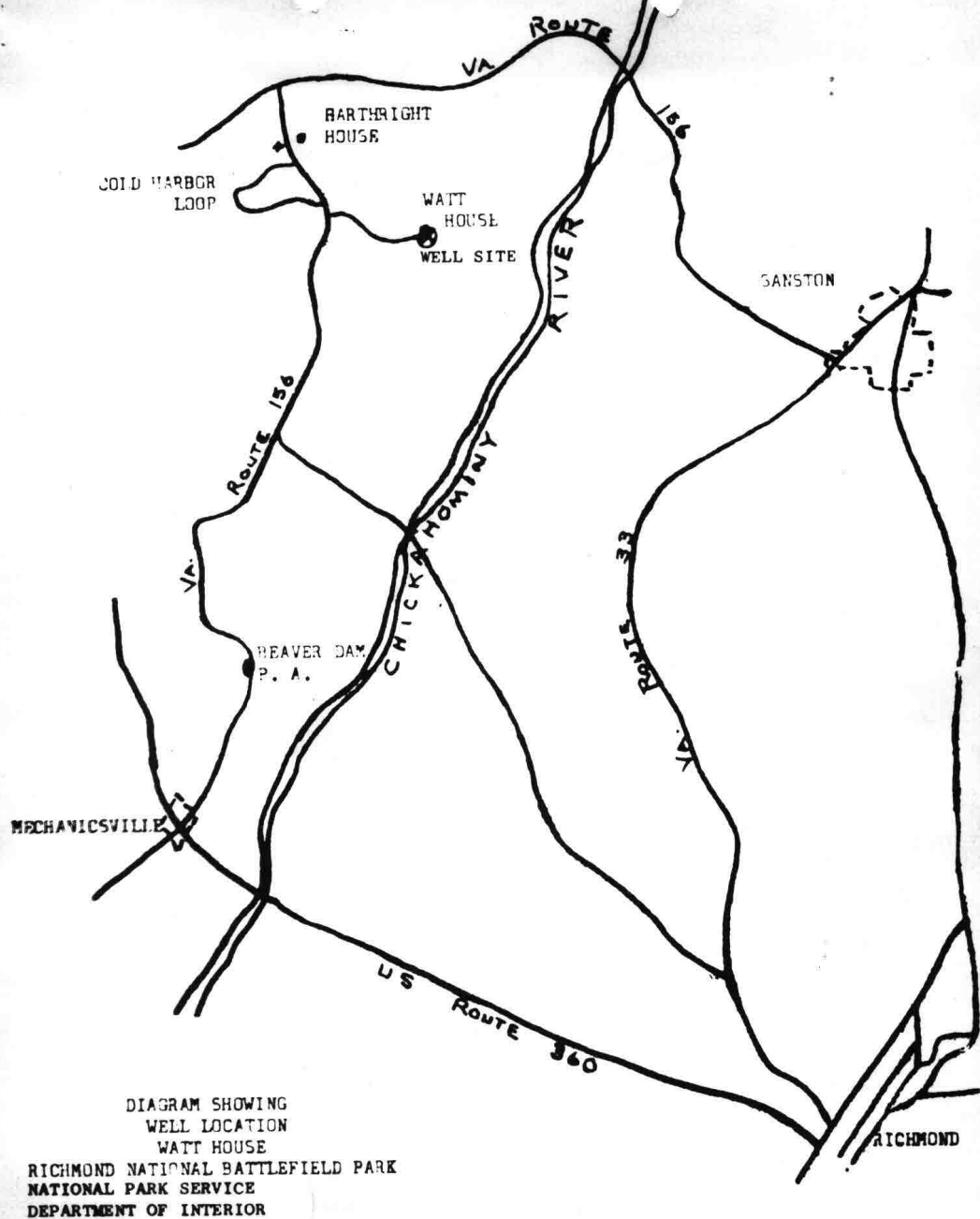
H. Reese Smith
Regional Chief of Operations

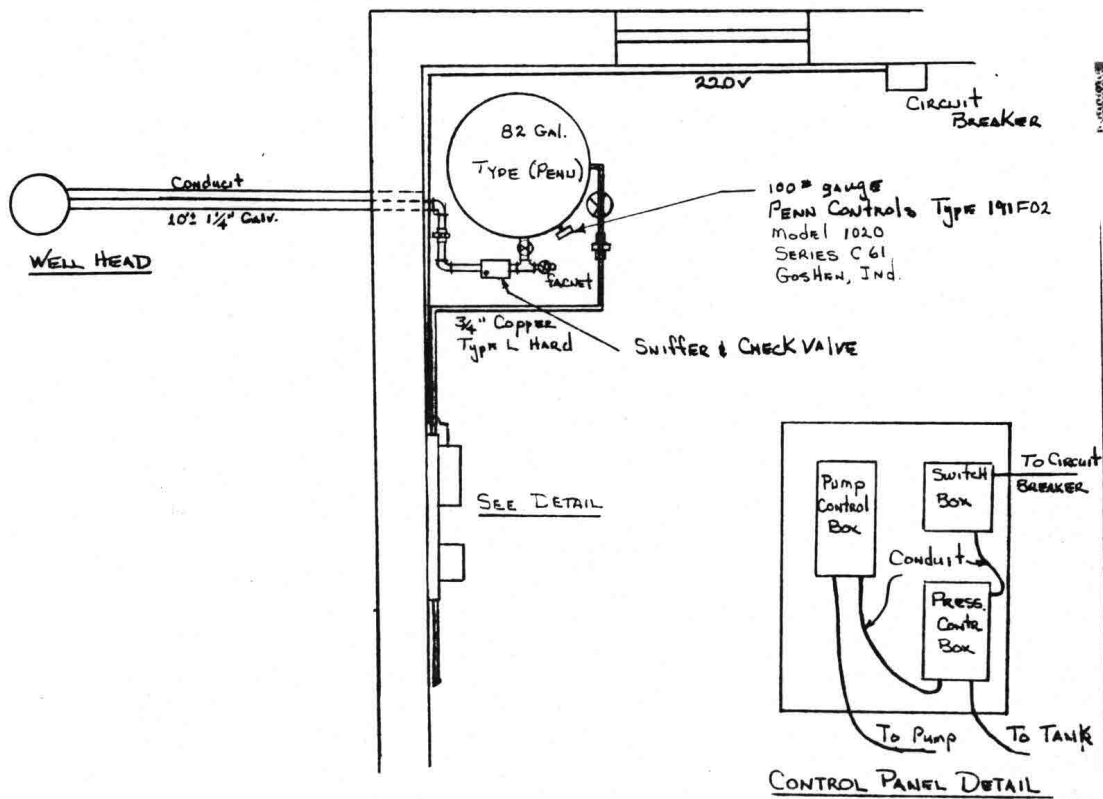
HRS:smh:ur

Copy to: Supt., Richmond NRP

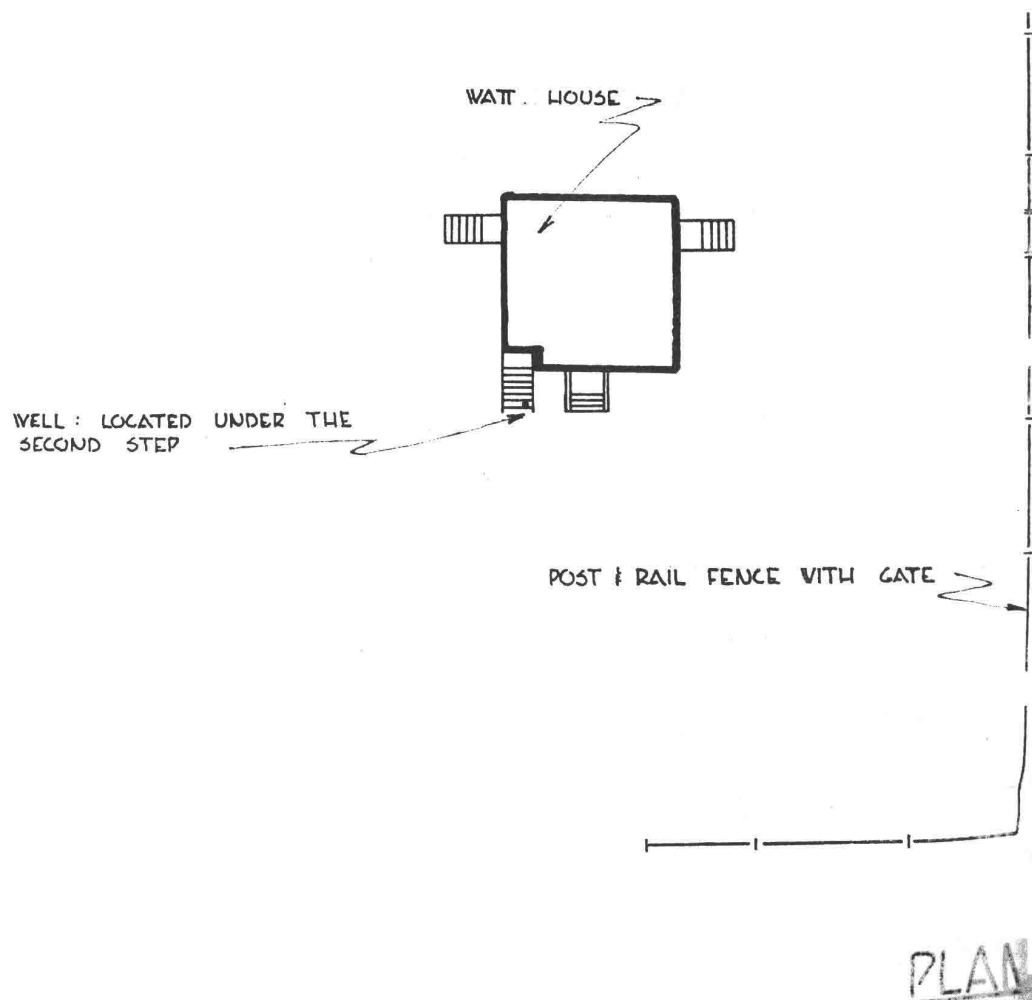
General

Daybook





WATER SUPPLY WATT HOUSE. RNBP



Docket Information

Number of Documents in Docket 15

Documents Dated from 5/13/1957 to 12/28/1961

Docket Compiled: 6/14/2011