



WATER-RIGHT DOCKET

Shenandoah National Park

Docket No: 22

UNNAMED SPRING AT SIMMONS GAP WATER SYSTEM

Preliminary Docket Information

00-00-0000: docket #39: simmons gap water system index

SHENANDOAH NATIONAL PARK

Docket #39

Simmons Gap Water System

I N D E X

PART I - INVESTIGATION

1. Preliminary report, Simmons Gap Area, by Virginia Division of Mineral Resources, Charlottesville, Virginia (April 12, 1966).

PART II - WATER RIGHTS

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

VDMR - 1704
WWCR- 28

MAILING ADDRESS: **DIVISION OF MINERAL RESOURCES**
Box 3667
Charlottesville, VA 22903

OFFICE ADDRESS:
McCormick Road
Charlottesville, Virginia

WATER WELL COMPLETION REPORT

OWNER: National Park Service (Shenandoah) Mailing Address: Luray, Virginia 22835

TENANT: Simmons Gap Maintenance Area Mailing Address: _____

DRILLER: Frank W. Martin Drilling Co., Inc. Mailing Address: 5163 Starkey Road
Roanoke, VA 24014

WELL LOCATION: County Greene Approx. 300 ^{feet} ~~mi~~ east _____ (direction) of _____
Skyline Drive and 500 ^{feet} ~~mi~~ south - southeast (direction) of Skyline Drive -
Fire Road jct.

(GIVE DIRECTION AND DISTANCE IN FEET OR MILES FROM TWO REFERENCE POINTS - ROADS, TOWNS, RIVERS, ETC. - ON COUNTY HIGHWAY OR OTHER MAP.)

DATE STARTED: 7/12/66 DATE COMPLETED: 7/14/66

TYPE OF DRILL RIG USED: Air Rotary TOTAL DEPTH 205 feet

WATER LEVEL: Stands 14 feet below surface OR

has NATURAL flow of _____ gallons per minute

YIELD TEST: Method Test pump

* Drawdown 99 feet

* Rate 25 gal. per min.

Duration 24 hrs., 0 min.

WATER ZONES: from 190 to 195 feet

from _____ to _____ feet

from _____ to _____ feet

WATER: Color Clear Taste _____

Odor _____ Temp. _____ °F

WELL TO SUPPLY: (check one) Home _____

Farm _____ Town _____ School _____

Industry _____ Other Maintenance Area

WATER ANALYSIS AVAILABLE: Yes X No _____

DRILL CUTTINGS SAVED: Yes X No _____

(DRILL CUTTINGS SHOULD BE COLLECTED AT 10 FOOT INTERVALS. THESE SAMPLES MAY BE SHIPPED TO THIS OFFICE EXPRESS COLLECT. SAMPLE BAGS ARE FURNISHED FREE OF CHARGE UPON REQUEST.)

REMARKS: * During stabilization period of 21 2/3 hours

HOLE SIZE: 10 inches from 0 to 43 feet

6 inches from 43 to 205 feet

_____ inches from _____ to _____ feet

SCREEN SIZE: _____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

CASE SIZE: 6 inches from 0 to 43 feet

_____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

GROUTING: Method Poured

Material Cement Depth 41 feet

PUMP: Type Electric Submersible

Capacity 50 gal per min

Depth of intake 193 feet

(LOG OF WELL) OVER

Land History

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.)

Location: Simmons Gap Area - South District

One Spring
One 3000 Gallon Concrete Reservoir
2400 Linear Feet of Pipe

Gravity System

Constructed by CCC in 1936

Line	DATE	REFERENCE		QUANTITY			COST		
		Journal Vols.	Other	Unit	No. of Units	Accumulated Total	Direct Costs	Indirect Costs	Accumulated Costs
1	8/27/59	37-10		System	1				2,100.00
2									
3									
4									
5									
G.I. Acct. No. 100.8		General Classification Utility			Sub-Classification Water System		Region One	State Va.	Park or Office SNP

Other Supporting Information

Shenandoah National Park
SIMMONS GAP AREA
Final Report

National Park Service
Contract No. 14-10-1-134-2

HISTORY

At the request of Superintendent R. T. Hoskins, a field investigation was conducted in November 1965 for possible sources of water for the Simmons Gap Ranger Station and any future developments in the immediate area. As no suitable springs are available within one mile of the Ranger Station, two test-hole drilling sites near the intersection of two fracture zones by Fork Hollow Creek were recommended (Preliminary Report dated April 12, 1966).

TEST-HOLE DRILLING AND EVALUATION

The Frank W. Martin Drilling Company of Roanoke, Virginia began drilling at Test-Hole Site No. 1 on July 12, 1966. The principle rock types, penetrated beneath an overburden 25 feet thick, were basalt, andesitic basalt, phyllite, and epidote, all in the Catoclin Formation. Water was encountered in fractured rock from 190 to 195 feet below ground level, and drilling was terminated at a depth of 205 feet. The test hole was completed on July 14, 1966 after it had been reamed, cased, and grouted. As the hole was not drilled at least 50 feet beyond the deepest water zone as recommended, it is unknown if additional water-bearing fractures occur below 205 feet. Test-Hole No. 2 was not drilled because the foreseeable water needs were fulfilled from Test-Hole No. 1. It should be noted that there is some inconsistency in the depths of reaming, grouting and casing as reported by the driller on the completion report form he submitted.

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A pump test was conducted on July 20 and 21, 1966 using an electric submersible pump set at a depth of 193 feet, and 25 gallons per minute were discharged continuously for a period of 21-2/3 hours from a constant pumping level of 113 feet. It is indicated by this long period of stabilization that the yield obtained will probably be available for extended periods of pumping even during the dry seasons. Water samples were collected near the end of the pump-test period and analysed by Froehling and Robertson, Inc., Richmond, Virginia. The following results of their analysis (P. O. No. 134-161, dated 9/15/66) show the water to be of excellent chemical quality:

(in parts per million, except for pH)

pH	8.3	Silica	1.0
Total Solids	76.0	Iron	0.02
Ignition Loss	20.0	Calcium	10.0
Mineral Residue	56.0	Magnesium	4.6
Free Carbon Dioxide	0.0	Sodium & Potassium	6.7
Phenolphthalein Alk.	8.0	Bar carbonate	51.2
Methyl Orange Alk.	42.0	Carbonate	4.8
Total Hardness	43.9	Chloride	4.0
Manganese	NIL	Sulfate	2.7
Fluoride	NIL	Nitrate	0.4

RECOMMENDATIONS

Small to moderate yields (5 to 20 gallons per minute) should be available from other wells in the area if they are located to intercept deep fracture zones; ground water encountered at depths less than 100 feet should be cased off because it can be anticipated they would not be perennial, sanitary supplies. Recommendations for Test-Hole No. 2 were furnished at the conclusion of the Preliminary Report: these recommendations are in no way altered as result of the completion

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of Test-Hole No. 1. The attached Water Well Completion Report form, drillers log, geologic log, and Pump Test data sheets contain information that will be helpful in any future water-well drilling operations in the Simmons Gap Area. These data are also on file at the Virginia Division of Mineral Resources, and the sample drill cuttings have been placed in the permanent well-sample repository.

Virginia Division of Mineral Resources
Charlottesville, Virginia
May 29, 1967

Shenandoah National Park
SIMMONS GAP AREA
Preliminary Report

Contract No. 14-10-0137-0185

In accordance with item 1d of Contract No. 14-10-0137-0185 this Division was requested by letter (R. T. Hoskins, Superintendent, October 26, 1965) to add the Simmons Gap Area to those areas already requested for study in the current contract. The necessary field investigations for geologic mapping and the occurrence of springs within a 1-mile radius of Milepost 73.2 were conducted during November 1965.

Geology and Hydrology

Although the usual number of wet-weather seeps were found, no perennial springs were observed within a reasonable distance or elevation of the Ranger Station. Accordingly, the investigations were continued for the location of test-hole drilling sites. The area on each side of Skyline Drive near Milepost 73.2 is underlain by fine-grained metamorphosed basalt of the Catoclin Formation that is somewhat distorted but has a regional dip to the southeast. Because these rocks have very little primary permeability it will be necessary to locate permeable zones of secondary origin interconnected with an adequate source of recharge to obtain a sufficient supply of ground water. As the recharge conditions in the area studied are limited, only small amounts of ground water can be anticipated. However, as the water requirements are relatively small, it is possible that a test hole can later be developed into a satisfactory water well.

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Test-hole Recommendations

Approximately 500 feet south of the Skyline Drive-Fire Road intersection is the intersection of two hollows. The east-west hollow and the southern portion of the north-south hollow are occupied by Fork Hollow Creek. A drilling area, the center of which is the intersection of these two hollows, has been selected for at least two test holes. Test Hole No. 1 should be drilled at the location shown by the tip of the arrow on the attached copy of an aerial photograph. At this site, 125 feet east of the Fire Road and on the north side of the access road to the Ranger Station, the drill hole will first penetrate 10 to 30 feet of overburden and then enter and remain in the Catoclin Formation. The maximum recommended drilling depth at this site is 400 feet unless a zone of shattered rocks is encountered at a depth greater than 300 feet. In such a case drilling should be continued for a distance of at least 50 feet below the deepest fracture penetrated.

If a sufficient tested yield cannot be developed from the 400-foot test hole at site No. 1, the drilling rig should be moved 250 feet southeast to Test Hole No. 2. The drilling specifications at this site, on the southeast side of Fork Hollow Creek, are the same as those for site No. 1.

Virginia Division of Mineral Resources
Charlottesville, Virginia
April 12, 1966



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
National Capital Region
1100 Ohio Drive, S.W.
Washington, D. C. 20242

SEP 20 1967

REF ID: A5031

SEP 22 1967

Director	
Assistant Director	
Chief of Division	
Administrative	
Technical	
Support	

Handwritten signature

Mr. Jackson E. Price
Regional Director
Southeast Regional Office
National Park Service
Federal Building, Box 10008
400 North Eighth Street
Richmond, Virginia 23240

Dear Mr. Price:

Mr. Dyksterhouse in our Charlottesville Regional Office has forwarded to us for our comments well log reports for several wells in Shenandoah National Park.

These reports and water use needs were discussed with Superintendent Hoskins. Our comments are listed below:

Corners Deadening Area - A new well was drilled in this area. A pump test indicated a yield of 28 gallons per minute. Examination of the chemical analysis indicates a satisfactory water.

Since this area is in a proposed wilderness area, there are no plans for developing facilities in this area at this time.

Dickey Ridge Area - This area contains a large visitor center, 30 site picnic area, and five houses. These facilities will require a considerable amount of water.

Test hole no. 3 - was drilled near the Fox Hollow weir. A pump test showed a final discharge of only two gallons per minute. This volume would not be adequate.

Test hole no. 4 - was drilled 600 feet north-northeast of test hole no. 3. This was a dry hole.

Test hole no. 5 - was drilled 10 feet from test hold no. 1 to a depth of 650 feet. The pump test indicated a flow of 35 gallons per minute for 28 hours, however, the recovery rate was only 2.5 gallons per minute. A study of the draw down curve indicates that this well

should not be pumped at a rate higher than 10 gallons per minute. The chemical analysis indicates that this is not a hard water and has a low iron content. The use of a large storage tank (100,000 gallons) with long pumping periods at a low rate should provide a adequate amount of high quality water.

Rockfish Gap - The area contains an entrance station with four employees. A small rest room and drinking fountain are located in this area.

Rockfish Gap well no. 1 was drilled about 200 yards north of the entrance station to a depth of 535 feet. The 6 inch diameter casing was grouted to 30.4 feet. A pump test for 19 hours produced 2 to 4 gallons per minute. Three gallons per minute was stabilized for five hours.

A chemical analysis of the water indicates a soft water with a nearly natural pH. The iron content is high enough to stain white fixtures and produce a metallic taste but should be palatable enough for drinking purposes.

With a suitable storage tank this well should produce a sufficient quantity of palatable water for this area.

Simmons Gap - This area will contain a submaintenance station with about 30 men, a trailer and one resident home.

A well was drilled to 205 foot depth. A 6 inch casing was grouted to a depth of 43 feet. After test pumping 25 gallons per minute for 21-2/3 hours, the water level remained at 113 feet.

A chemical analysis of this water indicates a soft water, with about 50 ppm alkalinity. Iron is very low. This water is suitably balanced and should be non-corrosive, good for laundry and general use and have a pleasing taste. This well should provide a satisfactory quantity of good tasting water.

Elkwallow Area - This area has a 50 site picnic area, a gift shop, and two comfort stations.

A well was drilled to a depth of 363 feet. The well was cased with 6 inch diameter pipe and grouted to depth of 41 feet. A pump test at

10 gallons per minute was run for 11 hours with the water level remaining at 298 feet. This well should produce 10 gallons per minute for an extended period of time.

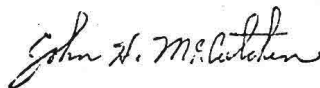
A chemical test indicated that this is a soft water, non-corrosive well, but does contain enough iron to stain fixtures and produce some metallic taste.

With a suitable storage tank, this well should produce a sufficient quantity of water but will not be as high quality as the Simmons Gap well.

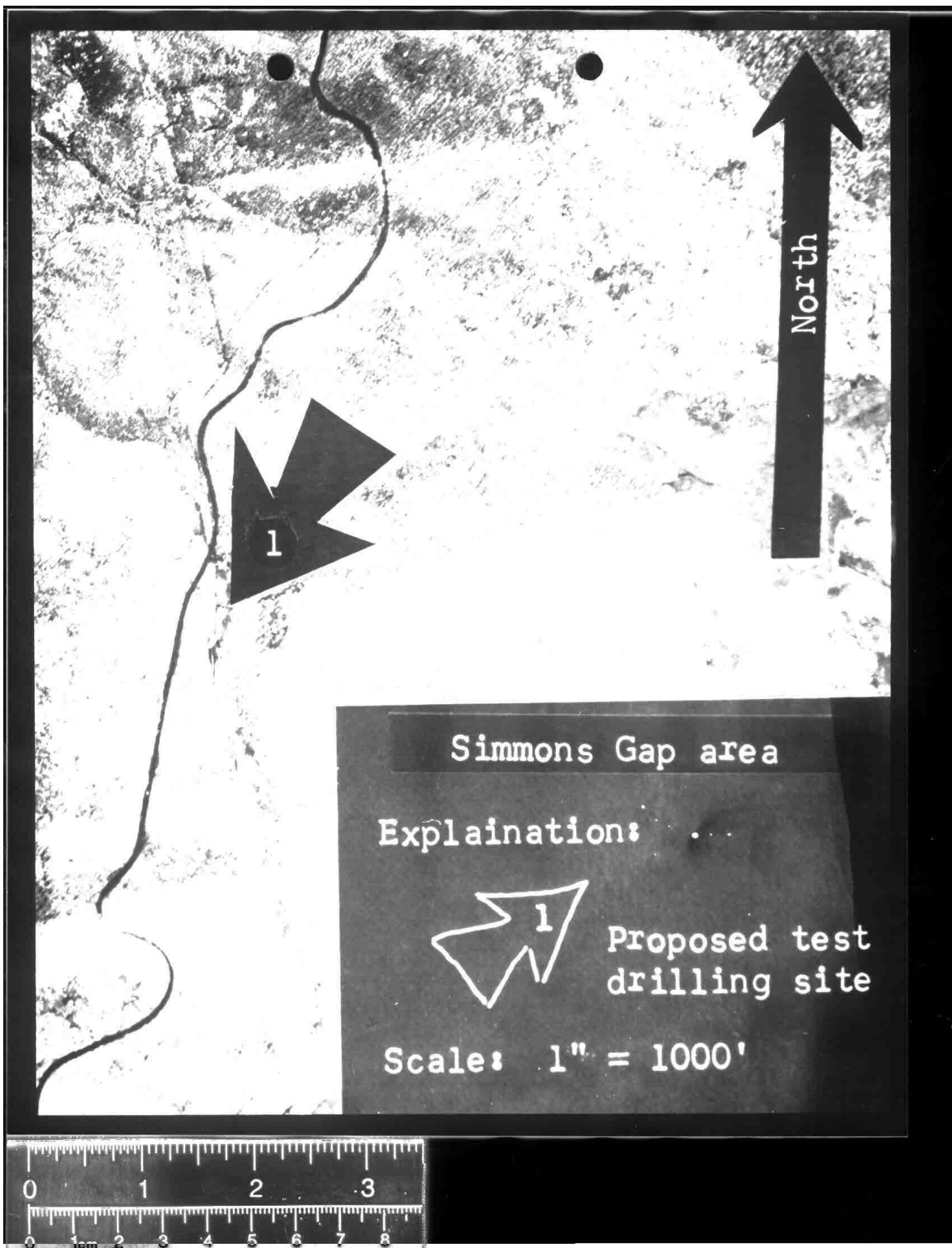
If the presence of iron in some of the well water causes a problem at some later date, iron removal filters, or high chlorine dosages may be necessary to eliminate this problem.

If you have any further questions regarding these well supplies, feel free to call on us.

Sincerely yours,

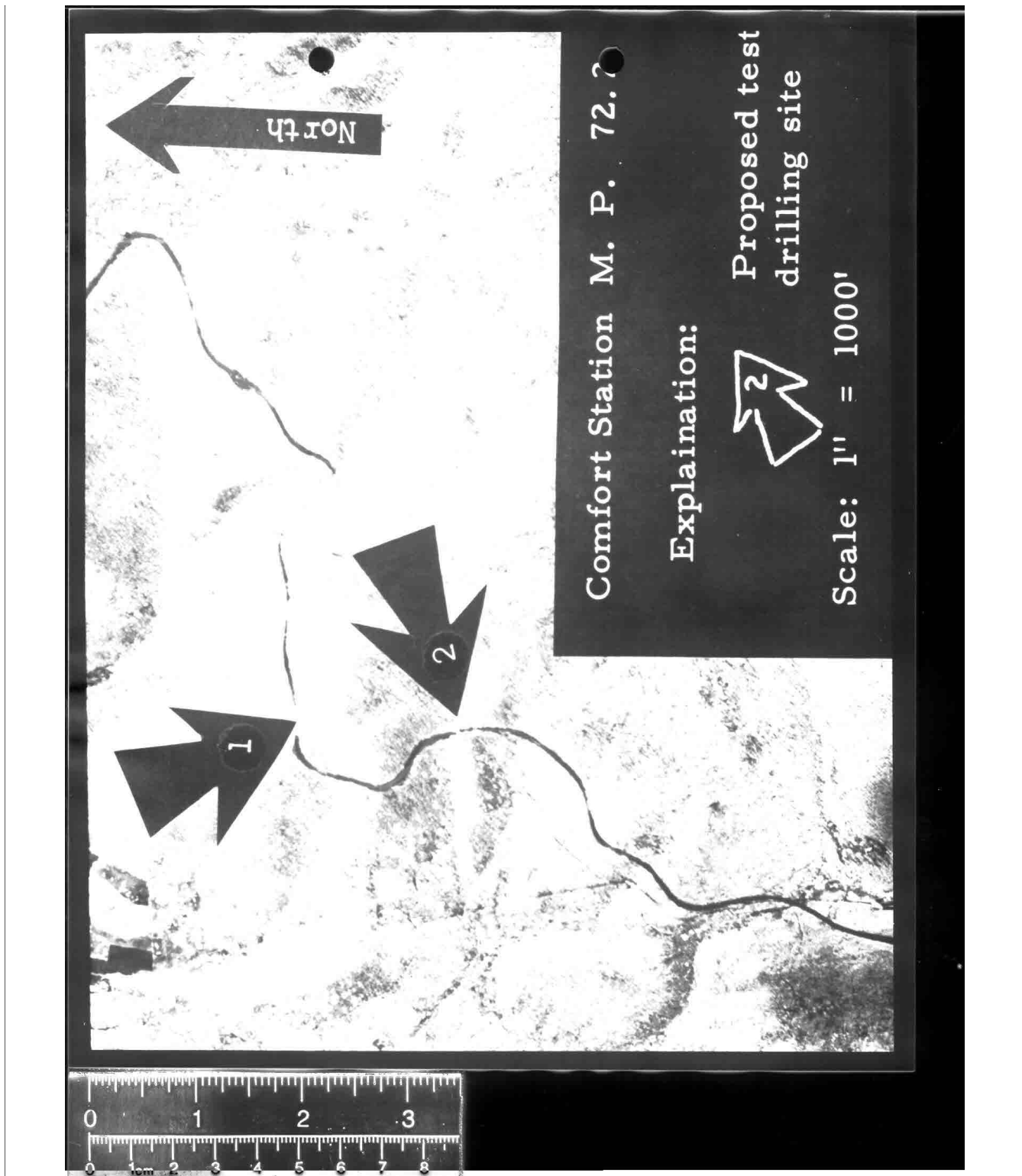


John H. McCutchen
Sanitary Engineer Consultant



VIRGINIA DIVISION OF MINERAL RESOURCES
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Shenandoah National Park
COMFORT STATION, MILEPOST 72.2
Preliminary Report

Contract No. 14-10-0137-0185

In accordance with item 1d of Contract No. 14-10-0137-0169 this Division was requested by letter (R. T. Hoskins, Superintendent, October 14, 1964) to conduct field investigations for the presence of springs within a one-mile radius of Milepost 72.2. As electric power is not available in this area it is necessary that the springs occur at elevations higher than Milepost 72.2 so a gravity-feed water system can be constructed to the proposed Comfort Station. Thorough investigations of the prescribed area were conducted on October 28, 1964, and Superintendent Hoskins was informed by letter dated October 29, 1964 that no perennial springs are present. Accordingly, additional field investigations for the location of test-hole drilling sites within a 3/4-mile radius of Milepost 72.2 were requested in item 1c of the current contract, dated September 2, 1965.

Geology and Hydrology

This Comfort Station Area is entirely underlain by the Catoctin Formation that is composed primarily of metamorphosed basalt. This rock type has virtually no primary permeability and contains water only in fracture openings interconnected with nearby sources surface recharge. As the recharge conditions in the area studied are poor, wells of only small yields can be anticipated. Test drilling will be required to obtain subsurface hydrogeologic data at selected sites in order to delineate the most favorable sites and depths for water wells. Because only a small quantity of water is required for the Comfort Station, it is possible that one of the test holes can later be developed into a water well.

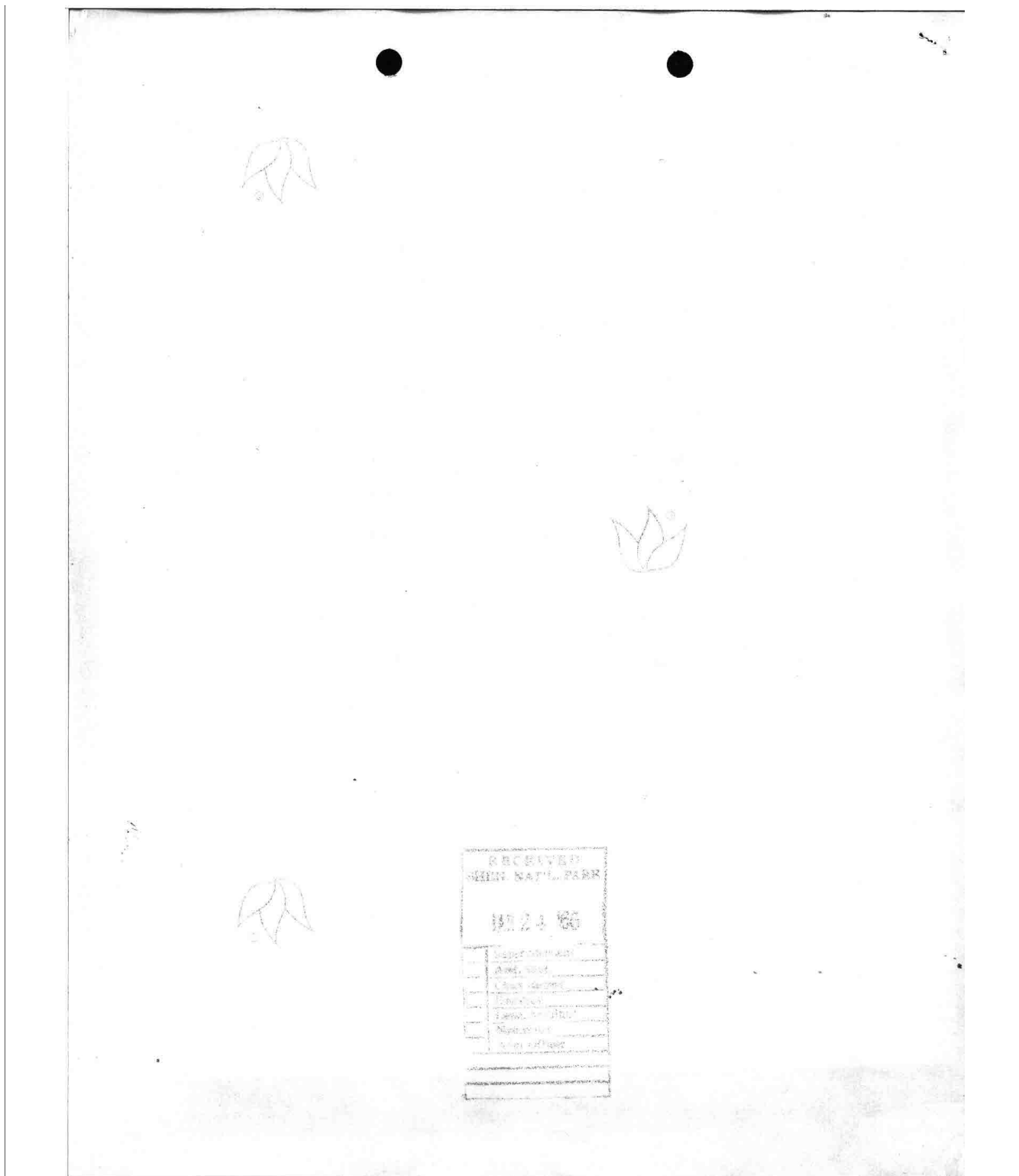
- 2 -

Test-Hole Recommendations

The locations of two proposed test-hole sites have been plotted on the attached copy of an aerial photograph. Because of the topography and dense vegetation within the prescribed area it has been necessary to select drilling sites on the basis of reasonable access for a drilling rig rather than optimum conditions for the occurrence of perennial ground-water supplies.

Test-Hole Site #1 is located approximately 200 feet north of Milepost 72.0, on the east side of Skyline Drive; Test-Hole Site #2 is located approximately 2000 feet south of Milepost 72.0 on the east side of Skyline Drive. Test holes at each of these sites will encounter 10 to 25 feet of overburden before penetrating the basalts of the Catoclin Formation. The recommended drilling depth at each site is 550 feet. The data obtained will be utilized for the location of a water-well site unless an adequate perennial water supply can be produced from one of the test holes.

Virginia Division of Mineral Resources
Charlottesville, Virginia
January 14, 1966



Docket Information

Number of Documents in Docket 19

Documents Dated from 1/14/1966 to 9/15/1967

Docket Compiled: 6/17/2011