



WATER-RIGHT DOCKET

Shenandoah National Park

Docket No: 9

SWIFT RUN SUB-MAINTENCE AREA WATER SYSTEM

Preliminary Docket Information

00-00-0000: index: swift run sub-maintenance area water system

SHENANDOAH NATIONAL PARK

Docket # 9

Swift Run Sub-Maintenance Area Water System

I N D E X

PART I - INVESTIGATION

1. Geologic Map of Swift Run Maintenance Area, Shenandoah National Park.
2. Figure 1. Swift Run Maintenance Area.
3. Preliminary Report, Swift Run Maintenance Area, prepared by Virginia Division of Mineral Resources, Charlottesville, Virginia, December 7, 1961.
4. Drawdown Curve - (Test Well No. 1)
5. Pump Test Data - (Well No. 1)
6. Geologic Log - (Well No. 1)
7. Water Well Completion Report - (Well No. 1)
8. Final Report, Swift Run Maintenance Area, prepared by Virginia Division of Mineral Resources, Charlottesville, Virginia, August 27, 1963.

PART II - WATER RIGHT

COMMONWEALTH OF VIRGINIA
 DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
 DIVISION OF MINERAL RESOURCES
 Box 3567, University Station, Charlottesville, Virginia
WATER WELL COMPLETION REPORT

VDNR 865
 WNCR 454

OWNER Shenandoah National Park Mailing Address Luray, Virginia
 TENANT Swift Run Maintenance Area Mailing Address _____
 DRILLER Sydnor Pump & Well Co., Inc. Mailing Address Richmond 12, Virginia
 WELL LOCATION County Rockingham Approx _____ ft
 (direction) of _____ and _____ of _____
 (also specify any distance in feet or miles of well from any railroad, canal, road, river, stream, etc. or county highway or other map)

WATER CONDITIONS**DEPTH**

STATIC WATER LEVEL 7'
 WATER ZONES (fissures or formations supplying water)
 (from) _____ (to) _____
 (from) _____ (to) _____

QUANTITY OF WATER

WELL PUMPED (or bailed) at 12 Gal. per Min. with
48 feet DRAWDOWN after 15 HOURS PUMPING
 FLOW (natural) _____ GPM. HEAD _____ ft. above ground
 REMARKS See test pump log for details

QUALITY OF WATER

COLOR OK TASTE OK
 ODOR OK OTHER _____
 ANALYSIS AVAILABLE— Yes ☐ No ☐ ATTACHED Yes ☐ No ☐
 TEMPERATURE _____
 WATER (from) _____ ft. (to) _____ ft.
 (acid, brackish, iron, sulfur, and, other)

From observation at time of pump test.
 Also a sample was taken to Div. of Min.
 Resources and checked for Iron.

USE OF WATER: Domestic ☐ Town ☐ Industry ☐ Farm ☐ Public ☒

CONSTRUCTION

RIG TYPE (or method) Air rotary
 (rotary, cable, bored, driven, etc.)
 DATE Started 7-12-63 Completed 7-16-63
 TOTAL DEPTH 60 ft.
 BEDROCK at 28 ft.

GROUTING INFORMATION

METHOD USED Gravity
 GROUTING MATERIAL Cement & water
 DEPTH OF GROUTING 30

HOLE SIZE

(diam) (from) (to)
10 in. 0 ft. 43 ft.
6 1/2 in. 43 ft. 60 ft.

CASING SIZE

(diam) (from) (to)
6 11/32 in. 0 ft. 43 ft.

SCREEN (or perforations)

(diam) (from) (to) (opening size)
 _____ in. _____ ft. _____ ft.

PUMP (installed)

TYPE _____ Cap. (gpm) _____
 H.P. _____ Depth of intake _____ ft.

REMARKS: log & samples to Div. of Min. Resources

This well was gravel packed from 30' to 43'. The pipe was slotted below 35'.
 Grout was placed from 30' to the ground surface.

Log of well (over)

Swift Run
No.1

LOG

FURNISHED BY: Snyder Pump and Well Co. Inc.DATE: 7-19-63

Data from driller's notes by Jesse Snyder, Jr.

DEPTH (feet)		TYPE OF SOIL OR ROCK PENETRATED (gravel, clay, etc., hardness, color, etc)	REMARKS (water, casing, shot, screen, sample, etc)
FROM	TO		
0	1	Top soil	
1	28	Yellow clay	
28	40	Shale with weathered streaks and water from 35 to 40' about	5 to 7 G.P.M.
40	43	Hard greenstone	
43	49	Hard greenstone with weathered fractures	48'-had about 12 G.P.M. (air lift test)
49	53	Soft weathered material some slough	
53	60	Hard & soft greenstone	12 G.P.M. air test from 60'
Last efficient return of drill cuttings below 49'-at 60' back pressure on down hole gun was sufficient to almost overcome effectiveness of gun. The reason: Part of the air circulated through the weathered strata and re-entered the well through the gravel sack and slotted area in the casing. The well depth measured 53'5" after the pump test.			

Supporting Hydro Data

Shenandoah National Park
Contract No. 14-10-0137-123

RECEIVED
SHEN. NAT'L. PARK
DEC 18 '61
Superintendent
Asst. Sup.
Chief Ranger
Engineer
Land Architect
Naturalist
Admin. Officer

Swift Run Sub-maintenance Area

Preliminary Recommendations

The area is located near U. S. Highway 33, 4.5 miles east of Elkton and 2.5 miles west of Swift Run Gap. Bedrock consists of greenstone and associated thin beds of tuffaceous sediment. A modern geologic map of the area has been prepared by Phillip King, and published: U. S. Geological Survey Professional Paper 230.

Two developed and two undeveloped springs occur in the area. One developed spring (location A, Figure 1) is covered by a concrete spring box and flowed an estimated 3 gallons per minute on October 4, 1961. The other developed spring is 100 feet west of Spring A. The springs capture only a small portion of the water available. Development of these springs by the construction of collecting galleries may increase the flow by four or five times.

The two undeveloped springs issue from the bank of West Swift Run Creek (locations C and D, Figure 1). Spring C flowed less than 3 gallons per minute when visited. Spring D flowed an estimated eight to ten gallons per minute. There is some doubt whether these are true springs, and before either is contemplated for a future water supply, it will be necessary to determine if the source is from bedrock, or just stream water that has soaked into the creek bank and reappears further down stream.

-2-

A recommended test-well site (location B, Figure 1) is in the northwest-trending hollow, 50 to 100' southeast of Spring A. The hollow was probably formed by stream erosion along a zone of weakness. There is a cross-fault just southwest of the area; see Figure 1. Topographic and field geologic data indicate either this fault or a subsidiary fault is located in the flood plain of West Swift Run Creek and passes through the small hollow near the proposed test site. The recommended depth of the well is 150 feet, or 75 feet into bedrock, whichever is greater. The soil cover is probably less than 35 feet.

H. R. Hopkins
Division of Mineral Resources
Charlottesville, Virginia
December 7, 1961

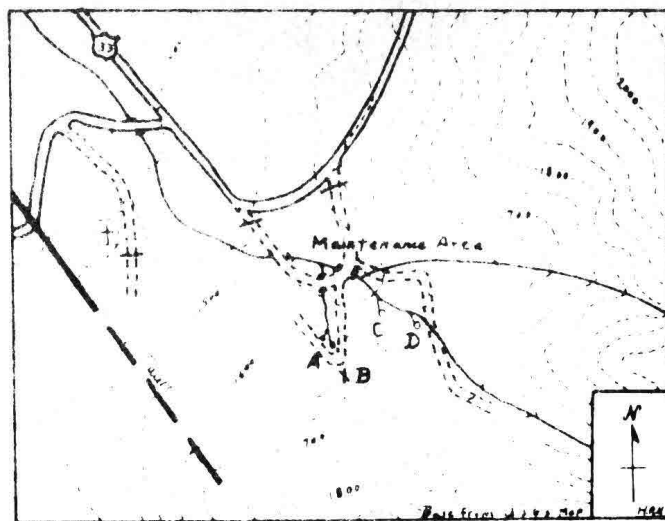


Figure 1. Swift Run Maintenance Area.
Scale: 1 inch equals 1,000 feet. Contour interval 50 feet.

- A. Spring, flow of 3 gallons per minute.
- B. Test well site.
- C. Spring, flow of less than 3 gallons per minute.
- D. Spring, flow of 8 to 10 gallons per minute.

Other Supporting Information

November 8, 1963

154

Memorandum

To: Regional Director, Southeast Region

From: Superintendent, Shenandoah

Subject: Final Water Resources Reports, Headquarters Area and
Swift Run Maintenance Area, Shenandoah National Park

In response to Mr. E. W. Reed's memorandums of September 6, and September 30; and Mr. R. C. Squinn's memorandum of September 17, and October 24, on the subject water resources reports, the following details and comments are submitted:

Headquarters Area: The preliminary report located three test well sites, and water resources funds were programmed for two wells. Test Well No. 1 was drilled at the location designated in the preliminary report. Test Site No. 2 could not be used because the Virginia Department of Highways plans to construct a four lane highway over the site. After drilling Test Well No. 1 and abandoning Site No. 2, the State Geologist recommended relocation of Site No. 3 because of additional geological data obtained from the first test well. They selected a site in the Loudoun formation approximately 120 feet northwest of the intersection of the entrance road to the Headquarters Area and U. S. Highway 211 (this site is shown as a proposed water well on the final report). Because of the inaccessibility of this site and the damage which would result from the construction of an access road, this site was rejected by the Park staff after consultation with Key Regional personnel. An alternate site was selected back of the maintenance area near the site where a hand dug production well once existed. This test well proved to be a very good producer (23 gallons per minute). A permanent pump has been installed in the well and arrangements are being made to reimburse the water resources account for drilling this production well. Since this well will furnish all water needed in the Headquarters Area for many years, no further drilling is proposed for the area. Bacteriological samples are taken from the production well twice each month, and no contamination has been found.

Swift Run Maintenance Area: The preliminary report recommended one 150-foot test well and funds were programmed on this basis. Before the drilling operation was started, further geological study by Mr. Gardner revealed that the location of the proposed well should be approximately 800 feet from the site selected by Dr. Hopkins. The well was drilled at this revised location and at a depth of approximately 60 feet the strata became too soft and porous for the modern air rotary drill rig to operate. Since the well is ideally located and is capable of producing 12 gallons per minute, Park officials agreed to accept the well. This 12-gallon per minute supply is adequate for the small maintenance area and three employee residences proposed for the area and additional drilling is not proposed. The savings resulting from the acceptance of this shallow well greatly reduced the amount of additional funds required to finance an urgently needed well at Thornton Gap under Change Order No. 1

We will ask the State Geologist to include more details in their final reports on future test well drilling and pump testing operations, but we do not believe a special meeting is needed at this time.

The Government has exclusive jurisdiction over all lands and resources within the Park; therefore, we do not believe the enactment of future State Water Laws will affect the Park.

(S) R. Taylor Hopkins

R. Taylor Hopkins

cc:
Park Engineer

JMS:ump/jta

September 30, 1963

D9039-RLN

✓ B. J. H. 10 7
✓ 9/30/63
✓ 10/3

Memorandum

To: Regional Director, Southeast Region

From: Chief, Branch of Water Resources

Subject: Final Report - Swift Run Maintenance Area, Shenandoah National Park, by L. E. Gardner II, Shenandoah

The above report, transmitted by Mr. Spier's memorandum of September 18 has been received here.

This rather brief report cannot be evaluated fully here because of lack of knowledge of specific conditions. Comparing this report with the preliminary report on the Swift Run Maintenance Area by E. R. Hopkins, it is noted that the test well was not drilled at the location recommended by Hopkins but some 600 feet farther north. The reason for this change should be given in the report. Further, the Gardner report now recommends a production well at the same location recommended as a test-hole site in the preliminary Hopkins report. Will the yield of the production well, in Mr. Gardner's opinion be sufficient to supply the maintenance area or should another test hole be drilled?

The estimated water need at the maintenance area is not given in the report but presumably the 10 gpm developed from the test well is insufficient. The test well, however, was drilled only 60 feet deep, whereas the report recommends that the production well be drilled to 150 feet. Would the yield of the test well be increased if it were deepened to 150 feet? Although the air-rotary rig could only drill to 60 feet, a standard cable-tool rig could deepen the hole to 150 feet without difficulty. The possibility of increasing the yield by deepening the test hole to 150 feet should be considered in the report.

Perhaps these points have been considered and discussed orally by personnel of this Service and the Virginia Division of Mineral Resources. Nevertheless, the reports are the only record of the test-well program and it is desirable that future reports be more comprehensive.

E. W. Reid

cc: Superintendent, Shenandoah
Chief, BRW (8)

Final Report
Swift Run Maintenance Area
Shenandoah National Park

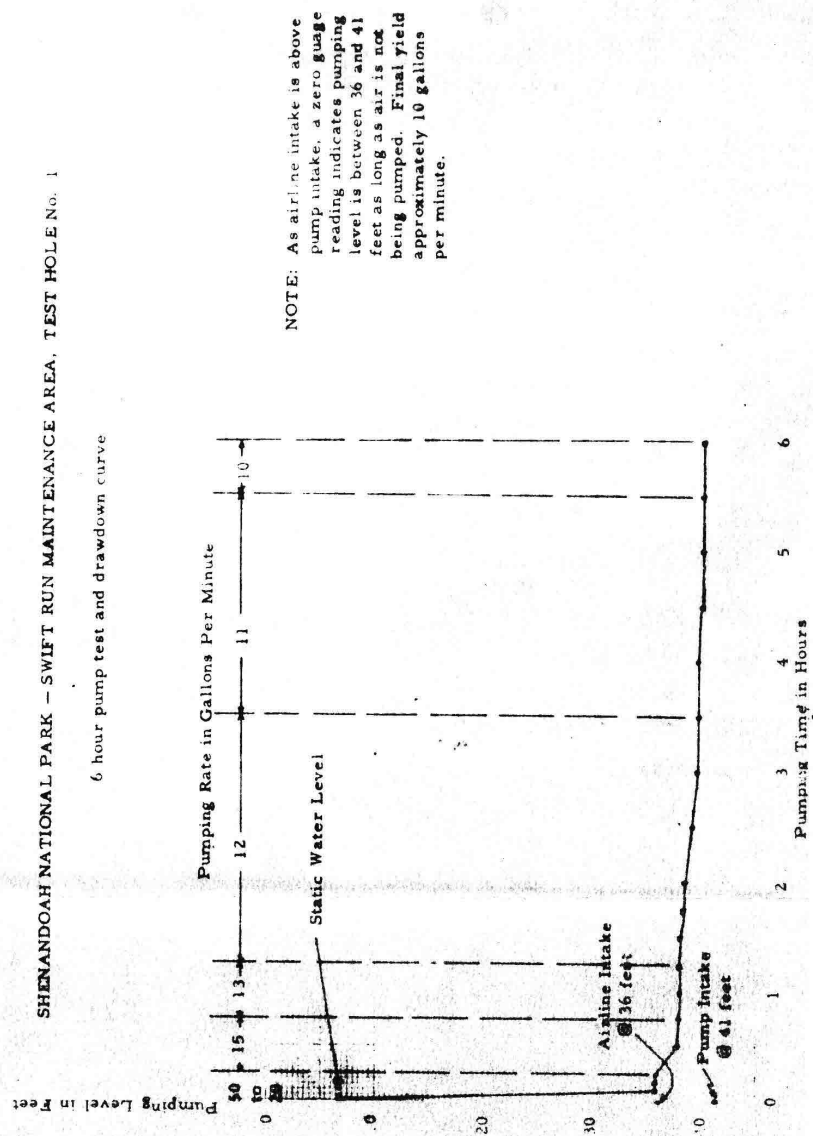
Test drilling and evaluation

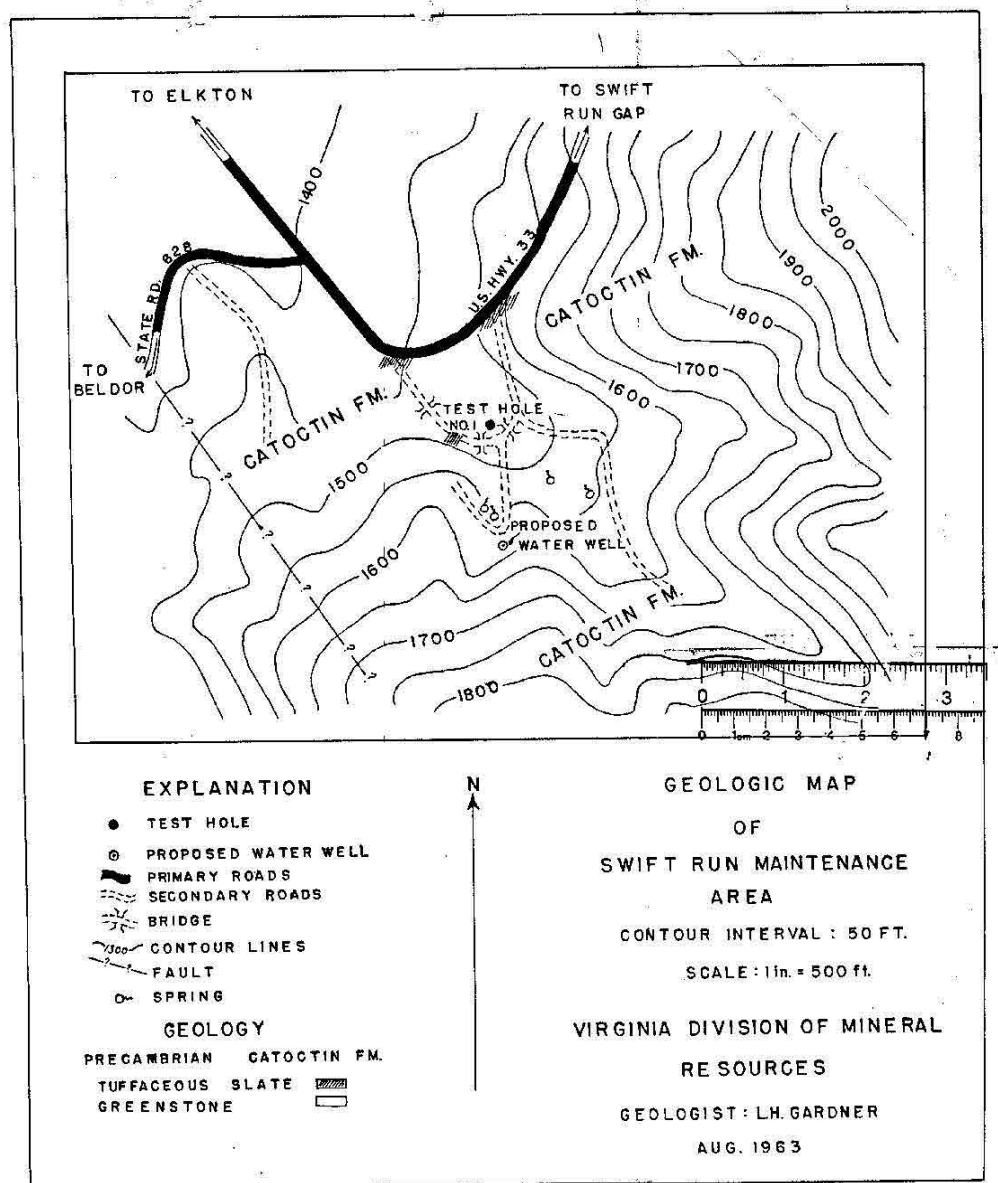
The test hole was drilled at the recommended site and was terminated at a depth of 60 feet because the condition of the overburden resulted in loss of air pressure. Greenstone of the Catoctin formation was the only rock encountered beneath the overburden that is 28 feet thick. Data from the 6 hour pump test indicate this hole may be pumped at the rate of 10 gallons per minute for periods longer than 6 hours; 12 to 15 gallons per minute can be obtained for periods less than 6 hours. A geologic map of the Swift Run Maintenance Area is attached, together with copies of the geologic log, Water Well Completion Report form, and pump test data for this hole, which has been assigned well number 865 in the Virginia Division of Mineral Resources well cutting repository.

Water Well Recommendation

The Catoctin formation underlies all of the Swift Run Maintenance Area. Interbeds of tuffaceous slate have been observed, but they are thin and probably of limited lateral extent. A water well site has been recommended on a portion of the property where fractured bedrock may be penetrated in an area of favorable recharge. The site for this well, as indicated on the attached geologic map, is located approximately 800 feet south of the test hole. It is anticipated the well will encounter less than 30 feet of weathered material and penetrate only greenstone thereafter to the suggested total depth of 150 feet.

Commonwealth of Virginia
Division of Mineral Resources
Charlottesville, Va.
August 27, 1963
Laurence H. Gardner II - Geologist





Docket Information

Number of Documents in Docket 12

Documents Dated from 12/7/1961 to 11/8/1963

Docket Compiled: 6/17/2011