



WATER-RIGHT DOCKET

Shenandoah National Park

Docket No: 8

DUNDO WATER SYSTEM

Preliminary Docket Information

00/00/0000: Overview: Part I: Investigation

SHENANDOAH NATIONAL PARK

Docket #8

Dundo Area Water System

I N D E X

PART I - INVESTIGATION

1. Geologic Map of Dundo and Vicinity, Shenandoah National Park.
2. Preliminary Report, Dundo Area, prepared by Virginia Division of Mineral Resources, Charlottesville, Virginia December 21, 1961.

3. Final Report, June 14, 1967

PART II - WATER RIGHT

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

VDMR - 1811
WWCR - 973

MAILING ADDRESS:
Box 3667
Charlottesville, VA 22903

DIVISION OF MINERAL RESOURCES
JAMES L. CALVER, COMMISSIONER
WATER WELL COMPLETION REPORT

OFFICE ADDRESS:
McCormick Road
Charlottesville, Virginia

OWNER: Virginia Division of Mineral Resources Mailing Address: Charlottesville, Virginia
TENANT: Dundo Exploration Hole #2 Mailing Address: _____
DRILLER: Sydnor Pump & Well Company Mailing Address: 1305 Brook Rd., Richmond, Virginia
WELL LOCATION: County Albemarle Approx. 1/7 ~~xxxx~~ miles east (direction) of
Skyline Drive and 1/3 ~~xxxx~~ miles southwest (direction) of Milepost 83

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

DATE STARTED: December 1, 1965 DATE COMPLETED: December 1, 1965

TYPE OF DRILL RIG USED: Rotary TOTAL DEPTH 118 feet

WATER LEVEL: Stands ----- feet below surface OR
has NATURAL flow of ----- gallons per minute.

YIELD TEST: Method None

Drawdown _____ feet

Rate 0 gal. per min.

Duration _____ hrs., _____ min.

WATER ZONES: from None to _____ feet

from _____ to _____ feet

from _____ to _____ feet

WATER: Color _____ Taste _____

Odor _____ Temp. _____ °F

WELL TO SUPPLY: (check one) Home _____

Farm _____ Town _____ School _____

Industry _____ Other Geologic Exploration Hole

WATER ANALYSIS AVAILABLE: Yes _____ No X

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)

HOLE SIZE: 7-7/8 inches from 0 to 4 feet

5 inches from 4 to 118 feet

_____ inches from _____ to _____ feet

SCREEN SIZE: _____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

CASE SIZE: 5 inches from 0 to 5 feet

_____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

GROUTING: Method None

Material _____ Depth _____ feet

PUMP: Type _____

Capacity _____ gal per min.

Depth of intake _____ feet

REMARKS: * Samples collected during drilling by Virginia Division of Mineral Resources person

Hole capped and turned over to Shenandoah National Park authorities.

(LOG OF WELL) OVER

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

VDMR - 1810
WWCR - 972

MAILING ADDRESS:
Box 3667
Charlottesville, VA 22903

DIVISION OF MINERAL RESOURCES
JAMES L. CALVER, COMMISSIONER
WATER WELL COMPLETION REPORT

OFFICE ADDRESS:
McCormick Road
Charlottesville, Virginia

OWNER: Virginia Division of Mineral Resources Mailing Address: Charlottesville, Virginia

TENANT: Dundo Exploration Hole No. 1 Mailing Address: _____

DRILLER: Sydnor Pump & Well Company, Inc. Mailing Address: Richmond, Virginia 23212

WELL LOCATION: County Albemarle Approx. 1300 ^{feet} ~~acres~~ northeast (direction) of
entrance to Dundo from Skyline Drive and 3/5 ²⁶³⁰⁰ miles southwest (direction) of Milepost 83

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

DATE STARTED: 11/30/65 DATE COMPLETED: 11/30/65

TYPE OF DRILL RIG USED: Air Rotary TOTAL DEPTH 104 feet

WATER LEVEL: Stands _____ feet below surface OR
has NATURAL flow of _____ gallons per minute

YIELD TEST: Method None

Drawdown _____ feet

Rate 0 gal. per min.

Duration _____ hrs., _____ min.

WATER ZONES: from None to _____ feet

from _____ to _____ feet

from _____ to _____ feet

WATER: Color _____ Taste _____

Odor _____ Temp. _____ °F

WELL TO SUPPLY: (check one) Home _____

Farm _____ Town _____ School _____

Geologic
Industry _____ Other Exploration Hole

WATER ANALYSIS AVAILABLE: Yes _____ No X

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: * Samples collected during drilling by VDMR personnel

** Casing cut off 18" below ground; hole filled in with cuttings and rocks

HOLE SIZE: 7-7/8 inches from 0 to 13 feet

5 inches from 13 to 104 feet

_____ inches from _____ to _____ feet

SCREEN SIZE: _____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

CASE SIZE: 5 inches from 0 to 14 ** feet

_____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

GROUTING: Method None **

Material _____ Depth _____ feet

PUMP: Type _____

Capacity _____ gal per min

Depth of intake _____ feet

(LOG OF WELL) OVER

Rig 65

LOG

FURNISHED BY: Sydnor Pump and Well Company, Inc. DATE: 12/29/65

Data from drillers notes by Jesse Snyder, Jr.

DEPTH (feet)		TYPE OF ROCK OR SOIL PENETRATED (gravel, clay, etc., hardness, color, etc.)	REMARKS (water, caving, shot, screen, sample, etc.)
FROM	TO		
0	2	Top soil	
2	59	Weathered shale	
59	64	Sandstone	
64	74	Green shale	
74	89	Greenstone and shale	
89	104	Greenstone	

(Use additional forms if necessary)

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

VDMR - 1074
WWCR - 935

MAILING ADDRESS:
Box 3667
Charlottesville, VA 22903

DIVISION OF MINERAL RESOURCES
JAMES L. CALVER, COMMISSIONER
WATER WELL COMPLETION REPORT

OFFICE ADDRESS:
McCormick Road
Charlottesville, Virginia

OWNER: National Park Service (Shenandoah) Mailing Address: Luray, Virginia
TENANT: Dundo Test Hole #2 (Site 1) Mailing Address: 619 Brandon Avenue SW
DRILLER: Frank W. Martin Drilling Company Mailing Address: Roanoke, Virginia
WELL LOCATION: County Albemarle Approx. 100 ^{feet}/_{miles} east (direction) of Skyline Drive and 200 ^{feet}/_{miles} northeast (direction) of Milepost 83

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

DATE STARTED: 6/10/64 DATE COMPLETED: 6/11/64

TYPE OF DRILL RIG USED: Air Rotary TOTAL DEPTH 340 feet
Not
WATER LEVEL: measured feet below surface OR

has NATURAL flow of gallons per minute.

YIELD TEST: Method
Drawdown feet
Rate 1/2 gal. per min.
Duration hrs., min.

WATER ZONES: from 190 to 200 feet
from to feet
from to feet

WATER: Color Taste
Odor Temp. °F

WELL TO SUPPLY: (check one) Home
Farm Town School
Park picnic and camp
Industry Other area

WATER ANALYSIS AVAILABLE: Yes No X

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: * Casing removed and hole filled before static water level could be checked or geophysical logs made

HOLE SIZE: 10 inches from 0 to 47 feet
7 inches from 47 to 340 feet
 inches from to feet

SCREEN SIZE: inches from to feet
 inches from to feet
 inches from to feet

CASE SIZE: *7 ^{OD} inches from 0 to 47 feet
 inches from to feet
 inches from to feet

GROUTING: Method *
Material Depth feet

PUMP: Type
Capacity gal per min
Depth of intake feet

(LOG OF WELL) OVER

LOG

FURNISHED BY: Frank W. Martin Drilling Company DATE 6/11/64

DEPTH (feet)		TYPE OF ROCK OR SOIL PENETRATED (gravel, clay, etc., hardness, color, etc.)	REMARKS (water, caving, shot, screen, sample, etc.)
FROM	TO		
0	25	Grey slate	
25	50	Brown and grey stone	
50	150	Greenstone and shale	
150	190	Greenstone, hard	
190	200	Broken rock	
200	230	Greenstone	
230	340	Greenstone, hard	

(Use additional forms if necessary)

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

VDMR - 1073
WWCR - 934

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

OFFICE ADDRESS:
McCormick Road
Charlottesville, Virginia

WATER WELL COMPLETION REPORT

JAMES L. CALVER, COMMISSIONER

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

TENANT: Dundo Test Hole #1 (Site #3) Mailing Address: 619 Brandon Avenue, SW

DRILLER: Frank W. Martin Drilling Company Mailing Address: Roanoke, Virginia

WELL LOCATION: County Albemarle Approx. 1250 ^{feet}/_{section} northeast (direction) of entrance to Dundo from Skyline Drive and 3/5 ^{feet}/_{section} miles southwest (direction) of Milepost 83

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

DATE STARTED: 6/3 - 9/64 DATE COMPLETED: 6/16 - 20/64

TYPE OF DRILL RIG USED: Air Rotary TOTAL DEPTH 615 feet

WATER LEVEL: Stands 354 feet below surface OR

has NATURAL flow of _____ gallons per minute.

YIELD TEST: Method Test Pump

Drawdown 178 feet

Rate 25 gal. per min.

* Duration 24 hrs., 30 min.

WATER ZONES: from 70 to _____ feet

from 240 to _____ feet

from 509 to _____ feet
602?

WATER: Color ** clear Taste none

Odor none Temp. 56 °F

WELL TO SUPPLY: (check one) Home _____

Farm _____ Town _____ School _____

Industry _____ Other Park Picnic and

Camp 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: Caving at 602-603'; prevented drilling beyond 615'

* Pump off for 1 1/4 hours during this period

** Milky color at beginning of pump test; cleared in 10 minutes

HOLE SIZE: 10 inches from 0 to 55 feet

6 inches from 55 to 615 feet

_____ inches from _____ to _____ feet

SCREEN SIZE: _____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

OD

CASE SIZE: 7 inches from 0 to 55 feet

_____ inches from _____ to _____ feet

_____ inches from _____ to _____ feet

GROUTING: Method Gravity

Material Cement Depth 55 feet

PUMP: Type _____

Capacity _____ gal. per min.

Depth of intake _____ feet

LOG

FURNISHED BY: Frank W. Martin Drilling Company DATE: 6/25/64

DEPTH (feet)		TYPE OF ROCK OR SOIL PENETRATED (gravel, clay, etc., hardness, color, etc.)	REMARKS (water, caving, shot, screen, sample, etc.)
FROM	TO		
0	25	Light-brown shale	
25	45	Greenstone	
45	50	Broken greenstone and shale	
50	100	Greenstone and shale	Small amount of water at 70 feet
100	105	Soft, spotted shale	
105	135	Greenstone, hard	
135	140	Green and pink rock	
140	410	Greenstone, hard	Trace of water 240-245
410	445	Pink and green slate	
445	455	Greenstone	
455	500	Pink and dark green rock	
500	505	Greenstone	
505	615	Pink and green rock	Water at 509, 602(?)

(Use additional forms if necessary)

Land History

Form 10-450
(Rev. 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: Dundo Picnic Area, South District

One Spring
 One 20,000 Gallon Concrete Reservoir
 6,020 Linear Feet of Pipe
 One Stone Masonry Drinking Fountain

Gravity System

Constructed by CCC in 1937

Line	DATE	REFERENCE		QUANTITY			COST		
		Journal Voucher	Other	Unit	No. of Units	Accumulated Total	Direct Costs	Indirect Costs	Accumulated Costs
1	8/27/59	37-10		System	1				7,300.00
2									
3									
4									
5									
G.L. Acct. No. 130.8		General Classification Utility			Sub-Classification Water System		Region Va.	State Va.	Park or Office SNP

Supporting Hydro Data

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

Dundo Area

Preliminary Recommendations

Dundo Picnic area and temporary campgrounds are located in the Southern District of Shenandoah National Park, on the east side of Skyline Drive at milepost 83.7. Dundo is located on white, vitreous-to-phyllitic Weverton quartzite. East of Dundo purple Loudoun slate and greenstone are exposed in the valley of Jones Run (Figure 1).

The quartzite dips approximately 20 degrees westward. The slate and greenstone should closely conform to the dip of the quartzite. During folding the slate acted as a zone of slippage between the massive greenstone and the dense quartzite, and tensional pressures developed a shattered zone in the slate which may be water-bearing. A well drilled through the quartzite into the slate and greenstone will probably encounter water in this shattered zone. Three proposed test site areas are indicated where these conditions may occur in the Dundo area (Figure 1).

Test site No. 1 is in Brown Gap, approximately 50 feet east of Skyline Drive. In addition to fracturing along the contact of the slate, a prominent east-west fracture passes through Brown Gap. Favorable conditions for a water well should occur near the intersection of these fracture systems. A test well at this site should penetrate slate from 260 to 335 feet, and terminate at approximately 350 feet, 15 feet into greenstone.

Test site No. 2 is located along the west side of the shallow saddle northeast of Dundo. The slate attains one of its higher elevations near the saddle, and will be encountered at a shallower depth here (115 feet) than in the other test wells. No evidence of major or minor fracturing across the saddle is apparent, except for the existence of the saddle itself which might indicate a zone of weakness. The total depth of a test well at this site is approximately 225 feet, termination 15 feet into greenstone.

Test site No. 3 is located in the Dundo campground area 30 to 50 feet east of the western road. This test well should have a total depth of approximately 400 feet, encounter slate at 300 feet, and terminate 15 feet into greenstone.

Test site No. 1 should be drilled first. A well at this site has the greatest possibility for success because it is located near the intersection of two fracture systems and has a comparatively large recharge area. A second test well should be drilled at either site No. 2 or 3 in which geologic conditions are similar except for the projected depths to greenstone which are 210 and 385 feet respectively. The depth factor may be cancelled by the size of the recharge area of the two well sites, site No. 3 having a much larger recharge area and the potential to produce larger quantities of water.

There are three springs within a reasonable distance of Dundo. The present water source at the head of Jones Run, a spring line just east of Jones Run and south of the intersection of Falls Trail and Jones Run (location A, Figure 1), and a small man-made spring along the old road from Via Gap to Dundo (location B, Figure 1).

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The present Dundo water supply is inadequate; the water has a high iron content and is often murky during periods of low flow which is less than one gallon per minute in August (Table 1).

Table 1. Summer Flow of Dundo Weir, in gallons per minute.

Date	Flow	Date	Flow
August 15, 1957	0.65	August 22, 1960	0.8
June 26, 1958	3.3	September 9, 1960	6.8
July 20, 1959	1.2	June 13, 1961	6.8
July 30, 1959	1.8	July 6, 1961	3.3
August 17, 1959	0.8	July 20, 1961	2.9
August 28, 1959	0.8	August 20, 1961	0.44
July 28, 1960	1.8	September 5, 1961	2.5
August 12, 1960	1.5	September 22, 1961	18.8

There is no evident way to substantially increase the amount of water available at the present Dundo weir and the value of this source as an auxiliary water supply is doubtful.

No information is available on the springs below Falls Trail on Jones Run (location A, Figure 1). When visited on October 12, 1961, the estimated flow was about 20 gallons per minute. These springs probably could be developed to supply the Dundo area if necessary. Temporary weirs should be installed at the springs and the readings incorporated with the routine weir readings in the Southern District until the test wells have been drilled and further data is available.

Spring B has a very small flow (0.5 gallons per minute) and is probably of no value. Future work around this spring may indicate a suitable location for collecting galleries, but development work is not recommended at this time.

H. Robert Hopkins
Division of Mineral Resources
Charlottesville, Virginia
December 21, 1961

Shenandoah National Park
DUNDO AREA
Final Report

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

HISTORY

Field studies were conducted in November 1961 for the purpose of locating sources to augment the existing water supply that was at times barely adequate for the campground. As other springs in the vicinity were either intermittent or located too far from the development, three test-hole drilling sites were recommended (see Preliminary Report, December 12, 1961). A successful well was developed by deepening the first of two test holes drilled. Because more detailed stratigraphic control was needed to complete geologic mapping of the area, permission was granted by the Park Superintendent to delay this Final Report until two exploration holes could be drilled and fully evaluated.

TEST-HOLE DRILLING AND EVALUATION

On February 14, 1964, Park authorities suggested the drilling order of test-hole sites be reversed because Site No. 3 was located within the developed area. Consequently, on June 3, 1964 the Frank Martin Drilling Company began Test-Hole No. 1 at recommended Site No. 3. Subsurface stratigraphic variations were encountered, and only an estimated 1/2 gallon per minute had been obtained from cracks at 70 and 240 feet when drilling was terminated at 410 feet.

Although the order of drilling at the recommended test-hole sites had been reversed, evidence from Test-Hole No. 1 warranted the next drilling be done in Browns Gap. Therefore, on June 10, 1964 the Frank Martin Drilling Company began drilling Test-Hole No. 2 at recommended Site No. 1. Variations in the subsurface

-2-

rock structure were again encountered, and drilling was terminated at 340 feet. This hole was abandoned and the casing removed before any water measurements or geophysical logging could be accomplished. In this hole, 130 feet of phyllites in the Loudoun Formation and 210 feet of metabasalts in the Catoctin Formation were penetrated.

Because stratigraphic conditions were then known to be similar at the recommended Test-Hole Sites Nos. 2 and 3, and drilling at Site No. 3 had been unsuccessful, it was suggested Site No. 2 be relocated. This was accomplished on June 11, 1964 with the selection of a site 400 feet north of the springs in Jones Run Hollow. It had been intended to gain access to this site by clearing underbrush from the abandoned Browns Gap road, but boulders in places and rock outcrops in others rendered this infeasible. Consequently, because of information obtained from previous test drilling, it was then decided to re-enter Test-Hole No. 1 at Site No. 3 and deepen it from 410 to 635 feet.

On June 18, 1964, the Frank Martin Drilling Company began deepening Test-Hole No. 1, and approximately 5 gallons per minute was encountered at 509 feet. Several small fractures were penetrated in the next 100 feet, and an estimated yield of 25 gallons per minute was obtained. Because of a partially weathered zone from 602 to 603 feet, the weak sidewalls of the drill hole began to collapse onto the drill bit at that depth. Further drilling was difficult, and to avoid loss of equipment in the hole, drilling was terminated at 615 feet. In descending order, the drill had penetrated 140 feet of quartzite and phyllite in the Weaverton Formation, 95 feet of phyllite in the Loudoun Formation, and 380 feet of metamorphosed basalts in the Catoctin Formation.

-3-

After the test hole had been reamed, cased and grouted to 55 feet, a pump test was begun on June 24, 1964. With only one interruption of 75 minutes, the test hole was pumped continuously for 24 1/2 hours, the end of which the pumping level had dropped 178 feet and had begun to stabilize at 532 feet with a pumping rate of 25 gallons per minute. Although this yield may decrease slightly under long-term continuous discharge, it is likely the Dundo Area will have 15 to 20 gallons per minute available at all times, even in the driest of seasons, because of the depth of the principal aquifers.

A sample of water was collected by Shenandoah National Park personnel in August 1964 and submitted to the Virginia Division of Mineral Resources for analysis. The soft, clear, neutral water was found to be of excellent chemical quality, as evidenced by the following partial chemical analysis (in parts per million, except for pH):

pH	7.0	Silica	4.40
Turbidity	0.0	Iron	0.01
Calcium hardness	20.0	Maganese	0.25
Total hardness	30.0	Sulfate	0.60
		Nitrate	0.01
Temperature (at well) 56°F		Phosphate	0.01

EXPLORATORY DRILLING

Certain inconsistencies between the geology as originally mapped and as interpreted from the drill cuttings required clarification. Geophysical logging and electrical resistivity surveys were conducted during the spring of 1965, and it was decided accurate sampling from exploration holes was needed. Permission was granted for the Virginia Division of Mineral Resources to drill two exploration holes in the Area after the regular camping season closed about November 1, 1965.

On November 30, 1965, Exploration Hole No. 1 was drilled to a depth of 104 feet near Test-Hole No. 1 by the Sydnor Pump and Well Company. The same drilling company completed Exploration Hole No. 2 at a depth of 118 feet near the original Test-Hole Site No. 2 on December 1, 1965. Personnel of the Virginia Division of Mineral Resources collected sample drill cuttings from closely-spaced intervals, and evaluated them by petrographic and X-ray techniques.

RECOMMENDATIONS

The main area of development at Dundo occupies a relatively flat portion of a ridge underlain almost entirely by rocks of the Weaverton Formation. These are poor water-bearing strata, the drainage area is very limited, and surface water is practically non-existent. Should future drilling operations for ground water be necessary, it is recommended that every effort be made to utilize a site in Jones Run Hollow near the alternate location for Test-Hole Site No. 2. A 250-foot well at this site should furnish a moderate supply of water as compared to a possible low yield from another 600 or 700-foot well in the Campground area. The attached Water Well Completion Report forms, Interval Sheets, drillers logs, geologic logs, Pump Test Data Sheets, and Drawdown Curve will furnish helpful information for any future drilling at Dundo. These data have been recorded in the Virginia Division of Mineral Resources ground-water files, and the sample drill cutting repository.

Virginia Division of Mineral Resources
Charlottesville, Virginia
June 14, 1967

RELEASE OF CLAIMS

For and in consideration of the receipt of final payment in the amount of \$12,388.55, making a final total payed under Contract of \$23,404.25, from the United States of America (hereinafter called the Government) under and pursuant to Contract No. 14-10-0137-0161, for the Drilling, Casing, Grouting, Sealing and Pumping Test Wells, Shenandoah National Park, the undersigned does remise, release, and discharge the Government, its officers, agents, and employees of and from any and all claims and demands whatsoever under and arising from the said contract, except specified claims in stated amounts listed as follows:

No Exceptions

This release has been executed this 26 day of Sept 1964.

FRANK W. MARTIN DRILLING COMPANY

By Frank W. Martin

Title Owner

Form 10-194
(Rev. 9/60)UNIT STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Shenandoah National Park

(Park)

Check One:

Monthly
Estimate☐Final
Estimate☒

UNIT PRICE CONTRACT

ESTIMATE NO. 2	FOR (Period) June 17 - September 5, 1964	DATE SEP 19 1964
CONTRACT NO. 14-10-0137-0161	COMPLETION DATE September 23, 1964	EXTENDED DATE None
CONTRACTOR Frank W. Martin/Company, 4117 Cravens Creek Road, SW Roanoke, Virginia		ORIGINAL CONTRACT \$ 26,510.00
PROJECT Drilling, Casing, Grouting, Sealing and Pumping Test Wells		CHANGE ORDERS* \$ 0.00
LOCATION Shenandoah National Park, Virginia		TOTAL CONTRACT \$ 26,510.00

ITEM NO.	CONTRACT QUANTITY	DESCRIPTION	QUANTITY TO DATE	UNIT PRICE	AMOUNT TO DATE
1.	3225 Ft.	Drilling test wells of not less than 6" in diameter, including collection of samples, recording and furnishing Driller's Log:		\$6.00/Ft	
		Skyland Well No. 1	500'		3,000.00
		Skyland Well No. 2 (Comers Deadening)	365'		2,190.00
		Lewis Mountain Well No. 1	300'		1,800.00
		Dundo Well No. 1	615'		3,690.00
		Dundo Well No. 2	340'		2,040.00
		Dickey Ridge Well No. 1	200'		1,200.00
		Dickey Ridge Well No. 2	300'		1,800.00
		Rockfish Gap Well No. 1	535'		3,210.00
		Total Item 1	3155		\$18,930.00
2.	500 Ft.	Furnish & install new 6" inside diameter Schedule 40 black steel casing with threaded or welded joints to a minimum depth of fifty feet (50') or six feet (6') into solid rock:		\$3.95/Ft	
		Skyland Well No. 1	55		217.25
		Skyland Well No. 2 (Comers Deadening)	33		130.35
		Lewis Mountain Well No. 1	54		213.30
		Dundo Well No. 1	57		225.15
		Dundo Well No. 2	Casing removed and hole filled.		
		Dickey Ridge Well No. 1	20		79.00
		Dickey Ridge Well No. 2	14		55.30

Form 10-194
(Rev. 9/60)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICEShenandoah National Park
(Park)

Check One:

Monthly
Estimate ☐Final
Estimate ☒

UNIT PRICE CONTRACT Page 2

ESTIMATE NO. 2	FOR (Period) June 17 - September 5, 1964	DATE
CONTRACT NO. 14-10-0137-0161	COMPLETION DATE	EXTENDED DATE
CONTRACTOR		ORIGINAL CONTRACT \$
PROJECT		CHANGE ORDERS* \$
LOCATION		TOTAL CONTRACT \$

ITEM NO.	CONTRACT QUANTITY	DESCRIPTION	QUANTITY TO DATE	UNIT PRICE	AMOUNT TO DATE
		Rockfish Gap Well No. 1	32		126.40
		Total Item 2	265'		\$1,046.75
3.	500 Ft.	Grouting and sealing three-inch (3") annular space around the casings of all production wells:		\$2.00/Ft	
		Skyland Well No. 1	53'		106.00
		Skyland Well No. 2 (Comers Deadening)	30'		60.00
		Lewis Mountain Well No. 1	52'		104.00
		Dundo Well No. 1	55'		110.00
		Dundo Well No. 2	--		---
		Dickey Ridge Well No. 1	--		---
		Dickey Ridge Well No. 2	--		---
		Rockfish Gap Well No. 1	30'		60.00
		Total Item 3	223'		\$ 440.00
4.	240 Hrs.	Pump test for minimum of twenty-four (24) hours per production well:		\$15.00/Hr	
		Skyland Well No. 1	24		360.00
		Skyland Well No. 2 (Comers Deadening)	25.5		382.50
		Lewis Mountain Well No. 1	43		645.00
		Dundo Well No. 1	24		360.00
		Dundo Well No. 2	--		---
		Dickey Ridge Well No. 1	24		360.00
		Dickey Ridge Well No. 2	--		---

Form 10-194
(Rev. 9/60)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Shenandoah National Park

(Park)

Page 3

UNIT PRICE CONTRACT

Check One:

Monthly
Estimate☐Final
Estimate☒

ESTIMATE NO. 2	FOR (Period) June 17 - September 5, 1964	DATE
CONTRACT NO. 14-10-0137-0161	COMPLETION DATE	EXTENDED DATE
CONTRACTOR		ORIGINAL CONTRACT \$
PROJECT		CHANGE ORDERS* \$
LOCATION		TOTAL CONTRACT \$

ITEM NO.	CONTRACT QUANTITY	DESCRIPTION	QUANTITY TO DATE	UNIT PRICE	AMOUNT TO DATE
		Rockfish Gap Well No. 1	24		360.00
		Total Item 4	164.5		\$2,467.50
5.	9 Moves	Moving equipment from one test well site to another well site:		\$65.00/Move	
		Skyland Well No. 1	--		--
		Skyland Well No. 2 (Comers Deadening)	1		65.00
		Lewis Mountain Well No. 1	1		65.00
		Dundo Well No. 1	2		130.00
		Dundo Well No. 2	1		65.00
		Dickey Ridge Well No. 1	1		65.00
		Dickey Ridge Well No. 2	1		65.00
		Rockfish Gap Well No. 1	1		65.00
		Total Item 5	8		\$ 520.00

RECOMMENDED (Project Supervisor)	SUMMARY
Jerry A. Eubanks, Supervisory Park Engineer	TOTAL TO DATE \$ 23,404.25
APPROVED (Contracting Officer)	LESS RETAINED AMOUNT..... 0.00
P. Taylor Hoskins, Superintendent	NET..... 23,404.25
DATE SEP 29 1964	LESS PREVIOUS PAYMENTS..... 11,015.76
	LESS LIQUIDATED DAMAGES..... 0.00
	DUE THIS ESTIMATE..... 12,388.49
	% COMPLETED TO DATE..... 100%

*Show Breakdown on Reverse

(See Reverse for Distribution)

COST DATA FOR PRODUCTION WELLS DRILLED

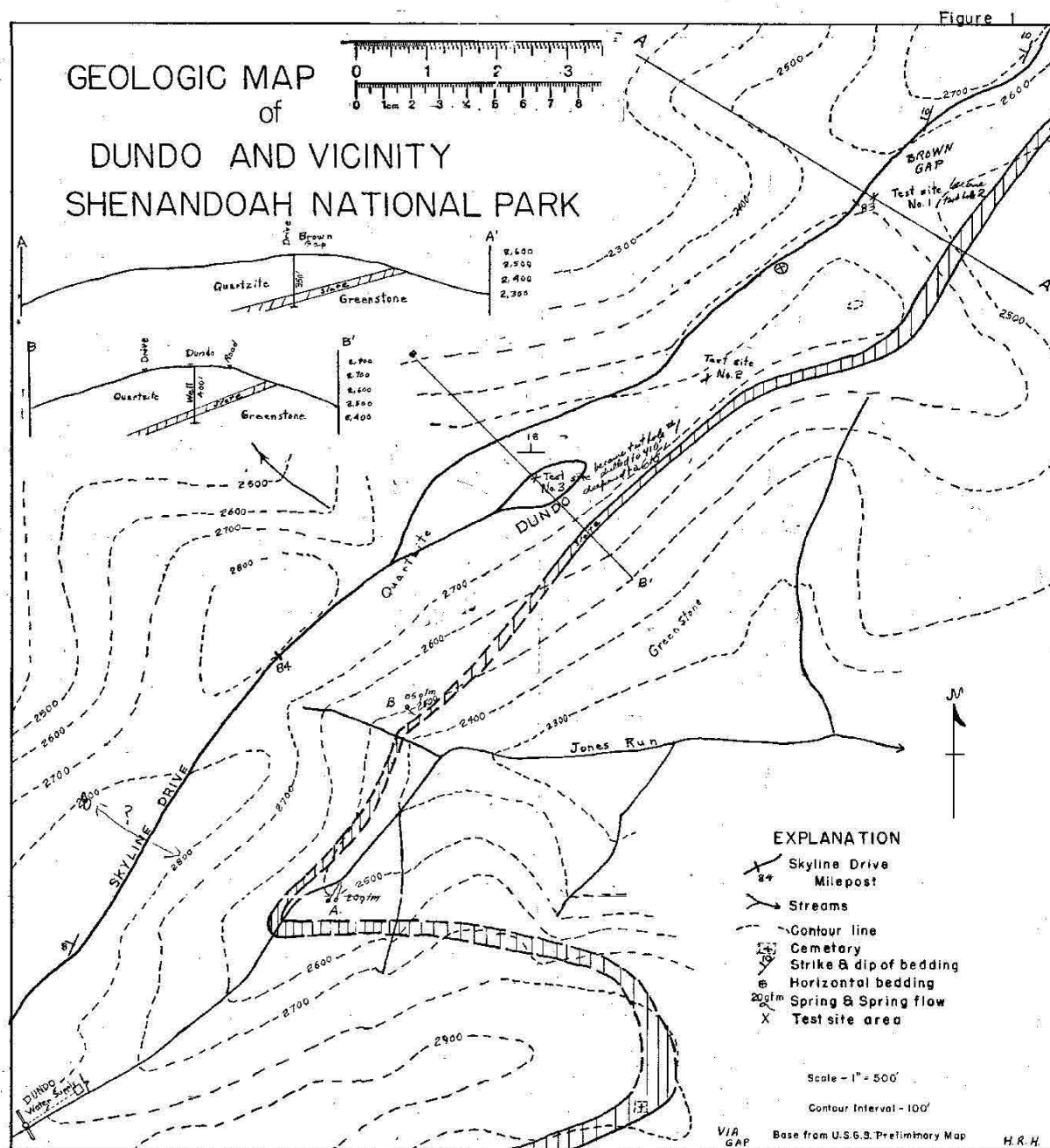
UNDER THE
WATER RESOURCES PROGRAMLOCATION AND WELL NO. DUNDO WELL NO. 1DATE DRILLED: _____ DEPTH OF WELL 615 feet

GAS PRODUCED: _____

Description	Quantity	Unit Price	Total
Drilling	615 feet	\$6/foot	\$3,690.00
Casing	57 feet	\$3.95/foot	225.15
Grouting and Sealing	55 feet	\$2/foot	110.00
Pump Testing	24 hours	\$15/hour	360.00
Moves	2 Moves	\$65/Move	130.00
TOTAL COST OF WELL			\$4,515.15

Drilled by Frank W. Martin CompanyWater Contract No. 14-10-0137-0161Date: May 1, 1964

Water Res. Rec.
Rich Point



Docket Information

Number of Documents in Docket 22

Documents Dated from 8/27/1959 to 6/14/1967

Docket Compiled: 6/17/2011