



WATER-RIGHT DOCKET

Shenandoah National Park

Docket No: 7

WELL. LEWIS MOUNTAIN AREA WATER SYSTEM

Preliminary Docket Information

00-00-0000: docket #7, lewis mountain area water system index

SHENANDOAH NATIONAL PARK

Docket #7

Lewis Mountain Area Water System

I N D E X

PART I - INVESTIGATION

1. Completion Report for water plant electrification.
2. Geologic Map, Lewis Mountain Area, Shenandoah National Park.
3. Table 1. Flow of Lewis Mountain Spring.
4. Preliminary Report, Lewis Mountain Area, prepared by Virginia Division of Mineral Resources, Charlottesville, Virginia, February 14, 1962.

5. Final Rpt. June 29, 1965

PART II - WATER RIGHT

COMMONWEALTH OF VIRGINIA
 DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
 DIVISION OF MINERAL RESOURCES
 JAMES L. CALVER, COMMISSIONER

VDMR 1072
 WWCR 84

MAILING ADDRESS: Box 3667, University Sta.
 Charlottesville, Virginia

OFFICE ADDRESS: McCormick Road
 Charlottesville, Virginia

WATER WELL COMPLETION REPORT

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

TENANT: Lewis Mountain, Well #1 Mailing Address: Luray, Virginia
619 Brandon Avenue, SW
Roanoke, Virginia

DRILLER: Frank W. Martin Drilling Company Mailing Address: 619 Brandon Avenue, SW
Roanoke, Virginia

WELL LOCATION: County Page Approx. 50 feet southeast (direction) of
Skyline Drive at Milepost 57.6 and feet miles (direction) of

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

DATE STARTED: 5/28/64 DATE COMPLETED: 6/1/64

TYPE OF DRILL RIG USED: Air Rotary TOTAL DEPTH 300 feet

*WATER LEVEL: Stands 69.34 feet below surface OR
 has NATURAL flow of gallons per minute.

*YIELD TEST: Method Test Pump
 Drawdown 203.32 feet
 Rate 10 gal. per min.
 Duration 19 hrs., 0 min.

WATER ZONES: from 54 to 55 feet
 from 104 to 105 feet
 from to feet

WATER: Color Clear Taste None
 Odor None Temp. 56 °F

WELL TO SUPPLY: (check one) Home
 Farm Town School
 Industry Other Lodge, Camp, & Picnic 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: * These data from pump test no. 2; data from the first test (attached) were
inconclusive.

(continued to back report (LOG OF WELL) OVER

LOG

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

DEPTH (feet)		TYPE OF ROCK OR SOIL PENETRATED (gravel, clay, etc., hardness, color, etc.)	REMARKS (water, caving, shof, screen, sample, etc.)
FROM	TO		
0	8	Soft sandstone	
8	11	Light gray	
11	14	Light brown	
14	25	Dark brown	
25	52	Dark gray	
52	90	Greenstone	Small amt. water 55'
90	93	Light brown	
93	110	Light gray	Water 105
110	115	Greenish gray	
115	130	Red rock	
130	160	Light brown	
160	205	Hard dark green	
205	210	Light green	
210	215	Red	
215	220	Gray	
220	225	Dark green	
225	230	Dark gray	
230	245	Greenstone	
245	250	Greenstone	
250	280	Greenstone and granite	
280	300	Greenstone and granite	

(Use additional forms if necessary)

Land History

Form 10-550
(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: Lewis Mountain Area, Central District

One Spring
 One 20,000 Gallon Concrete Reservoir
 One Concrete Pumphouse w/electrically Operated Pump and a Standby Gasoline
 Engine Pump. House is 210 Sq. Ft.
 4,805 Linear Feet of Pipe
 Ten Stone Masonry Drinking Fountains
 Two Fire Hydrants

Pump System
 Constructed by ODC, Force Acct. 1938-1956

2 3	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				8,600.00
2	1959	28					3,036.15		11,636.15
3									
4									
5									
G.L. Acct. No.		General Classification			Sub-Classification		Region	State	Park or Office
100.8		Utility			Water System		One	Va.	SNP

Supporting Hydro Data

National Park Service
Shenandoah National Park
Contract #14-10-0137-0169

Final Report
LEWIS MOUNTAIN AREA
Shenandoah National Park

In the Preliminary Report for this Area prepared by this Division on February 14, 1962, two Test Hole drilling sites were recommended. On May 28, 1964 the Frank W. Martin Drilling Company began drilling at Test Hole site #1, and completed the hole at 300 feet on June 1, 1964. As an estimated 20 gallons per minute was obtained, Park officials decided against drilling at the site recommended for Test Hole #2.

Geology

The rock formations and geologic structure of the Area as previously reported includes the Catoctin, Swift Run, and Pedlar formations; all of which are inclined approximately 25 degrees to the northwest. Because the Swift Run Formation is considered the most favorable potential aquifer of the three rock units, Test Hole #1 was to begin in the Catoctin Formation, penetrate the entire thickness of the Swift Run Formation, and terminate in the Pedlar Formation at a depth of 300 feet. The near-proximity of the Test Hole site to a cross fault was intentional in order to encounter any shattered rocks associated with the fault zone.

Drilling

Examination of the drill cuttings from Test Hole #1 verified the geology as reported with one exception: compressive forces that caused the cross fault distorted and steepened the inclination of the rock formations near the fault zone.

- 2 -

At the Test Hole site the strata are nearly vertical, and from 145 to 300 feet the drill hole passed back and forth between the irregular, nearly vertical Catoclin-Swift Run contact. Water-filled rock openings in the shatter-zone were encountered at 54 and 104 feet below ground surface, and it is probable that one or more minor fissures were penetrated in the next 150 feet but were not reported by the driller. A short-term air test at 245 feet produced an estimated 20 gallons per minute. No additional water was obtained from the next 55 feet of the Test Hole, and as it was apparent the shatter-zone had been penetrated and the Swift Run-Pedlar contact is much deeper than anticipated, drilling was terminated at a total depth of 300 feet.

Quantity of Water

A submersible test pump was installed in the Test Hole on June 10, 1964, and pumped continuously for 25 hours. The results are illustrated by the attached drawdown curve that indicates only 15 gallons per minute was being discharged during the last one and one-half hours of the test. Further, the drawdown exceeded depth of the air-line setting so the final portion of the curve and pumping level is unknown. However, inasmuch as the final pumping level was below 268 feet, it was considered to be below the lowest aquifer, and therefore dropping rapidly. Because of this it was recommended another pump test be conducted so stabilization could be reached and accurately measured; this was done in July 1964. As illustrated in the attached drawdown curve for pump test #2, there was a marked recovery of the pumping level during the last two hours of the 19-hour test. The final yield was 10 gallons per minute, but it is unfortunate the test was not continued another five hours as recommended.

- 3 -

Based on such a short producing period, it would seem unwise to pump this well continuously at more than 12 gallons per minute.

*too high?
ew*

Quality of Water

Water samples collected near the conclusion of pump test #2 were analyzed by this Division in July 1964. The water tested was slightly basic (pH 7.2), and no turbidity was noted; the remainder of the partial chemical analysis is as follows (in parts per million):

Total Hardness	50.0	Phosphate	0.5
Calcium Hardness	20.0	Iron	0.25
Sulfate	10.0	Manganese	0.25
Silica	1.3	Nitrate	0.02

Provided bacteria tests are negative, the water is of good quality. The moderate hardness is derived from the combination of calcium-sulfate-manganese components, and is often referred to as "permanent hardness." It is not probable that treatment will be necessary for this condition, but if a slight reddish-brown stain develops on any fixtures or white clothes it may be desirable to treat the water to reduce the iron and manganese content. It is possible that the amount of some of these mineral constituents in the water will be lower after the well has been pumped regularly.

Recommendations

In the Preliminary Report for the Lewis Mountain Area two Test Hole sites were recommended, the resulting data to be used to locate a Water-Well site if it were not possible to develop one of the test holes. As it was considered by Park officials that a sufficient quantity of water could be produced from Test Hole #1, no further drilling was done. At this time it is not possible to determine the long-range capacity of this Test Hole as a water well.

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but it is thought to be a risk for any public water supply to be obtained from any one source. Should another well be required in the future, it would be advisable to re-evaluate the data in order to select the most favorable drilling site.

Enclosed are copies of the Water Well Completion Report form, geologic log, two pump-test data sheets, and two drawdown curves. Data from this Test Hole has been filed in the permanent repositories maintained by this Division, and recorded as Page County Well #84, Well Repository #1072.

Virginia Division of Mineral Resources
Charlottesville, Virginia
June 29, 1965

RECEIVED
SHEN. NATL. PARK
Shenandoah National Park
Contract No. 14-10-0137-123

**Lewis Mountain Area
"Preliminary Recommendations"**

The Area is located in the Central District of the Shenandoah National Park at approximately milepost 57.6. Granodiorite, Swift Run quartzite, and Catoclin greenstone are exposed across the area from east to west (Figure 1). The quartzite dips to the northwest and west at approximately 25 degrees, and strikes generally north 44° east, becoming almost north-south just south of the Lewis Mountain Area. A minor cross fault striking northwest-southeast through the area is suggested by a possible offset in the quartzite. Prominent cleavage in the rocks is parallel to strike, and dips about 60 degrees to the southeast. This cleavage pattern should be beneficial to the ground-water conditions in the area.

The present water supply is obtained from Lewis Mountain Spring, approximately 1,200 feet southwest of the Lewis Mountain Area. The quality of water is good, but the flow is periodically less than the estimated demand of 14 gallons per minute (Table 1). The flow would probably not be substantially increased by additional work on the spring.

Bear Wallow Spring consists of two springs and numerous seeps which are located about 200 feet lower and 3,500 feet southwest of Lewis Mountain Spring (Figure 1). Little data is available on the Bear Wallow spring area, but the flow was measured at 31 gallons per minute on November 6, 1933, and estimated at 40 gallons per minute November 8, 1961. This spring could be used as an auxiliary water supply, and it is recommended that one or two

- 2 -

temporary weirs be installed in the stream below the springs so routine weir readings can be started in the Spring of 1962.

Two test wells are recommended for the Lewis Mountain Area (Figure 1). The first test well, located approximately 50 feet southeast of Skyline Drive near the entrance road to the area, will encounter greenstone at approximately 12 feet and the top of the quartzite at about 30 feet. The well should terminate in granodiorite at a depth not greater than 300 feet.

The second test well, located about 500 feet east of Lewis Mountain Spring on the west side of the Skyline Drive, will encounter greenstone at approximately 10 feet and the quartzite at about 60 feet. The well should terminate in granodiorite at a depth not greater than 150 feet.

The proposed well at test site No. 1 should be drilled first. The location of test site No. 2 is subject to change upon evaluation of the data from the drilling of Well No. 1. Drilling of the No. 2 well should be delayed until such data is analyzed.

H. Robert Hopkins
Laurence H. Gardner II
Virginia Division of Mineral Resources
Charlottesville, Virginia
February 14, 1962

- 3 -

Table 1. Flow of Lewis Mountain Spring
(in gallons per minute)

Compilation of partial daily flow records
May 7, 1935 through August 27, 1937

Date	high	Flow low	average	%Daily recordings under 14 g/m
May 1935	26	17	22	0
June 1935	23	17	18	0
July 1935	20	13	14	56
August 1935	29	6	15	68
September 1935	61	17	34	0
October 1935	29	13	19	18
May 1936	23	15	19	0
June 1936	17	9	11	88
July 1936	6	6	6	100
August 1936	6	4	5	100
September 1936	5	3	4	100
October 1936	29	3	10	75
November 1936	17	11	14	42
May 1937	44	29	36	0
June 1937	44	23	37	0
July 1937	36	17	23	0
August 1937	17	17	17	0

Summer Flow Records August 16, 1957 to September 26, 1961

Date	Flow	Date	Flow
August 16, 1957	6.8	September 26, 1960	11.9
September 16, 1957	2.5	October 14, 1960	6.8
June 25, 1958	21.6	May 29, 1961	21.6
July 30, 1959	10.0	June 12, 1961	24.5
August 14, 1959	6.8	July 7, 1961	24.5
August 31, 1959	5.5	July 24, 1961	24.5
June 27, 1960	21.6	August 11, 1961	27.6
July 28, 1960	10.9	August 30, 1961	31.0
August 12, 1960	7.6	September 11, 1961	31.0
August 22, 1960	6.8	September 26, 1961	24.5
September 9, 1960	5.5		

Other Supporting Information

Form 10-174
(June 1962)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

FACE SHEET FOR COMPLETION REPORT

Park Shenandoah National Park	Region Southeast	Work Order No. 211724
Location in Park Lewis Mountain - Central District	State(s) Virginia	Fund Symbol 14x1035
☐ Contract and/or ☒ Day Labor	County or Counties Greene	Year Programmed 1967
Work Order Title Improve Water Systems, Lewis Mountain		PCP No. <i>Not in use</i> U-172 <i>per S. A. Miller 5/7/69</i>
		Master Plan No. NP-SHE-2669A
		Master Plan Corrected By -
		As Built Drawings By Dale H. Hoak
		Date Started March 1967
		Date Completed June 1968 <i>WBS</i>
DESCRIPTION OF FIXED ASSETS (For completion by employee in charge of project)		TOTAL COSTS (For completion by FFO)
230 - Utility Systems		
1. <u>Water Systems</u> : Addition to existing system of 300' well, 1 chlorinator box, and 240' of 2" G.S. pipe, plus valves, meters, etc.....		\$ 5,390.53
2. <u>Electric Systems</u> : Installation of 592' of underground #4 cable.....		392.00
PS&S Added		925.20
TOTAL		\$ 6,707.73

DISTRIBUTION		THE FIXED ASSET DESCRIBED ABOVE HAS BEEN COMPLETED IN ACCORDANCE WITH APPROVED DRAWINGS, SPECIFICATIONS, AND AUTHORIZED CHANGES			
No.	To	Submitted	Title	Date	
1	WASO	By: <i>Thomas R. Lowe</i>	Chief of Park Maintenance	MAR 7 1969	
1	PSC DC	Approved: <i>Thomas R. Lowe</i>			
1	SERO	By: <i>R. Taylor Hoskins</i>	Superintendent	MAR 7 1969	
1	SERO FO				
1	Shenandoah				
COSTS VERIFIED					
BY <i>T. J. Baer</i>			Regional Accountant	MAR 31 1969	

GSA DC 65-14218

11300

Form 10-174A
(June 1962)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICEWork Order Number
211724

COMPOSITION OF COST FOR COMPLETION REPORT

Fund Symbol
14x1035Park
Shenandoah National ParkRegion
SEYear Programmed
1967Location in Park
Lewis Mountain, Central DistrictWork Order Title
Improve Water Systems, Lewis Mountain

COMPOSITION OF COST

COSTS CHARGED TO FUNDS ALLOTTED TO FIELD FINANCE OFFICE

(1) Personal Services.....	\$ 2,828.05	
(2) Travel.....		
(3) Contract Work		
(4) Supplies and Materials.....	2,375.45	
(5) Other Direct Expenses.....	170.00	
(6) Operation of Equipment.....	409.03	
(7) Depreciation of Equipment.....		
(8) Purchase of Construction Equipment.....		
(9) Purchase of Other Accountable Equipment		
(10) Other Costs:		
(11) TOTAL COST CHARGED TO FFO FUNDS	XXXXXXXXXX	\$ 5,782.53
OTHER COSTS:		
(12) PS&S, AP, and/or Facilitating Services @ 16 XX %.....	\$ 925.20	
(13) Inventory and Other Non-Fund Costs		925.20
(14) GROSS WORK ORDER COSTS	XXXXXXXXXX	\$ 6,707.73
LESS:		
(15) Residual Value of Construction Equipment on Line 8.....	\$	
(16) Other Credits		
(17) NET COST OF FIXED ASSETS	XXXXXXXXXX	\$ 6,707.73

Identify other costs and other credits by line item entry, on an attached schedule, or explain in narrative.

25543

Narrative to Accompany Project Completion Report

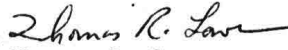
Work Order 211724

**Improve Water System, Lewis Mountain
Shenandoah National Park**

Work on this project began in late 1967 with fabrication of several small items which would be needed for construction. Due to lack of approval on original plans, work was withheld until late March of 1968 when the revised plans were approved.

Work began with installation of a Monitor, Model GPS-67B-S4, underground discharge unit to the top of a 300' well. A Myers, Model SE20B-21, submersible pump, was then set in the well at 273'. Connection to the existing system was made using 240' of 2" G.S. pipe and building a small 4'x8' chlorinator house (underground) equipped with a Wallace and Tiernan, Series A-747, Hypochlorinator. Power for the pump, etc., was brought underground from a commercial power source using salvaged underground cable in a ditch prepared under a purchase order with a local ditching contractor who was working in the area.

Work on the project was completed in June 1968 and the system was put into operation. No special ground or other conditions for the area were encountered during construction.


Thomas R. Lowe
Project Supervisor

RECEIVED
NATIONAL PARK SERVICE
WASHINGTON OFFICE

AUG 17 10 26 AM '65

612-8-18-65

LS4 SER(OLW)

AUG 16 1965

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SLW
Read
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8/18

Memorandum

To: Chief, RODE

From: Acting Assistant Regional Director, Operations,
Southeast Region

Subject: Lewis Mountain Area--Final Water Resources Report

We are enclosing a copy of the subject report prepared by the Virginia Division of Mineral Resources, Charlottesville, Virginia.

The project geologist pointed out in the report that water entered the well from rock openings in the shatter zone of the Swift Run Formation. From previous test drilling along the Skyline Drive, we have found this formation to be the most favorable potential aquifer of the various rock units encountered in wells located in this area. An evaluation of field data collected during the pumping tests indicated the well should not be pumped continuously at more than 12 gallons per minute. It was determined by chemical analyses of water samples collected during the pumping tests that the well water is of good quality and no treatment is needed.

(SIGNED)

W. Mikell

✓
Enclosure

cc:

Director w/c of enc.
Supt., Shenandoah

SHEN

154
W14

September 24, 1964

SOUTHEAST REGION	
SEP 30 1964	
Regional Director	
Asst. Reg. Dir., (O)	
Asst. Reg. Dir., (A)	
Asst. Reg. Dir., (CA)	
Asst. to Reg. Dir. (PA)	
Asst. to Reg. Dir. (D)	
Resource Studies Adv.	

[Handwritten signature]
9/25/64

Frank W. Martin Drilling Company
4117 Cravens Creek Road, SW
Roanoke, Virginia

Gentlemen:

In order that the final payment may be made on your Contract No. 14-10-0137-0161, for the Drilling, Casing, Grouting, Sealing and Pumping Test Wells, Shenandoah National Park, you are requested to execute the original and all copies of the enclosed Release of Claims. You should keep one copy for your files and return the original and other copies to this office.

The requirements for this release is contained in the General Provisions, Standard Form 23A, Clause 7, "Payments to Contractors," subparagraph (d).

If you have any claims against the Government arising under and by virtue of this contract, they should be excepted and described in sufficient detail to identify them and the amounts of each should be stated separately.

If you have no claims, you should have the words "No Exceptions" typed in the space immediately above the last sentence reading "This release has been executed...".

Final payment on your contract will not be made until this release has been signed by you and furnished this office.

Very truly yours,

Jerry B. House
Acting Superintendent
Contracting Officer

Enclosure 1

cc;
WASO
EODC
->SERO

RELEASE OF CLAIMS

For and in consideration of the receipt of final payment in the amount of \$12,383.55, 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 SERVICEShenandoah National Park
(Park)

Check One:

Monthly
Estimate ☐Final
Estimate ☒

UNIT PRICE CONTRACT

ESTIMATE NO. 2	FOR (Period) June 17 - September 5, 1964	DATE SEP 29 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
		<u>Lewis Mountain Well No. 1</u>	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
		<u>Lewis Mountain Well No. 1</u>	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	220'		\$ 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
		<u>Lewis Mountain Well No. 1</u>	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
E. Taylor Hoskins, Superintendent	NET..... 23,404.25
DATE SEP 29 1964	LESS PREVIOUS PAYMENTS..... 11,015.70
	LESS LIQUIDATED DAMAGES..... 0.00
	DUE THIS ESTIMATE..... 12,388.55
	% COMPLETED TO DATE..... 100%

*Show Breakdown on Reverse

(See Reverse for Distribution)

Form 10-174
(Rev. 1/56)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
COMPLETION REPORT OF CONSTRUCTION PROJECT
REGION ONE OFFICE
AUG 29 1956

REGION One	AREA Shenandoah National Park	COUNTY Page	STATE Virginia
PROJECT OR JOB TITLE Water Plant Electrification - Lewis Mountain			PCP NO. U-70
LOCATION IN AREA Lewis Mountain - Central Section		MASTER PLAN NO. NP-SHE-5012	BUILDING NO. 17-4
WORKING DRAWING NO. AND TITLE None			
APPROPRIATION TITLE AND SYMBOL 14X1035			ACCOUNT NO. 332.02
CONTRACT NO. None		DATE WORK STARTED September 1955	DATE WORK COMPLETED April 1956
NAME OF CONTRACTOR None		ADDRESS	

COST ANALYSIS

CONSTRUCTION ITEMS	QTY.	UNIT COST IN PLACE	TOTAL COST IN PLACE
Fairbanks-Morse, Figure 6977, Vertical Multistage, self priming, turbine deep well pump, General Electric type KCR 1 phase, 7½ h.p. motor, two G.E. # CR2931 float type switches, unit installation, plumbing fixtures	1 each	\$ 1,263.29	\$ 1,263.29
Two conductor #10 direct burial trench cable installed 12" to 18" deep	2200 lin.ft.	0.447	983.42
Moisture-proof electrical wiring, switches, fixtures installation, 100 ft. service line and conduit from transformer to pump house. Complete package unit.		849.44	849.44
TOTAL			\$ 3,096.15

Verified by Field Finance Office


 Administrative Officer

SUMMARY OF EXPENDITURES

PERSONAL SERVICES \$ 1,199.20	EQUIPMENT \$ 37.14 - 31.85	MATERIALS AND SUPPLIES \$ 1,738.78
OTHER \$ 68.99 - 126.12		

CHANGE ORDERS

ORIGINAL CONTRACT AMOUNT	FIRST	SECOND	THIRD
FINAL CONTRACT AMOUNT	FOURTH	FIFTH	SIXTH

THIS PROJECT OR JOB HAS BEEN COMPLETED IN ACCORDANCE WITH
APPROVED DRAWINGS, SPECIFICATIONS, AUTHORIZED CHANGES

SUBMITTED BY (Name and title) <i>E. R. Baldwin</i>	DATE August 22, 1956
APPROVED BY (Name and title) <i>C. R. Baldwin, Asst. Park Engineer</i> <i>Guy D. Edwards, Superintendent</i>	DATE August 22, 1956

(ATTACH NARRATIVE STATEMENT, PHOTOGRAPHS, AND "AS BUILT" DRAWINGS TO THIS FORM)

NARRATIVE REPORT

Project: Water Plant, Electrification - Lewis Mountain - 332.02

As a result of negotiations between the Concessioner and the Northern Virginia Power Company for the erection of an electrical transmission line to Lewis Mountain, under the sanction of the Park Service, provisions were made for the power company to provide a transmission line to the service water pumping facility which serves the area water system.

Funds for the purchase of an electrically-operated pumping unit to replace the gasoline engine operated unit and to provide the necessary moisture proof switches, wiring and fixtures, and the plumbing work - amounting to \$3,100 - were allotted by transfer from account 332.01 by memorandum of Marcy 15, 1955.

Motor and pump requirements were discussed in May 1955, with representatives of the Northern Virginia Power Company. They indicated that a certain type pump and motor were required due to the single phase power source and the need to eliminate any fluctuation of current which could be caused by the starting of the pump. The type of motor predicated was a capacitor start-capacitor run 230 volt, 60 cycle, single phase in either a 5 or a 7½ horse power. The type of pump required was predicated to be a centrifugal rather than a reciprocating unit as was currently in use.

Bids were advertised in August 1955, specifying a requirement for a centrifugal type, self priming pump capable of delivering a minimum of 32 gallons per minute against a static head of 420 feet.

In September 1955, work consisted of the installation of 400 linear feet of two conductor #10 trench cable and the excavation of 900 linear feet of cable trench on the line from the pump house to the reservoir.

The award for furnishing the pump was made in October 1955, to the low bidder, Fairbanks-Morse Company to furnish a Figure 6977, vertical multistage, self priming, deep well turbine pump equipped with a General Electric type KCR 7½ horse power capacitor start-capacitor run, single phase, 60 cycle, 230 volt A.C., 3450 R.P.M. motor.

In November 1955, there were 1800 linear feet of two conductor #10 trench cable installed which completed the 2200 foot electric switch line from the pump house to the reservoir.

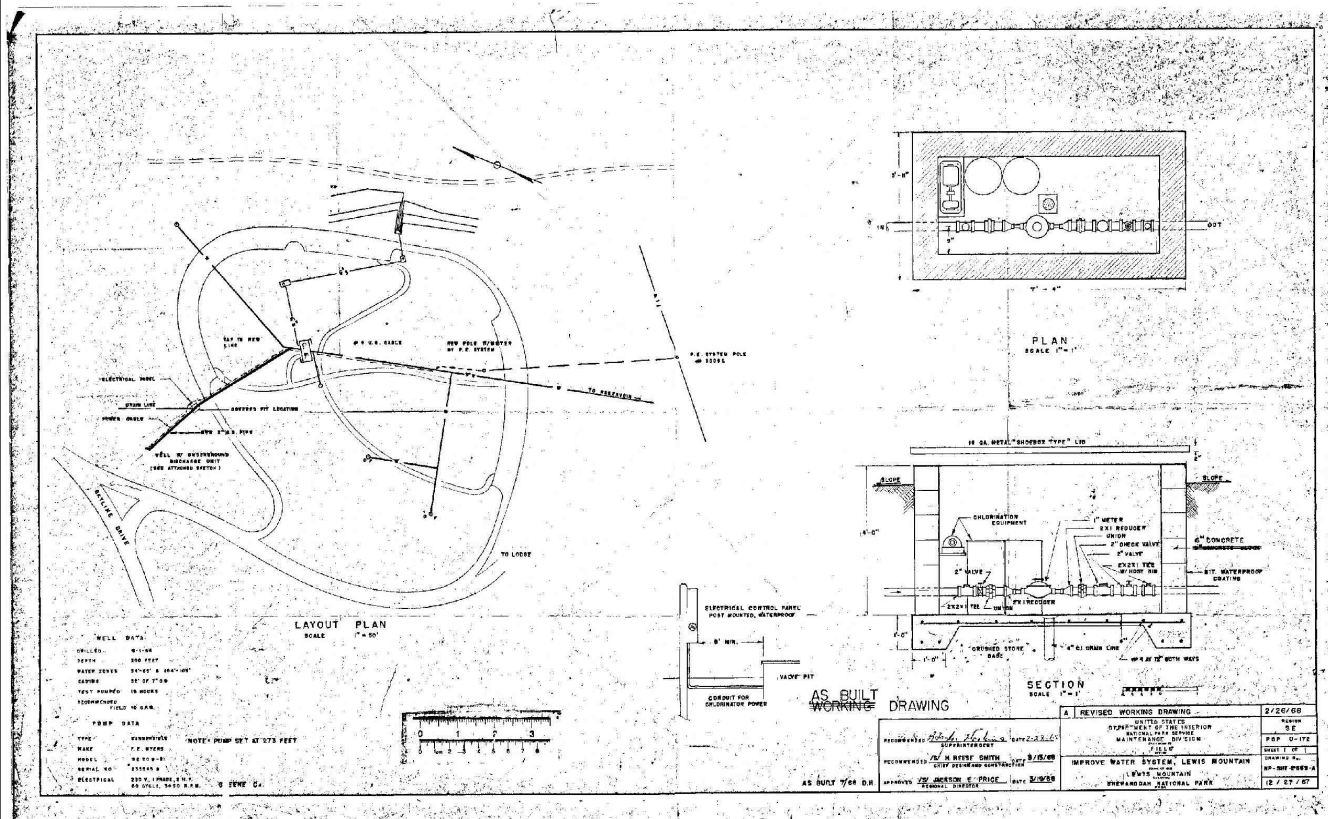
The pumping unit and two General Electric # CR2931, Form M, double pole, rod operated, float type switches were received in December 1955.

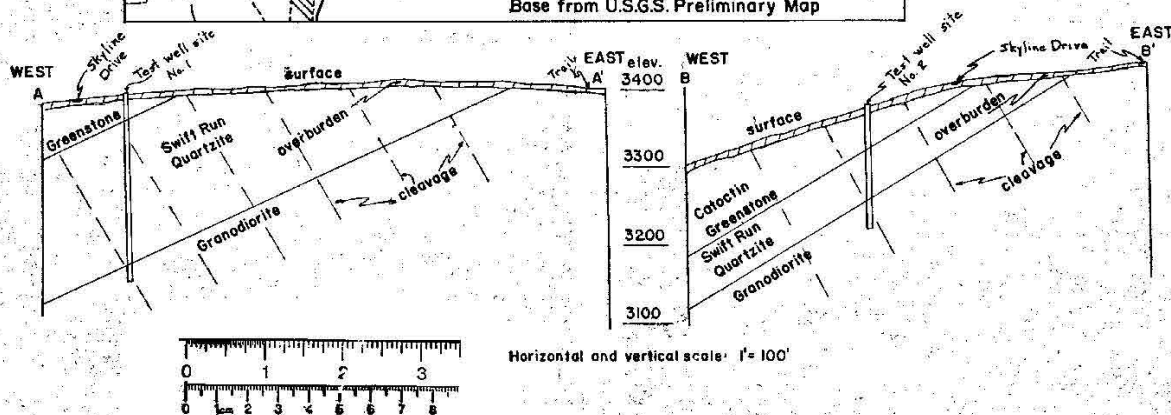
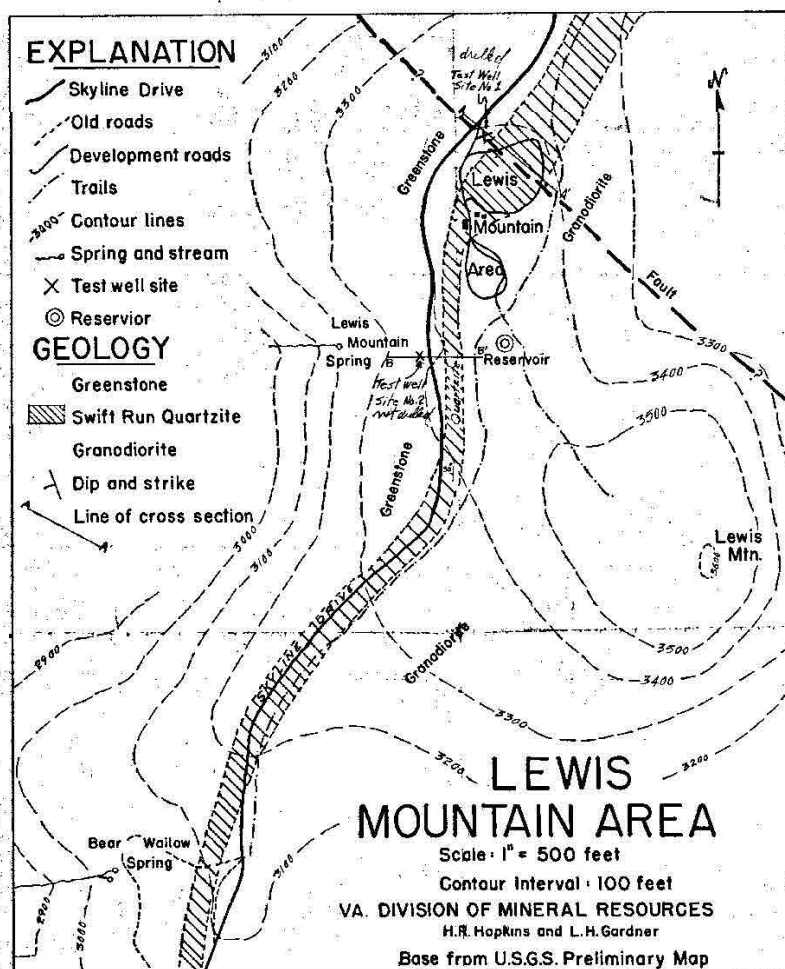
Interior wiring installation and switch mounting work was accomplished and a concrete pump base was installed in the pump house in January 1956.

The pumping unit, switches, moisture-proof lighting fixtures and switches and plumbing connections and final hookup work was accomplished in April 1956. Tests were made for pump operations and found to meet specification performance.

The project was completed in April 1956.

Maps and Miscellaneous Information





Docket Information

Number of Documents in Docket 26

Documents Dated from 8/22/1956 to 3/7/1969

Docket Compiled: 6/17/2011