



WATER-RIGHT DOCKET

Great Smoky Mountains National Park

Docket No: 23

LITTLE RIVER BRANCH, WELL-METCALF BOTTOMS PICNIC AREA.

Preliminary Docket Information

00-00-0000: see great smoky mountain docket no. 1 for map and preliminary map showing locations of water sources within the p

SEE GREAT SMOKY MOUNTAIN DOCKET NO. 1 FOR MAP
AND PRELIMINARY MAP SHOWING LOCATIONS OF
WATER SOURCES WITHIN THE PARK.

WATER RIGHTS DOCKET
Metcalf Bottoms
Great Smoky Mountains National Park

Supporting Hydro Data

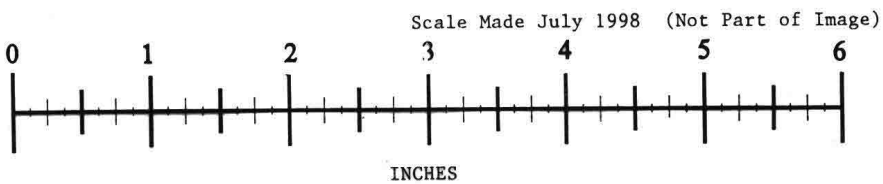
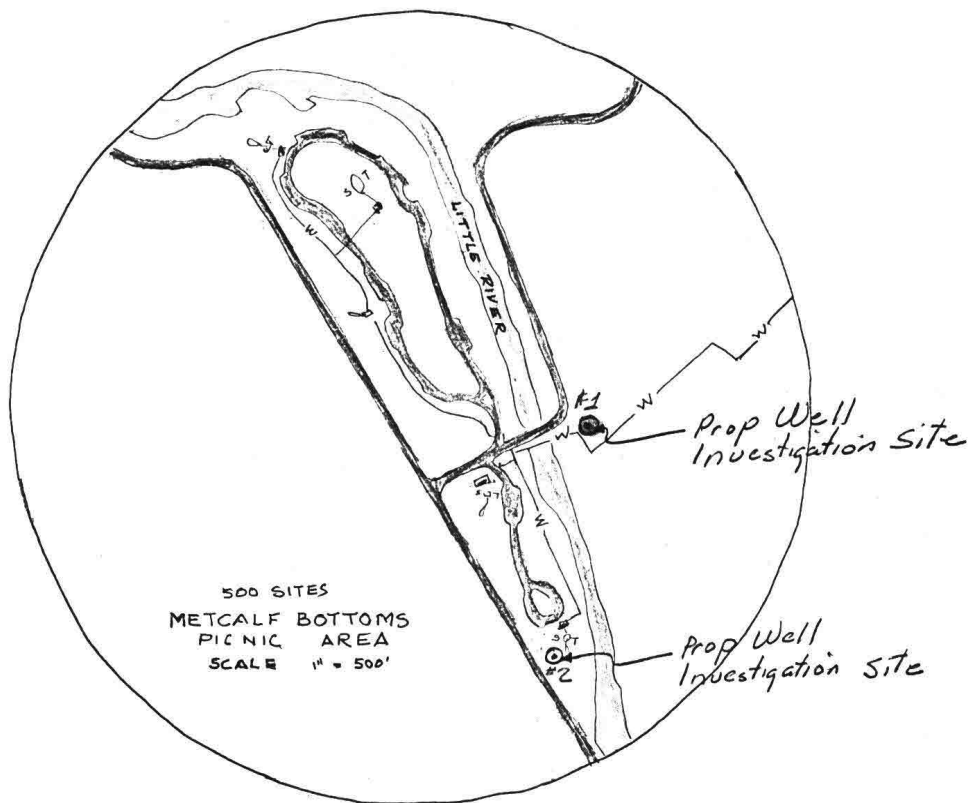
METCALF BOTTOMS

Situation: The existing development consists of a 200-site picnic area.

During the past year, the water consumption for the area was approximately 15,000 gallons per day (based on actual meter usage). During extended dry periods, the open stream supply does become borderline and suggests the need for a more consistent supply or a supplemental supply. At the present time, there is no commercial power in the area for pumping but the National Park Service is in the process of obtaining such power this summer.

Proposed: That we drill an exploratory 8" well that will provide a minimum of 20 gallons per minute.

Progress to date: This is the second priority in the Water Resources Investigation program for the 1967 F.Y. as submitted by the park.



OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

JEV WASO
08, 25

TO : Gerald A. Rowe, Superintendent
Great Smoky Mountains National Park
Gatlinburg, Tennessee

DATE: August 17, 1967

FROM : William M. McMaster, USGS, WRD
Knoxville, Tennessee

SUBJECT: Preliminary report, Test wells at Metcalf Bottoms

I am enclosing the preliminary report on test drilling and pumping at Metcalf Bottoms.

If you have any questions or need more information, please call me.

Bill

William M. McMaster
Hydrologist



5010-108

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

Preliminary Report, Drilling and Testing of Wells at Metcalf Bottoms Picnic Area

Introduction

The Metcalf Bottoms picnic area is located on a flood plain of the Little River, in the northwestern part of Great Smoky Mountains National Park, at a general altitude of about 1,680 ft. It consists of a 200-site picnic area and 4 comfort stations. Water is presently supplied by Little Greenbrier Branch, a small tributary to Little River. Because this stream's discharge is reported to be at times barely adequate to supply water needs, test wells were drilled to determine if sufficient ground water were available to augment or replace the existing supply. A yield of 20 gpm (gallons per minute) was desired.

At the time of test drilling, a well was to be drilled to be used for water level observation purposes.

Geology

The Metcalf Bottoms area is located on alluvial material of the Little River. This material consists of red clay intermixed with quartz sand, gravel, cobbles, and boulders. Its thickness appears to be generally about 10 to 25 ft.

The alluvium lies in an outcrop belt of the pre-Cambrian Metcalf Phyllite, which at this location is principally medium-gray phyllite containing, in places, veins of calcite. Dip is generally to the southeast in exposures near Metcalf Bottoms, but the bedding planes are strongly contorted.

Drilling

Drilling of the 6-1/4-inch observation well (test well no. 1, fig. 1) began on February 20, 1967, by Caldwell Well Drilling Co., Hot Springs, N. C., using an air rotary rig. The locations of this and other wells in the Metcalf Bottoms area are shown on figure 1. Twenty-four feet of alluvial material was penetrated and 31 feet of 6-1/4-inch standard casing was set. Bedrock consisted almost entirely of fresh, medium-gray phyllite. A soft zone between 55 and 60 ft evidently supplies most of the water to the well. When finished at the 150-ft depth, the rig was blowing 6.5 gpm. A columnar section for the Metcalf Bottoms wells is attached (fig. 2).

Drilling began on the second hole, located in the southeastern part of the picnic area (test well no. 2, fig. 1), on February 21. The driller had difficulty in setting the 8-inch casing to bedrock, which was at

a depth of 20 ft, because of falling cobbles, and finally had to set 30 ft of 6-inch casing inside the 17.5 ft of 8-inch casing in order to make the hole. Drilling proceeded through medium-gray phyllite, which contains considerable calcite in places. At the 187 ft depth, the maximum footage under specifications of the contract, the rig was blowing only 5 gpm. Most of the water was obtained at 38 ft. The driller volunteered to drill further at no expense to the Park Service, as drilling was very fast. The well was completed at 242 ft with no increase in yield.

Approval was obtained from National Park Service to drill a third hole at Metcalf Bottoms. This 6-1/4-inch well, located at the northwestern end of the picnic area, penetrates 12 ft of alluvium, and is cased to a depth of 19 ft. The lithology penetrated by the well, which is 200 ft deep (the last 13 ft being provided by the driller), is essentially identical to that of the other wells, that is, phyllite containing some calcite. The drilling rig blew only 4 gpm from this well. Water was obtained primarily at 50-55 ft.

Pumping test

A check of the water-use records at Metcalf Bottoms for July and August 1967 showed that maximum daily usage was only 3800 gpd. In view of this, it was decided to run a pumping test on the first well drilled at Metcalf Bottoms. An 8-hour test was run on March 3, 1967, results of which are shown in fig. 3. Static water level was 12 ft. Pumping began at the rate of 7 gpm at 0919 hrs and continued until 1005, when discharge was increased to 10 gpm, resulting in a maximum drawdown of 28 ft or a specific capacity of 0.35 gpm/ft. By 1240 hrs, the water level had recovered 5 ft against pumpage, and drawdown was reduced to 23 ft, or a specific capacity of 0.43 gpm/ft. At 1240, discharge was increased to 13 gpm. After 34 minutes the water level had declined to 72 feet; discharge was then reduced to 10 gpm. The decline ceased but no recovery occurred. The pump was stopped for 20 minutes and restarted at 10 gpm. A somewhat variable pumping water level was established, ranging between 29 and 34 ft below land surface. During the final 1 hr 15 minutes of the test, drawdown was essentially stable at 20 ft, indicating a specific capacity of 0.50 gpm/ft. Pumpage stopped at 1715 hrs. Recovery was very rapid, and the static water level was re-established within 15 minutes.

This well will yield 10 gpm on a continuous basis, but like other low-yield wells in similar rocks in this area, it is very sensitive to changes in discharge and 10 gpm is the maximum recommended pumping rate.

Results of chemical analysis of a sample obtained during the pumping test are attached.

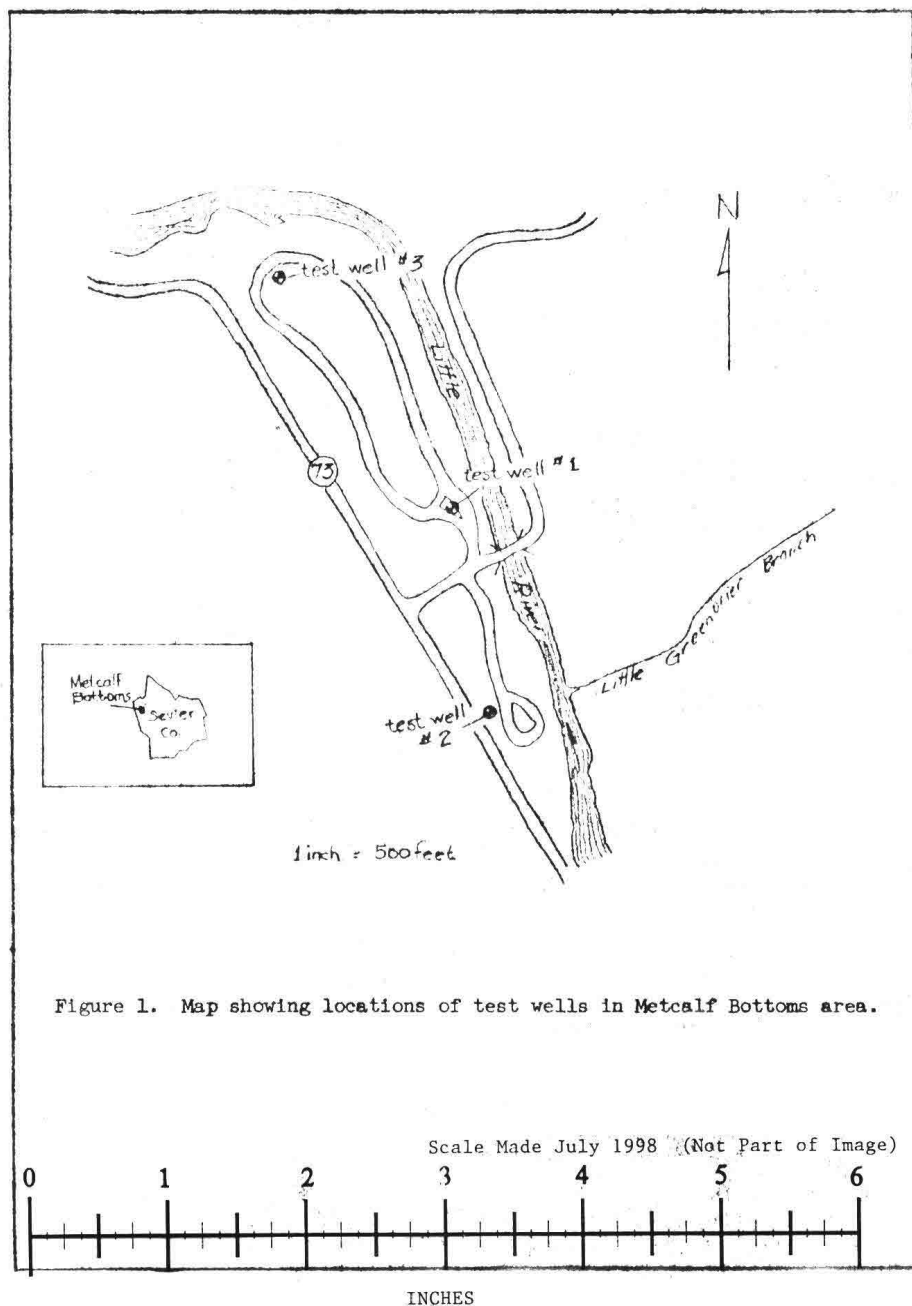
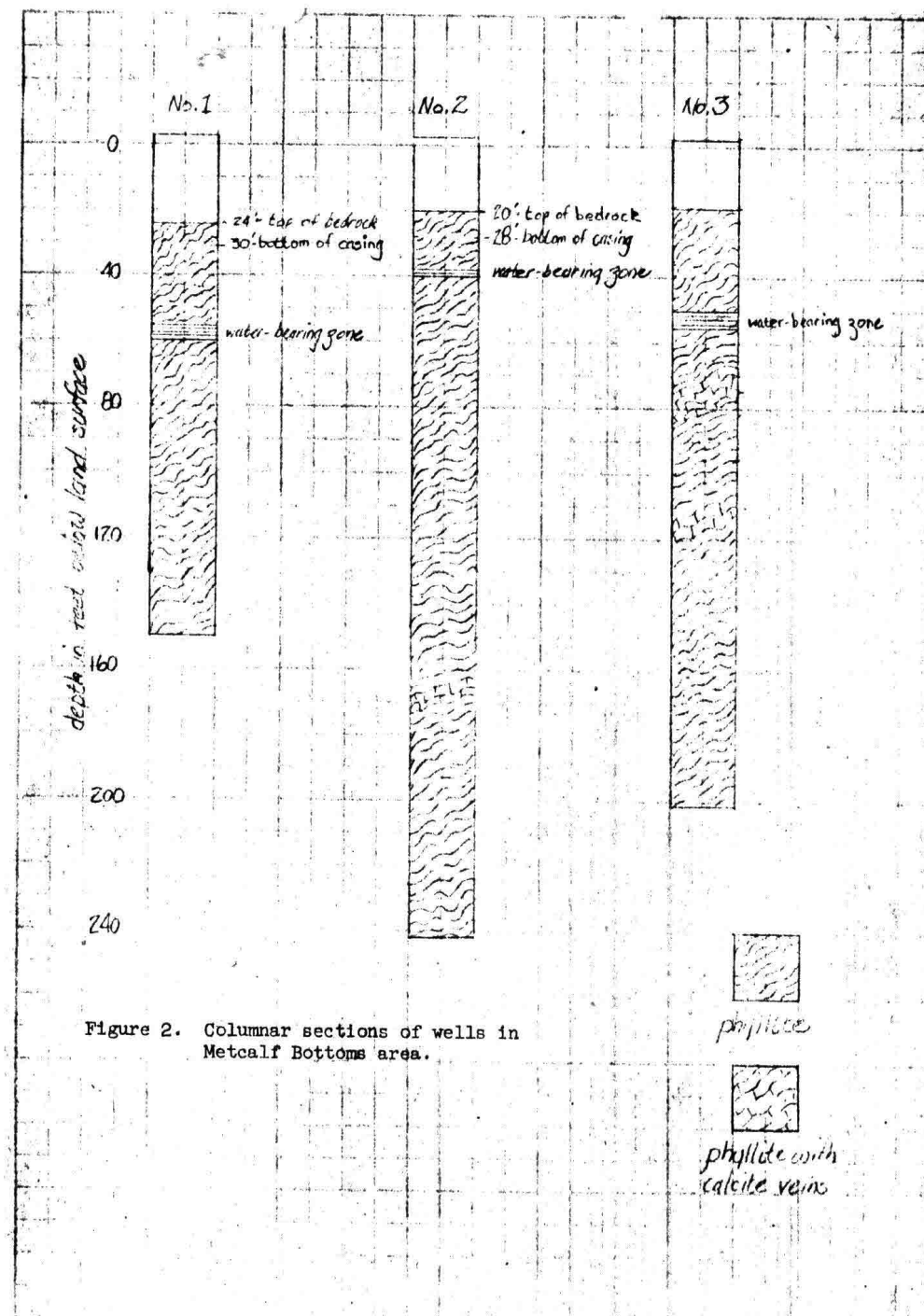


Figure 1. Map showing locations of test wells in Metcalf Bottoms area.



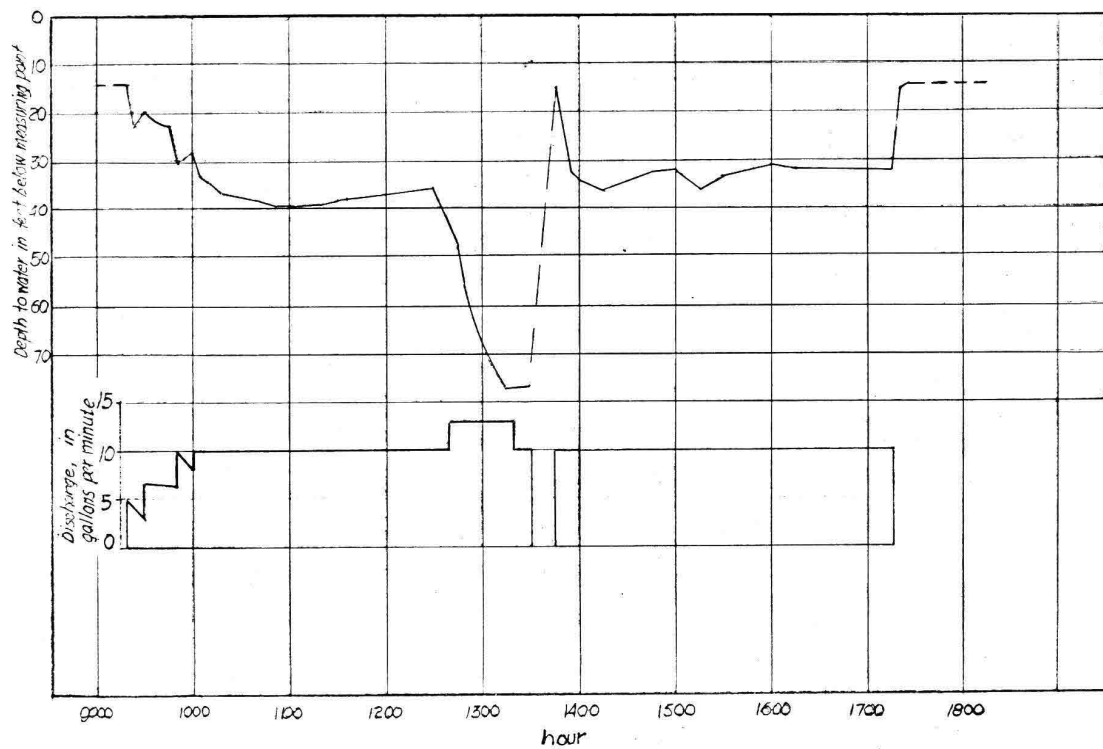


Figure 3. Results of pumping test, Metcalf Bottoms well No. 1, March 3, 1967.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

2GW

WATER ANALYSIS 354044N0833854.1

Location Gatlinburg, Tennessee County Sevier
 Source Well No. 354044N-0833854 Depth (ft) Diam (in.)
 Cased to (ft) Date drilled Point of coll. Metcalf Bottoms Picnic Area
 Owner National Park Service
 Treatment Use
 WBF WL Yield 10 gpm
 Temp (°F) 57 Appear. when coll. Clear
 Collected March 3, 1967 By W. McMaster
 Remarks Sample collected at pump discharge. No sample in iron bottle.

	ppm	epm		ppm	epm
Silica (SiO ₂)	9.9		Bicarbonate (HCO ₃)	26	0.43
Aluminum (Al)			Carbonate (CO ₃)	0	.00
Iron (Fe)	.02				
Manganese (Mn)	.00		Sulfate (SO ₄)	2.6	.05
			Chloride (Cl)	1.9	.05
			Fluoride (F)	.0	.00
Calcium (Ca)	4.6	0.23			
Magnesium (Mg)	1.1	.09	Nitrate (NO ₃)	.0	.00
Sodium (Na)	3.3	.14			
Potassium (K)	.4	.01			
Total		.47	Total		.53

	ppm		
		Specific conductance (micromhos at 25° C)	59
Dissolved solids:		pH	6.9
Calculated	37	Color	1
Residue on evaporation at 180° C	32		
Hardness as CaCO ₃	16		
Noncarbonate	0		

Lab. No. 35626

Field No.

Project

B. Consumption:METER READINGS - 1969 OPERATING SEASON

Breakdown according to usages:

Month (Consumption in 1,000 gal.)	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug</u>	<u>Sept</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>TOTALS</u>
Picnickers (70,802).....	--	--	--	7	19	55	73	57	50	23	--	--	284
Unaccounted.....	--	--	--	<u>1</u>	<u>8</u>	<u>28</u>	<u>27</u>	<u>18</u>	(23)	<u>19</u>	<u>8</u>	<u>4</u>	<u>90</u>
TOTALS.....	--	--	--	8	27	83	100	75	27	42	8	4	374

During the 1969 operating season, this system served 70,802 picnickers.

METER READINGS - 1970 OPERATING SEASON

Breakdown according to usages:

Month (Consumption in 1,000 gal.)	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug</u>	<u>Sept</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>TOTALS</u>
Picnickers (113,136).....	--	--	2	10	22	71	99	104	55	65	20	4	452
Unaccounted.....	<u>7</u>	<u>5</u>	<u>2</u>	<u>9</u>	<u>17</u>	<u>6</u>	<u>4</u>	<u>6</u>	<u>10</u>	<u>8</u>	--	<u>1</u>	<u>75</u>
TOTALS.....	7	5	4	19	39	77	103	110	65	73	20	5	527

During the 1970 operating season, this system served 113,136 picnickers.

(Metcalf Bottoms - Addendum No. 2)

(2/8/71)

NAME OF SYSTEM: Metcalf Bottoms Picnic AreaLOCATION: Park Route 3BNLOCATION: STATE: Tennessee COUNTY: SevierTennessee 73A. Source of SupplyLocation - Reference to Permanent LandmarkCoordinates1. Tributary of Little River Branch

Source located 3,500' east of reservoir site, elevation 1,850'

Lat. N 35°41'06"
Long. W 83°38'10"

This gravity flow system has an intake structure consisting of a 12" CM perforated pipe 18 feet long buried in a trench and backfilled with 1½ feet of gravel connected to a 3' x 3' collection box. The collection box has 4 inch galvanized iron pipe drain for cleaning purposes and a 2½ inch galvanized iron supply main leading to a 25,000 gallon reinforced concrete reservoir. The floor elevation of the reservoir, located 1,300 feet east of the picnic area, is 1,785 feet. The supply water flows through a Mathieson type chlorinator which is located on top of the reservoir in a small concrete block house. A float in the reservoir controls the flow in the supply main. From the reservoir a 4 inch cast iron distribution main runs to the picnic area.

2. Deep Well

Well drilled in the west picnic area 175 feet west of intersection of the west picnic area road and Metcalf Bottoms Picnic Area entrance road.

Lat. N 35°40'43"
Long. W 83°38'55"

This is one of three exploratory wells drilled in the vicinity of Metcalf Bottoms Picnic Area. This well, test well #1, drilled to a depth of 150 feet is a low yield type well producing 10 gallons per minute at a drawdown of twenty feet.

2. Deep Well (Continued)

This well was put into production in 1968 F.Y. It is the main source of supply, requiring no purification with the old source being retained in case of breakdown of well system. This system consists of a submersible deep well pump connected directly to the distribution main. The pump is capable of delivering 10 gallons per minute against a 120 foot head. Several different methods of control are provided as a section of this system is utilized for winter operation. For summer operation, when the entire system is used, a float operated switch in the reservoir is utilized. In addition, during periods of heavy demand a time clock in the control room is utilized to spread the pumping over a 24 hour period so as not to overtax this critical low yield well.

For winter operation the system is sectionalized using a direct line to a winterized comfort station. In the comfort station three 2-gallon hydrocells and a pressure switch control the operation.

(Metcalf Bottoms - Addendum No. 1)

B. Consumption:

Maximum daily - 4,000 gallons

Maximum monthly - 180,000 gallons

Maximum annual - 600,000 gallons

Breakdown according to usages.

METER READINGS - 1966 OPERATING SEASON

Month (Consumption in 1,000 gal.)	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug</u>	<u>Sept</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Totals</u>
Picnickers (88,145)	--	--	--	98	25	65	105	89	32	33	--	--	447

Breakdown according to usages

METER READINGS - 1967 OPERATING SEASON

Month (Consumption in 1,000 gal.)	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug</u>	<u>Sept</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Totals</u>
Picnickers (87,952)	--	--	25	23	32	64	80	76	35	72	6	1	414

Breakdown according to usages

METER READINGS - 1968 OPERATING SEASON

Month (Consumption in 1,000 gal.)	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug</u>	<u>Sept</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	<u>Totals</u>
Picnickers (61,364)	--	--	--	46	171	60	124	111	54	18	--	--	584

(Metcalf Bottoms - Addendum No. 1)

C. Distribution Mains and Laterals

<u>Size</u>	<u>Type</u>	<u>Length</u>
4"	Galvanized Steel	20 Lineal Feet
2½"	Galvanized Steel	3,527 Lineal Feet
2"	Galvanized Steel	360 Lineal Feet
1"	Galvanized Steel	100 Lineal Feet
4"	Cast Iron	<u>3,010 Lineal Feet</u>
	TOTAL	7,017 Lineal Feet

(Metcalf Bottoms - Addendum No. 1)



CHLORINATOR HOUSE ATOP A 25,000 GALLON RESERVOIR



INTAKE STRUCTURE AT TRIBUTARY OF LITTLE GREENBRIER BRANCH

Other Supporting Information

PROPOSED SITES FOR WATER RESOURCES INVESTIGATION

1. Park Headquarters
2. Green Mountain (Foothills Parkway)
3. Newfound Gap
4. Cades Cove
5. Deep Creek
6. Smokemont
7. Abrams Creek
8. Twin Creeks
9. Collins Creek
10. Metcalf Bottoms
11. Cataloochee
12. Elkmont
13. Cosby
14. Chimneys
15. Rocky Mountain (Foothills Parkway)
16. Webb Mountain (Foothills Parkway)
17. Little Greenbrier
18. Greenbrier
19. Sinks
20. Towstring
21. Indian Camp Creek
22. Tremont Ranger Station
23. Round Bottom Campground
24. Balsam Mountain Campground
25. Main Oconaluftee Residential Area
26. Old Oconaluftee Residence Area (Ravensford)
27. Big Creek Ranger Station
28. Cataloochee Ranger Station
29. Cataloochee Maintenance Area
30. Twentymile Ranger Station
31. Cherokee Orchard
32. Sugarlands

(09/28/67)

ALY 1967 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

TO : Gerald Rowe, Chief of Maintenance
Great Smoky Mountains National Park
Gatlinburg, Tennessee 37738

DATE: September 7, 1967

FROM : W. M. McMaster, USGS, WRD
Knoxville, Tennessee

SUBJECT: Summary of work plans for study of water resources of Great Smoky Mountains
National Park, North Carolina and Tennessee Districts

As I promised you on August 11, I am sending you our plans for the study of water resources of Great Smoky Mountains National Park that have been modified as a result of a meeting between North Carolina and Tennessee U. S. Geological Survey personnel July 6-7, 1967.



W. M. McMaster
Hydrologist

cc: Edward J. Kennedy, Chief, Tenn. District
Ralph C. Heath, Chief, N. C. District



5010-108

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

Summary of work plans for study of water resources of Great Smoky Mountains
National Park, North Carolina and Tennessee Districts

Sept. 7, 1967

At a meeting in Knoxville during July 6-8, 1967, North Carolina and Tennessee personnel discussed modification of plans in the study of water resources of the Great Smoky Mountains National Park. Those who attended the meeting were: Ralph C. Heath, North Carolina District Chief; Edward J. Kennedy, Tennessee District Chief; D. R. Rima, Assistant District Chief for Tennessee; Nat Thomas, G. C. Goddard, and E. F. Hubbard of North Carolina; and W. M. McMaster of Tennessee.

At the meeting it was agreed that the effort in both districts should be combined under leadership of one individual; McMaster was delegated project leadership. McMaster will be responsible for ground water interpretive aspects of the study and Hubbard will be responsible for surface water interpretive aspects.

The final product will be a hydrologic atlas of the Smokies area, published by the Geological Survey, that will consist of the 1:125,000 base map upon which will be delineated ground water and surface water information. Ground water occurrence and availability will be shown as a series of patterns, each defining a range between a minimum, a maximum, and an average of expected well yields within the area covered by the pattern. These areas are expected to be established by topographic criteria, geologic location, estimated soil thickness, and background information provided by test wells drilled during the course of the study. If a test well appears capable of yielding the desired quantity of water for water supply at the drilling site, a pumping test will be run.

Surface water information will be indicated by isopleths of minimum flow in cubic feet per second per square mile at the 2-year 7-day recurrence interval, based on a series of low-flow measurements made during the course of the study, at a total of about 100 sites throughout the Park distributed so as to define variations in flow with location and altitude. It is hoped that these sites can be measured a total of 6-8 times following periods of about 7 days of no rainfall.

Ground water and surface water chemical quality will be described, based on results of analysis of water from test wells and samples collected from streams. A series of coliform analyses of stream water is planned to define possible areas of contamination.

An explanatory text and supplementary illustrations will be included. The atlas is expected to provide the NPS engineer a basis for planning future developments of any kind in the Park for which knowledge of water resources is required.

Consideration will be given to popular-type brochure for distribution to Park visitors, describing and illustrating the occurrence of water in the area and its role in shaping the mountains.

Test drilling and reporting will continue to be handled by the District in which the site is located.

Plans are to complete the text of the final report by May 1969 for transmission through final review and publication. However, if insufficient opportunities to collect flow measurements occurs during the remaining time through November 1968, it is hoped that supplementary funds will be available from NPS to make additional measurements during the following year.

775-7-17-65-

L54 SER(OLW)

SEP 14 1965

Handwritten:
R...
ARC 9/17
WRY

Memorandum

To: Superintendent, Great Smoky Mountains

From: Acting Assistant Regional Director, Operations,
Southeast Region

Subject: Water Resources Investigations, Great Smoky Mountains
National Park

We will be glad to assist you in developing a detailed water resources study at Great Smoky Mountains National Park during the 1966 fiscal year as requested in your memorandum of August 23. The results produced from such a study should provide us with the basis for a full and most effective development of all water resources located within the Park boundaries. It is evident that new sources of water are needed to meet the demands of future and existing Park facilities.

We believe the investigative work should include the following:
(1) The first and most pressing problem involves the need to expand several water supply systems in order to provide more water to take care of a greater number of Park visitors and increased Park uses. This requires an evaluation of the probable capacity of the present sources of supply and the locating of possible new sources of water supply of acceptable quality for increased demands of the future and (2) The second phase of the project (extending over a period of several years) would be to conduct surface and ground water studies throughout the Park in order to obtain a general knowledge of all water resources. With such information at hand, the Park staff will be able to plan efficiently for new or expanded developments.

An over-ceiling item was included in the 1966 F.Y. Regional Water Resources Program in the amount of \$26,000 to initiate a study of domestic water supply needs and test well drilling work at the Park. Mr. E. W. Reed, Chief, Water Resources, has recently advised that at present the Washington Office reserve contains sufficient funds to finance this study.

We agree a meeting and field reconnaissance should be held at the Park between representatives of the U. S. Geological Survey, the Regional Office and the Park staff to properly formulate a logical approach to this water resources project. In early October, we will take the necessary action to firm up a satisfactory date for the meeting with all those concerned.

(SIGNED)

W. Mikell

cc:

Director, w/c of inc.
Chief, RADC (2), w/c of inc.



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Great Smoky Mountains National Park
Gatlinburg, Tennessee 37738

Y REFER TO:

L54

August 23, 1965

Memorandum

To: Regional Director, Southeast Region
From: Superintendent, Great Smoky Mountains
Subject: Water Resources Investigations, Great Smoky Mountains
National Park

EAST REGION	
AUG 26 1965	
Regional Director	
Asst. Reg. Dir. (A)	26
Asst. Reg. Dir. (CA)	
Asst. to Reg. Dir. (PA)	
Asst. to Reg. Dir. (DI)	
Resource Studies Act.	

X *Land & Water*
Grain

Over the past couple of years, continued increases in demands on the numerous surface water supplies have gradually developed into a problem that needs immediate attention. While it is recognized that in the past we have shown little or no interest in water resources investigations, it now appears that well supplies may not only be a desirability but a necessity. During periods of prolonged drouth such as we are now experiencing in the Park, the surface supplies diminish to the point of nearly drying up, and supplemental supplies of low quality water are heavily treated and pumped into the supply lines.

During USPHS Engineer Henderson's recent trip to the Park, we had occasion to closely observe several of our major supplies. For example, we found that the Ash Hopper Branch gravity supply that ordinarily supplies headquarters was providing 19 gallons per minute (actual meter readings) over a period of a week. The consumption at this time was metered at 35,000 to 37,000 gallons per day and so, needless to say, we had to pump a supplemental supply out of a branch of Fighting Creek which runs through the residential area. We actually were only able to obtain a maximum of 15 gallons per minute from this supply. Incidentally, this creek pumping station is only a couple of hundred feet from the first domestic user and less than 1,000 feet from our major development area which definitely does not allow the desired chlorine retention time for safe water treatment. Also, when you realize that our actual usage exceeded an average of 25 gallons per minute and all available water in the system amounted to 34 gallons per minute, it is easy to see there is little margin for any emergency whether it be a leak in the line, any type of fire drawdown or allowance for any consideration of lawn sprinkling. If either of these supplies decrease further, we do have several alternatives in order to retain a minimum supply on hand.

By metering, we have determined that we are wasting 13,000 gallons per day through our Visitor Center dehumidifier system. This is quite a luxury and one that needs some study as to the possibility of re-circulation of this water. If our present supply should decrease any further, we would of course have to shut down the dehumidifier system which would have rather detrimental effects on artifacts storage as well as causing the Visitor Center to be rather uncomfortable.

Further checks on other major supplies in the Park showed similar conditions but none as critical as that that exists in the Headquarters area. If at all possible, and if it can be worked into your Water Resources Investigation program as an emergency measure, we would like to suggest the programming of an exploratory well for this fall. While we have little information on the characteristics of wells in this area, Mr. Henderson felt that a well programmed for 100-foot depth with rotary drill method (possible heavy river boulder sub-surface) should provide a plentiful supply for the area. On this basis, it appears that funds in the construction amount of \$2,500 would be needed to drill, case and test the well.

In an August 19 telephone conversation between Hydraulic Engineer Vick of your office and Chief of Maintenance Rowe, Mr. Vick had mentioned that he had put an over-ceiling item in his 1966 F.Y. Water Resources budget in the amount of \$24,000 to initiate a study of Park domestic water supply needs. We support this program whole-heartedly and hope that a necessary field inspection involving personnel from the USGS, the Regional Office, and the Park can be set up for the month of November. / /

As suggested to Mr. Vick in the abovementioned telephone call, the following listing is a tentative priority list of well investigations which we would like to see programmed:

1. Headquarters -- As soon as possible.
2. Green Mountain Picnic Area, Foothills Parkway -- 1967 F.Y.
3. Cades Cove -- 1967 F.Y.
4. Cataloochee -- 1967 F.Y.
5. Rocky Mountain -- 1967 F.Y.
6. Chilhowee, Foothills Parkway -- 1968 F.Y.

7. Cades Cove -- 1968 F.Y.
8. Deep Creek -- 1968 F.Y.
9. Smokemont -- 1968 F.Y.
10. Chimneys -- 1969 F.Y.
11. Elkmont -- 1969 F.Y.
12. Cosby -- 1969 F.Y.
13. Webb Mountain, Foothills Parkway -- 1969 F.Y.



George W. Fry

Form 10-411
(July, 1965)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

DISTRIBUTION OF COPIES

NO.

TO

PROJECT CONSTRUCTION PROPOSAL

1. STATEMENT OF MANAGEMENT'S REQUIREMENTS, PROPOSED WORK, AND ITS RELATIONSHIP TO OTHER FACETS OF THE PARK PROGRAM. (Provide detail data for "Management Information" on Form 10-411a, Supplemental Sheet and attach.)

Management's Requirements: Improve water system at the Metcalf Bottoms Picnic Area to provide for operation of system during winter months, and to replace the existing source of supply by a small stream with a deep well and pumping system.

Proposed Work:

1. Purchase the deep well (production well) developed by the Water Resources Program.
2. Furnish and install a deep well pump with all controls, connections, and accessories for:
 - (a) Winter Operations (restricted).
Construct supply line from well to comfort station, with valves, drains, etc., to isolate this water supply from remainder of original system. Provide pressure tank, install in station, with pipe connections, and pumping control line to well.
 - (b) Integrate the deep well into the water supply system for pumping to the reservoir. Provide pipe connection from pump to distribution main in the area, with valves, drains, etc., for shut-down in winter.
3. Reconstruct river crossing of distribution main to picnic area. Encase pipe in concrete.
4. Construct signal line from reservoir to pump, with water-level controls at reservoir.

2. ADVANCE REQUIREMENTS DATA

LAND STATUS	MASTER PLAN NO.	APPROVAL DATE
Government-owned. National Park Service	NP-GSM 3333	
PCP NUMBERS OF PREVIOUSLY COMPLETE PORTIONS	INTERRELATED & DEPENDENT PROJECT PCP NUMBERS	

INTERPRETIVE PROSPECTUS APPROVAL DATA

N.A.

DATE

WATER RIGHT NEEDS & STATUS

N.A.

RESEARCH NEEDS & STATUS

N.A.

OTHER

3. RECOMMENDED BY SUPERINTENDENT (Signature & Date)

Dan Davis, Acting Superintendent 05/26/67

4. APPROVED BY REGIONAL DIRECTOR (Signature & Date)

R. E. Smith, Jr. 6/9/67

5. LOCATION WITHIN AREA OR TERMINI

Metcalf Bottoms Picnic Area

6. BLDG. OR RT.# AND SEC.

N.A.

7. REGION

Southern

8. PARK

Great Smoky Mountains National Park

9. PROJECT

Water System Improvements

Sevier

(County)

Tennessee

(State)

10. PCP INDEX NO.

U-256

CLASS ☐ (A) - Estimate based on working Drawings CLASS ☐ (B) - Estimate based on preliminary plans CLASS ☒ (C) - Estimate based on similar facilities in other parks	P. S. & S. by BPR ☐ NPS ☒
--	---

ESTIMATE	QUANTITY	COST
Provide funds for reimbursement to Water Resources Program for production well.	L. S.	2,500
Furnish and install deep well pump with all controls, accessories, and piping.	L. S.	2,050
Pump line from deep well to comfort station, connections, valves, drains, and other appurtenances as: 2" pipe	400 ft.	1,400
100 gal. pressure tank	1	225
Valves, drains, etc.	L. S.	100
River crossing of supply line, encased in concrete.	100 ft.	500
Signal line from reservoir to well.	L. S.	3,200
		<u>9,975</u>
	~~finy~~	~~9,970~~
Branch Electric Service for pump including entrance service, safety switch, meter base and underground feeder	L.S.	800
U.S.P.H.S. Requirements--Chlorinator and water meter including all weather enclosures	L.S.	<u>1,400</u>
Total'		\$12,175

RESEARCH ESTIMATE APPROVED: (Asst. Director, Resource Studies) (Date) CONSTRUCTION ESTIMATE APPROVED: H. Reese Smith <i>H. Reese Smith</i> (Design Office Chief) 6/28/67 (Date) INTERPRETIVE ESTIMATE APPROVED: (Asst. Regional Director, Operations) (Date)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">ESTIMATE TOTALS</th> </tr> <tr> <td>RESEARCH.....</td> <td>12,150</td> </tr> <tr> <td>Construction..... 75%</td> <td>9,978</td> </tr> <tr> <td>Plans, Surveys, and Supervision..... 15%</td> <td>2,430</td> </tr> <tr> <td>Contingencies..... 10%</td> <td>1,620</td> </tr> <tr> <td>CONSTRUCTION SUB TOTAL</td> <td>13,300</td> </tr> <tr> <td>INTERPRETIVE SUB TOTAL (100%)</td> <td>---</td> </tr> <tr> <td>C AND TOTAL</td> <td>\$10,000</td> </tr> <tr> <td></td> <td>~~13,300~~</td> </tr> </table>	ESTIMATE TOTALS		RESEARCH.....	12,150	Construction..... 75%	9,978	Plans, Surveys, and Supervision..... 15%	2,430	Contingencies..... 10%	1,620	CONSTRUCTION SUB TOTAL	13,300	INTERPRETIVE SUB TOTAL (100%)	---	C AND TOTAL	\$10,000		~~13,300~~
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Form 10-411a
(July 1965)UNITED STATES DEPARTMENT OF THE INT
NATIONAL PARK SERVICE

Page ____ of ____ pages

SUPPLEMENTAL INFORMATION FOR PROJECT CONSTRUCTION PROPOSAL

PARK	FACILITY	P.C.P. NO.
Great Smoky Mountains NP	Water System Improvements, Metcalf Bottoms Picnic Area	U-256

1. MANAGEMENT INFORMATION

For the previous winter operations of the Metcalf Bottoms Picnic Area the modern comfort station could not be used because the water system was not winterized, and the station was not heated. The use of pit toilets for winter operation has been criticized by the U.S. Public Health Service, and is also unsatisfactory for the park.

With the introduction of commercial power to this area, and the development of a deep well in the area by the Water Resources Program, we are most anxious to improve our water system and provide for a better and more economical operation of the comfort station before the winter season.

2. TECHNICAL INFORMATION

(CONTINUE ON REVERSE)

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

PACE SHEET FOR COMPLETION REPORT

Park	Region	Work Order No.
Great Smoky Mountains National Park	Southeast	133-211721
Location in Park	State(s)	Fund Symbol
Metcalf Bottoms Picnic Area	Tennessee	14X1035
	County or Counties	Year Programmed
	Sevier	1968 L.S.
☒ Contract and/or ☒ Day Labor		PCP No.
Work Order Title		U-256
Water System Improvements		Master Plan No.
		Master Plan Corrected By
		As Built Drawings By
		Date Started
		August 18, 1967
		Date Completed
		May 28, 1968
DESCRIPTION OF FIXED ASSETS (For completion by employee in charge of project)		TOTAL COSTS (For completion by FFO)
230 - Utility Systems 9,875.06		11,455.07
1. Water Systems		
Improvements to water system consisted of: installation of a deep well pump with controls; improvement of existing water main crossing of Little River; improvement of existing water intake structure and appurtenances.		
TOTAL	\$	11,455.07

DISTRIBUTION		THE FIXED ASSET DESCRIBED ABOVE HAS BEEN COMPLETED IN ACCORDANCE WITH APPROVED DRAWINGS, SPECIFICATIONS, AND AUTHORIZED CHANGES	
No.	To		
	Submitted	Title:	Date:
	By: <i>Heald A. Rine</i>	Chief of Maintenance	6/14/68
	Approved	Title:	Date:
	By: <i>George W. Jorg</i>	Superintendent	JUN 14 1968
	COSTS VERIFIED	Title:	Date:
	BY <i>T. J. Baer</i>	Regional Accountant	JUN 30 1968

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

Work Order Number

133-211721

Fund Symbol

14X1035

COMPOSITION OF COST FOR COMPLETION REPORT

Year Programmed

1968 L.S.

Park

Great Smoky Mountains National Park

Region

S.E.

Location in Park

Metcalf Bottoms Picnic Area, Sevier County, Tennessee

Work Order Title

Water System Improvements

COMPOSITION OF COST

COSTS CHARGED TO FUNDS ALLOTTED TO FIELD FINANCE OFFICE

(1) Personal Services.....	\$ 69.27	
(2) Travel.....		
(3) Contract Work	9,790.00	
(4) Supplies and Materials.....		
(5) Other Direct Expenses.....		
(6) Operation of Equipment.....	) 15.79	
(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	\$ 9,875.06
OTHER COSTS:		
(12) PS&S, AP, and/or Facilitating Services @ 16 %.....	\$ 1,580.01	
(13) Inventory and Other Non-Fund Costs		1,580.01
(14) GROSS WORK ORDER COSTS	xxxxxxxxxx	\$11,455.07
LESS:		
(15) Residual Value of Construction Equipment on Line 8	\$	
(16) Other Credits		
(17) NET COST OF FIXED ASSETS	xxxxxxxxxx	\$11,455.07

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

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

Work Order No.

B-35 GSM
Fund Symbol

FACE SHEET FOR COMPLETION REPORT

Park Great Smoky Mountains National Park	Region Southeast	Year Programmed 1961
Location in Park Metcalf Bottoms Picnic Area and Headquarters Area	State(s) Tennessee	PCP No. B-248, U-212, U-213
	County or Counties Sevier	Master Plan No. NP-GSM-3229A NP-GSM-5362A
☒ Contract and ☒ Day Labor		Master Plan Corrected By ----
Work Order Title Construction of Utilities and Comfort Stations, Metcalf Bottoms and Headquarters Area		As Built Drawings By EODC
		Date Started May 15, 1961
		Date Completed October 30, 1962
DESCRIPTION OF FIXED ASSETS (For completion by employee in charge of project)		TOTAL COSTS (For completion by FFO)
Comfort Station, Bldg. No. 553. Building, Visitor Use. Single story, 2 visitor-use rooms, one pipe and storage room, one drinking fountain. 100.8-2-c		6,594.01
Comfort Station, Bldg. No. 554. Building, Visitor Use. Single story, 2 visitor-use rooms, one pipe and storage room, one drinking fountain. 100.8-2-c		6,594.02
Metcalf Bottoms, Utilities, Water System. Intake, supply line, reservoir, distribution line, and drinking fountains. 100.8-1		22,463.71
Metcalf Bottoms, Utilities, Sewer System. Sewer line, septic tank, distribution box and leaching field at each of 2 Comfort Stations. 100.8-2		4,723.06
Headquarters Area, Utilities, Water System. Intake, supply and pump lines, pumping and treatment station, reservoir and with all valves, piping and controls. 100.8-1		12,318.10
TOTAL	\$	52,692.90

DISTRIBUTION	THE FIXED ASSET DESCRIBED ABOVE HAS BEEN COMPLETED IN ACCORDANCE WITH APPROVED DRAWINGS, SPECIFICATIONS, AND AUTHORIZED CHANGES		
Orig. No. To	Submitted	Title	Date
1 Director	By: <u>James C. Little</u>	Supv. Civil Engineer	3-8-63
1 SE Region	By: <u>Stanley W. Tauscher</u>	Landscape Architect	
1 EODC	Approved	Title	Date
	By: <u>Stanley W. Tauscher</u>	Superintendent	3/14/63
	COSTS VERIFIED	Title	Date
	BY: <u>Joseph E. Van Buren</u>	Accounting Officer	3-13-63

11160

ACTUAL QUANTITIES & PAYMENTS

<u>Item</u> <u>No</u>	<u>Description</u>	<u>Actual</u> <u>Quantity</u>	<u>Unit</u> <u>Price</u>	<u>Amount</u> <u>To Date</u>
<u>UNIT NO. 1</u>				
1	4" Water Line (Cast Iron)	2090 L.F.	2.50	5,225.00
2	2½" Water Line (Galv. S.)	3562 L.F.	1.65	5,877.30
3	2" Water Line (Galv. S.)	311 L.F.	1.34	416.74
4	1" Water Line (Galv. S.)	40 L.F.	1.70	68.00
5	Drinking Fountains	2 Ea.	193.00	386.00
6	Waterline Markers	50 Ea.	4.00	200.00
7	River Crossing	L.S.	650.00	650.00
8	Water Intake Structure complete including Drain	1 Ea.	786.00	786.00
9	Water Reservoir 25,000 Gal. complete including Chlori- nator House and Equipment	1 Ea.	5,460.00	5,460.00
10	6" C.I. Sewer Line	Deleted	2.30	- - -
11	4" C.I. Sewer Line	42 L.F.	1.80	75.60
12	4" V.C. Sewer Line	100 L.F.	1.30	130.00
13	Leaching Trench	1000 L.F.	1.50	1,500.00
14	Septic Tank (2325 Gal.)	2 Ea.	1,085.00	2,170.00
15	Distribution Boxes	2 Ea.	98.00	196.00
TOTAL UNIT NO. 1				\$23,140.64
<u>UNIT NO. 2</u>				
16	Comfort Stations (Comp.)	2 Ea.	5,513.00	11,026.00
	Change Order # 1		42.99	42.99
TOTAL UNIT NO. 2				\$11,068.99
<u>UNIT NO. 3</u>				
17	4" C.I. Water Line including all Valves, Valve boxes and con- nections to existing lines	323 L.F.	5.20	1,679.60
18	2" G.S. Pipe including all Valves, Valve Boxes and required connections	80 L.F.	1.90	152.00

ACTUAL QUANTITIES & PAYMENTS (Cont'd)

<u>Item No</u>	<u>Description</u>	<u>Actual Quantity</u>	<u>Unit Price</u>	<u>Amount To Date</u>
19	Water Intake, complete with Drain	1 Ea.	1,150.00	1,150.00
20	Pumping Station complete in place, including Pump, Electricity, Chlorinator and Controls	1 Ea.	2,729.00	2,729.00
21	Concrete Reservoir (25,000 Gal.)	1 Ea.	4,447.00	4,447.00
	TOTAL - UNIT NO. 3			<u>\$10,157.60</u>
	TOTAL - UNITS 1, 2, & 3			<u>\$44,367.23</u>
	Less emergency water line repairs by Park			<u>- 116.69</u>
	TOTAL CONTRACT PAYMENT			<u>\$44,250.54</u>

EQUIPMENT LIST

Comfort Station

Water Closet -- "Crane" model Santon with "sloan" No. 110F Crown flush valve

Lavatory -- "Crane" model Rhodile with Vantage Dial-ese faucet 8-31

Urinal -- "Crane" model Correcto with "sloan" No. 186 Crown flush valve

Urinal (Pedestal Type) -- "Crane" model Hy-San with "sloan" No. 110FYV Crown flush valve

Supplier: Crane Company
523 Jackson Ave. N. W.
Knoxville 1, Tennessee

Toilet Partitions -- Global Steel Products Corporation
Brooklyn 36, N. Y.
Type Regal with seafoam color No. 1018

Paint -- Cooper Paint Company,
Box 9067
Knoxville, Tennessee

Hardware -- Dick Wright Hardware Company
700 Depot Ave. N. E.
Knoxville, Tennessee

Mirrors -- Carolina Mirror Corporation
North Wilksboro,
North Carolina

Chlorinator House

Water Meter -- "Badger" 1½" model A-SOT, 1800 Ellsworth Industrial Drive,
N. W., Atlanta 18, Georgia

Float Valve -- "Clayton" 2" No. 124, "Clayton" 1½" Automatic No. 100
Newport Beach
California

Hypochlorinator -- "Mathieson" Type L Tablet manufactured by Wilson Chemical
Feeders, Buffalo, N. Y.

EQUIPMENT LIST (Cont'd)

Pumping Station

Window -- "Truscon" Type P-A2, Youngstown, Ohio

Pump -- "Fairbanks-Morse" Fig. BR2-605 BF with "Fairbanks-Morse" 3 h.p.
Type WCZK No. F423415 motor, Chicago, Illinois

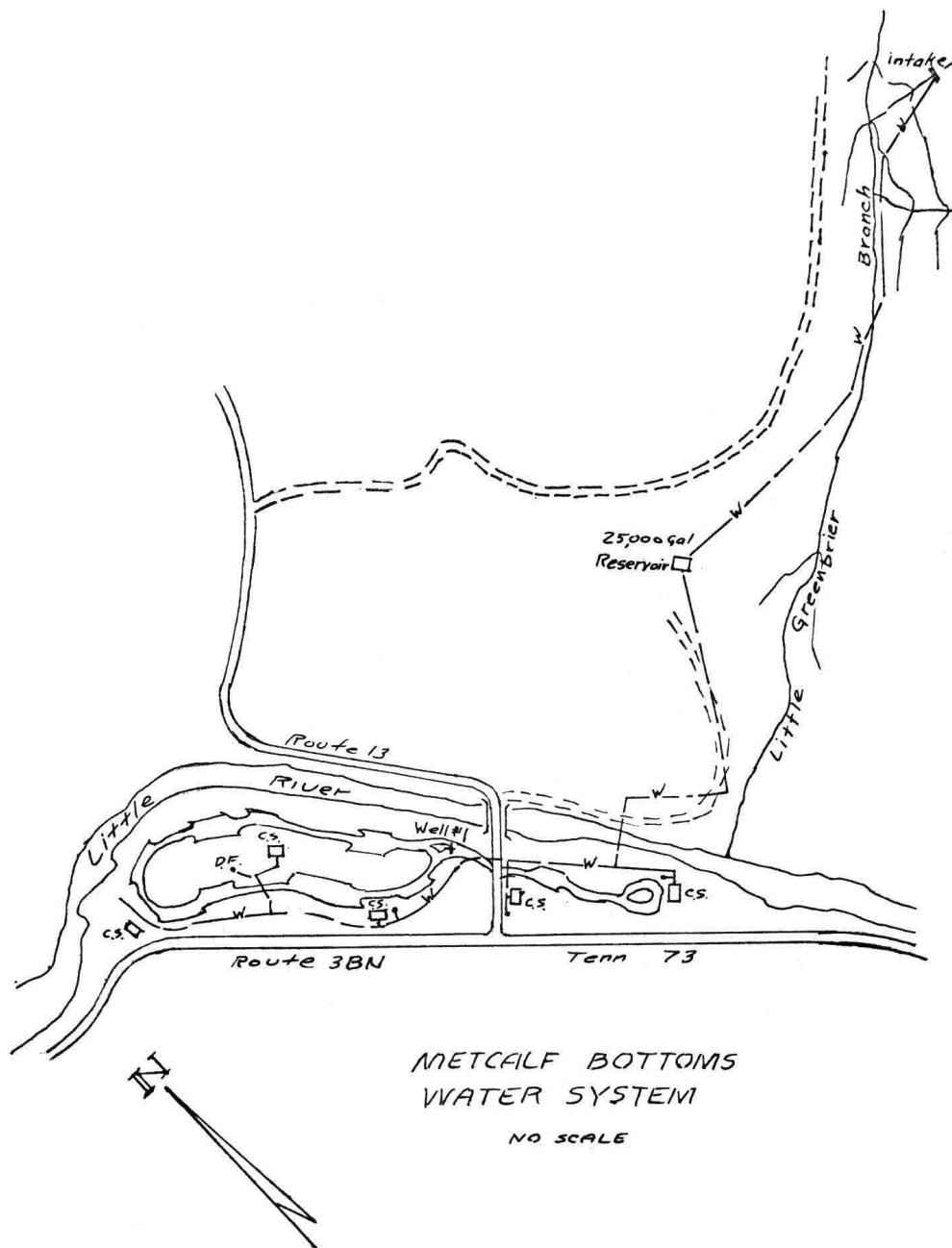
Hypochlorinator -- "Wallace & Tiernan", Belleville, N.J. Type A-588

Safety Switch -- "General Electric" model 1 Cat. No. 3222

Time Clock -- "General Electric" model 3TSA47AAA1

Main Breaker -- "E. Q. Loadcenter" Class NI No. AA manufactured by Lite
Circuit Breaker Co., Walker Division, Atlanta, Georgia

Water Meter -- "Badger" 1 1/2" model A-SOT



Docket Information

Number of Documents in Docket 37

Documents Dated from 3/14/1963 to 6/14/1968

Docket Compiled: 3/30/2011