



WATER-RIGHT DOCKET

Great Smoky Mountains National Park

Docket No: 12

WEST PRONG LITTLE PIGEON RIVER, CHIMNEY TOPS PICNIC AREA

Preliminary Docket Information

00-00-0000: intro: see grsm docket 1 for map and preliminary map of water sources

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

WATER RIGHTS DOCKET
Chimney Tops Picnic Area & Residence
Great Smoky Mountains National Park

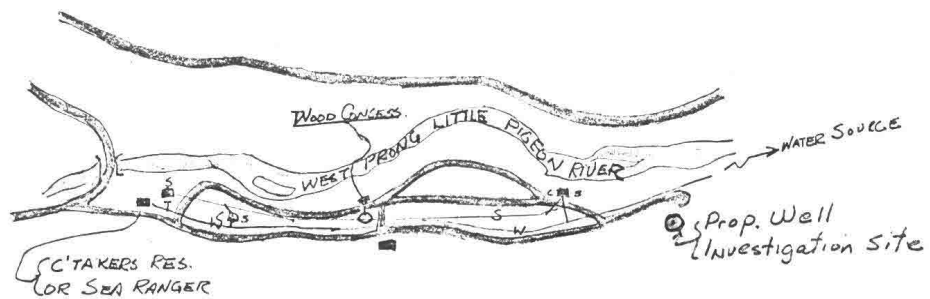
Supporting Hydro Data

CHIMNEYS

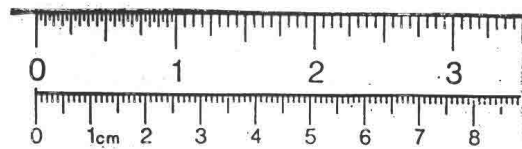
Situation: The development in the Chimneys Area consists of an 30-site campground, a 11-site picnic area and a campground ranger residence. The water supply is a gravity source from the West Prong of Little Pigeon River and the daily consumption amounts to 12,000 to 15,000 gallons per day. The major problem with this source is involved in the keeping of an operable water intake as it is located in a stream that is highly vulnerable to flooding and subsequent damage.

Proposed: Drill a 6" exploratory well to determine availability of water. If we can get 20 g.p.m. minimum, then we would consider this as our primary source of supply in future development.

Progress to date: This Water Investigation Study is included in the proposed 1963 F.Y. program, as submitted by the park.



CHIMNEYS
Scale: 1" = 500



Preliminary Report, Wells at Chimneys Campground

A ground-water supply of 20 gpm is desired at Chimneys Campground to replace or supplement the existing supply taken from West Prong Little Pigeon River. The current source of supply is difficult to maintain due to siltation of the intake.

Geology

The Chimneys area is underlain by the Thunderhead Sandstone. The beds are fairly thick and are relatively unfractured. Dip is to the east at about 20 degrees. There are no nearby major structural features such as faults.

Drilling

Three test wells were drilled in an effort to obtain sufficient ground water at this site. Locations of the wells are shown on figure 1. All were drilled by Jack Terry Well Drilling Co., Sevierville, Tenn.

Wells no. 1 and 2 were drilled in May 1968. Well no. 1 penetrated only 6 ft of overburden before entering very hard sandstone. This well was stopped and refilled at 45 ft as no water was obtained. Well no. 2 is cased to 44 ft thru gravel and boulders. At completion at 105 ft, the well had penetrated several fracture openings in the sandstone and the rig was blowing 5 gpm from the hole. As a pump was being set in this hole in June 1968 it was discovered that gravel had evidently caved into the hole and filled it to the bottom of the casing.

Well no. 3 was drilled November 19-22, 1968. This well is cased to a depth of 24 ft through weathered sand, and penetrated 212 ft of gray sandstone containing several thin weathered fracture zones, as shown in figure 2. At completion, the rig was blowing 10 gpm from the hole. It was expected that this well might produce as much as 12-13 gpm.

Pumping

An eight-hour pumping test was run on well no. 3 on December 20, 1968. Results of the test are shown in figure 3. Pump intake was set at 130 ft. Static water level was 45 ft.

Initial discharge was 10 gpm but as the water level declined this decreased to 7 gpm; and this was allowed to continue as the drawdown was excessive. An indication of approaching stabilization after 200 minutes was replaced by a steepening of the curve. After 420 minutes drawdown rate increased sharply and pumpage was stopped at 470 minutes at which time drawdown was 105 ft. Recovery from pumpage was very slow and amounted to only 25 ft in 30 minutes. This well will not sustain more than 5 gpm and perhaps not that much, since the changes in slope of the drawdown curve indicate that no nearby adequate source of recharge is available to the well.

(Chimney Tops Picnic Area - Addendum No. 1)

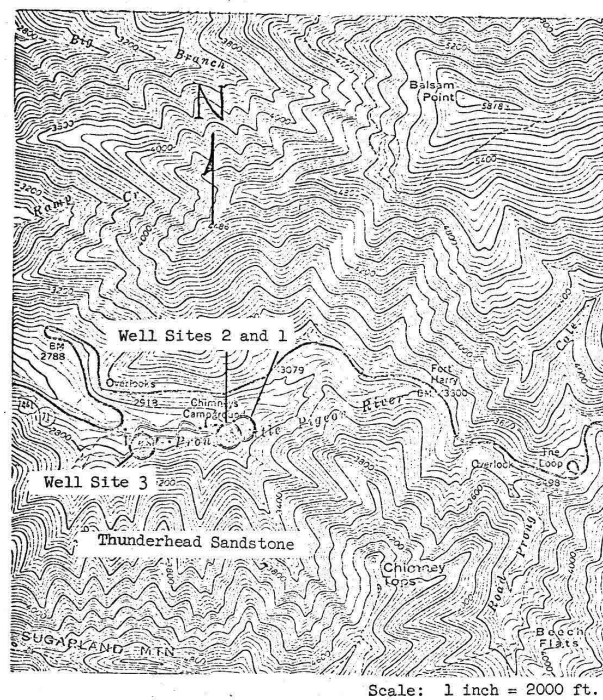


Figure 1. Location of well and general geology at Chimneys Campground.

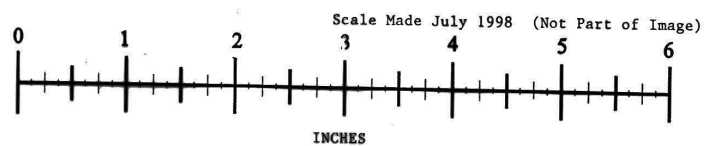


Figure 2. Columnar section of the Chimneys well.

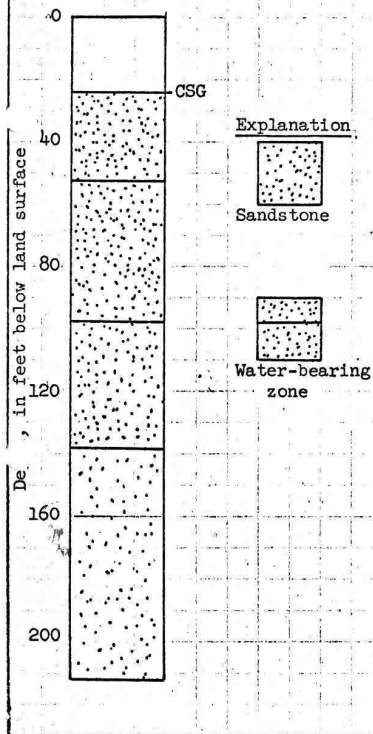
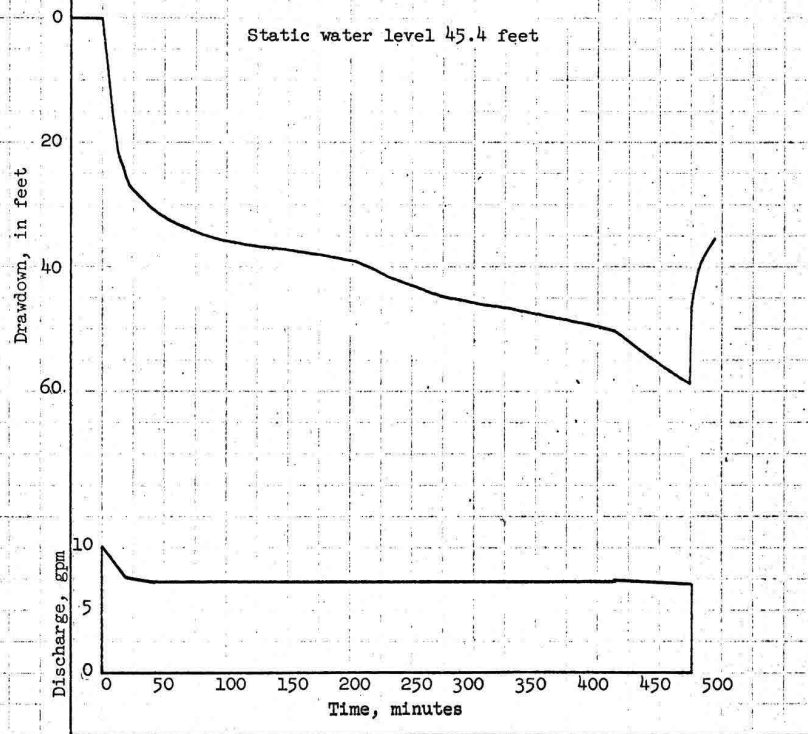


Figure 3. Results of pumping test, December 20, 1968, Chimneys Well



NAME OF SYSTEM: Chimney Tops Picnic Area and ResidenceLOCATION: Park Route 1A, U.S. 441LOCATION: STATE: Tennessee COUNTY: Sevier

- | <u>A. Source of Supply</u> | <u>Location - Reference to Permanent Landmark</u> | <u>Coordinates</u> |
|---|--|---|
| 1. West Prong Little Pigeon River | 1,500 feet upstream from reservoir | Lat. N $35^{\circ}38'21''$
Long. W $83^{\circ}28'49.8''$ |
| <p>This is a gravity flow system. The intake structure consists of a perforated galvanized and asphalt-coated 10" C.M. pipe 3 feet long embedded in a stream bed in a natural pool. West end of pipe is attached to 2' x 2' x 6" reinforced concrete collection box. Storage is a 30,000 gallon reinforced concrete reservoir at elevation 2,895 feet, located 200 feet west of the south end of the picnic area. Treatment - Wallace-Tiernan (Army type) hypochlorinator, located adjacent to reservoir. Estimated 200 gallons per minute available.</p> | | |
| 2. Small tributary of West Prong of Little Pigeon River | This stream passes about 200 feet west of reservoir. | Lat. N $35^{\circ}38'10.3''$
Long. W $83^{\circ}29'12.2''$ |
| <p>This gravity flow system is used only in emergency. The intake structure which is located about 270 feet upstream from the reservoir is a masonry dam 12 feet high across the steep and narrow channel. A collection chamber is built against the center of the upstream side of the dam. Collection chamber has manhole for maintenance. Same storage reservoir and treatment as primary system. Estimated 12 gallons per minute available.</p> | | |

(Chimney Tops Picnic Area - Addendum No. 1)

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 (63,140).....	--	--	--	--	6	25	84	73	25	40	--	--	253
Residences.....	--	--	--	--	--	--	--	--	--	--	--	--	--
Unaccounted.....	--	--	--	--	60	266	200	229	139	157	--	--	1,051
TOTALS.....	--	--	--	--	66	291	284	302	164	197	--	--	1,304

During the 1969 season, this system served 63,140 picnickers.

METER READING - 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 (97,834).....	--	--	--	5	9	36	125	93	44	64	--	--	376
Residences.....	--	--	--	--	--	--	--	--	--	--	--	--	--
Unaccounted.....	--	--	--	119	92	85	58	75	33	28	--	--	490
TOTALS.....	--	--	--	124	101	121	183	168	77	92	--	--	866

During the 1970 season, this system served 97,834 picnickers.

(Chimney Tops Picnic Area - Addendum No. 2)

(2/8/71)

B. Consumption:

Maximum Daily - 15,000 Gallons

Maximum Monthly - 393,000 Gallons

Maximum Annual - 1,725,000 Gallons

METER READINGS - 1966 OPERATING SEASON

Breakdown according to usages:

Month (Consumption in 1,000 gal.)	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTALS
Campers (65,090)	--	--	--	--	29	250	268	272	132	CLOSED OCT. 18			951
Picnickers (19,300)	--	--	--	--	7	16	18	17	18	--	--	--	76
Residents	--	--	--	--	9	9	10	9	9	--	--	--	46
Unaccounted	--	--	--	--	202	74	59	11	67	--	--	--	413
TOTALS	--	--	--	--	247	349	355	309	226	--	--	--	1,486

During the 1966 calendar year, this area was utilized by 65,090 campers and 19,300 picnickers.
 The area then consisted of a campground ranger residence, 80 campground sites and 11 picnic sites.

(Chimney Tops Picnic Area - Addendum No. 1)

B. Consumption: (Continued)METER READINGS - 1967 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>
Campers (53,467)	--	--	--	--	46	188	265	283	200	88	--	--	1,070
Picnickers (14,057)	--	--	--	--	4	16	11	15	6	4	--	--	56
Residences	--	--	--	--	--	10	11	11	--	--	--	--	32
Unaccounted	--	--	--	--	257	-95	56	-26	-68	-5	--	--	119
TOTALS	--	--	--	--	307	119	343	283	138	87	--	--	1,277

During the 1967 calendar year, this area was utilized by 53,467 campers and 14,057 picnickers.
 The area then consisted of a campground ranger residence, 80 campground sites and 11 picnic sites.

METER READINGS - 1968 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>
Campers (47,061)	--	--	--	--	32	244	258	268	140	--	--	--	942
Picnickers (10,780)	--	--	--	--	3	11	10	15	5	--	--	--	44
Residences	--	--	--	--	--	11	11	--	--	--	--	--	22
Unaccounted	--	--	--	--	257	-33	139	23	-57	--	--	--	329
TOTALS	--	--	--	--	292	233	418	306	88	--	--	--	1,337

During the 1968 calendar year, this area was utilized by 47,061 campers and 10,780 picnickers.
 The area then consisted of a campground ranger residence, 80 campground sites and 11 picnic sites.

(Chimney Tops Picnic Area - Addendum No. 1)

C. Distribution Mains and Laterals:

<u>Size</u>	<u>Type</u>	<u>Length</u>
2"	Galvanized Iron	1,619 Lineal Feet
1-1/2"	Galvanized Iron	150 Lineal Feet
1-1/4"	Galvanized Iron	204 Lineal Feet
1"	Galvanized Iron	329 Lineal Feet
3/4"	Galvanized Iron	536 Lineal Feet
6"	Cast Iron	299 Lineal Feet
4"	Cast Iron	<u>2,437 Lineal Feet</u>
	TOTAL	5,574 Lineal Feet

D. Problems:

Sanitary conditions for both systems are adversely affected by heavy visitor use in swimming, fishing and hiking. The major problem with this source is involved in the keeping of an operable water intake as it is located in a stream that is highly vulnerable to flooding and subsequent damage (Primary source).

E. Additional Information:

Two 6" test holes were drilled in Chimneys Campground area. The first hole was abandoned and filled at 44 feet. The second hole was drilled to 105 feet and cased with 6" casing to 44 feet. When drilling was stopped, the rig was blowing only 5 gallons per minute. The casing was sealed off; and an attempt to develop the well will be made at a later date, as a layer of river gravel between 50 and 55 feet should yield more water.

(Chimney Tops Picnic Area - Addendum No. 1)

F. Additional Information: (Continued)

A third test well was drilled in December of 1968 to a depth of 212 feet in the vicinity of the amphitheater. A six-inch casing was set and grouted to a depth of 24 feet. An eight hour pump test was run on the well and indicated a continuous yield of 6 gallons per minute or less

In May of 1969, this campground was converted to a 92-site picnic area. A maximum daily estimated consumption expected to reach 6,000 gallons per day, which is considerably below the present daily maximum. Because the output of the third well is low, it is doubtful that it can be utilized in the present system. It is, therefore, proposed that the existing intake be made more reliable by moving it upstream and setting it in a narrow gorge where the river bed is unlikely to change. At that time it will be necessary to replace several lengths of pipe leading to the reservoir and a small flow through filter installed in compliance with the State of Tennessee Health Department. The supply line is laid underground, but in places it is suspended across rocks and at these places piers should be constructed to help support the line.

In the spring of 1969, a new gas-operated chlorinator was installed in an existing concrete block house built adjacent to the reservoir.

{Chimney Tops Picnic Area - Addendum No. 1}



INTAKE ON WEST PRONG LITTLE PIGEON RIVER
THIS IS THE MAIN INTAKE OF THE SYSTEM.



RESERVOIR AND CHLORINATOR HOUSE



THIS DAM ON A TRIBUTARY STREAM FORMED THE ORIGINAL INTAKE STRUCTURE FOR THE SYSTEM

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)

OPTIONAL FORM NO. 10
MAY 1962 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
W. M. McMaster
Hydrologist

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



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 6-7, 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 analyses 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 prior to publication. However, if insufficient opportunities to collect low-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.

725-7-17-65

L54 SER (OLW)

SEP 14 1965

Reed
ARC 9/17
WRR

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 ever-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

EAST REGION	
AUG 26 1965	
Regional Director	
Asst. Dir. (Adm.)	26
Asst. Dir. (AI)	
Asst. Dir. (CA)	
Asst. to Reg. Dir. (PA)	
Asst. to Reg. Dir. (DI)	
Resource Studies	
X <i>Land & Water</i>	
<i>Smith</i>	

Memorandum

To: Regional Director, Southeast Region

From: Superintendent, Great Smoky Mountains *lost file*

Subject: Water Resources Investigations, Great Smoky Mountains National Park

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



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Great Smoky Mountains National Park
Gatlinburg, Tennessee 37738

Y REFER TO:
L54

August 23, 1965

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

X *Paul Hater*
Gatlinburg

Memorandum

To: Regional Director, Southeast Region

From: Superintendent, Great Smoky Mountains *last L54*

Subject: Water Resources Investigations, Great Smoky Mountains National Park

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.

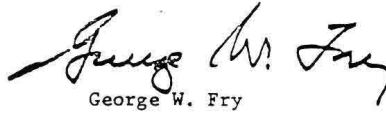
Further checks on other major supplies in the Park showed similar conditions but none as critical as that that exists in the Headquarters area. If at all possible, and if it can be worked into your Water Resources Investigation program as an emergency measure, we would like to suggest the programming 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

Docket Compiled: 3/29/2011