



WATER-RIGHT DOCKET

Natchez Trace Parkway

Docket No: 1

HOLLY HILL PICNIC AREA WATER

Supporting Hydro Data

04-27-1967: water level data- pumping test

WATER LEVEL DATA - PUMPING TEST
Holly Picnic Area - Natchez Trace Parkway
April 27, 1967

Time	Water Level In Feet Below Measuring Point	Remarks
7:45 AM	26.85	Electric tape
7:48	27.00	Steel tape
7:50	26.85	Electric tape used to end of test
8:00	26.86	
8:05	-	Pump on-Discharge open
8:06	27.68	
8:07	28.98	
8:08	29.68	
8:09	29.59	
8:10	29.49	
8:11	29.62	
8:12	29.63	
8:13	29.46	
8:14	29.38	
8:15	29.35	
8:16	29.35	
8:18	29.31	
8:20	29.27	
8:22	29.32	
8:24	29.93	
8:26	29.95	
8:28	29.38	
8:30	30.19	
8:32	29.28	
8:34	29.50	
8:36	29.61	
8:40	"	
8:45	29.67	
8:50	29.64	
8:55	29.63	
9:00	29.64	
9:05	29.71	Increase discharge
9:06	31.90	
9:07	31.20	
9:08	31.54	
9:09	31.72	
9:10	31.98	
9:11	32.24	
9:12	32.34	
9:13	32.37	
9:14	32.38	
9:15	32.39	
9:16	32.42	
9:18	32.36	
9:20	32.32	
9:22	32.31	

WATER LEVEL DATA - PUMPING TEST
 Holly Picnic Area - Natchez Trace Parkway
 April 27, 1967

Time	Water Level In Feet Below Measuring Point	Remarks
9:24	32.31	
9:26	32.31	
9:28	32.31	
9:30	32.33	
9:32	32.35	
9:34	32.38	
9:36	32.37	
9:40	32.45	
9:45	32.47	
9:50	32.51	
9:55	32.54	
10:00	32.60	
10:05	32.57	
10:06	36.74	Increase discharge
10:07	38.85	
10:08	40.30	
10:09	41.31	
10:10	41.95	
10:11	42.44	
10:12	42.82	
10:13	42.98	
10:14	43.31	
10:15	43.92	
10:16	44.40	
10:17	44.80	
10:20	45.43	
10:22	45.61	
10:24	45.51	
10:26	45.69	
10:28	45.77	
10:30	45.56	
10:32	45.58	
10:34	45.57	
10:36	45.53	
10:40	45.55	
10:45	45.39	
10:50	45.31	
10:55	45.30	
11:00	45.30	
11:05	45.51	
11:06	-	Increase discharge
11:07	48.38	
11:08	50.51	
11:09	52.12	
11:10	54.12	
11:11	55.48	
11:13	60.46	

WATER-LEVEL DATA - PUMPING TEST
 Holly Picnic Area - Natchez Trace Parkway
 April 27, 1967

<u>Time</u>	<u>Water Level In Feet Below Measuring Point</u>	<u>Remarks</u>
11:14	62.42	
11:15	64.04	
11:17	-	Water level at pump intake - about 67 feet. Decrease discharge.
11:24	60.27	
11:25	59.90	
11:26	61.43	
11:27	62.83	
11:28	63.46	
11:33	63.91	
11:34	62.93	
11:35	62.17	
11:36	61.65	
11:37	61.31	
11:38	61.07	
11:39	60.83	
11:40	60.70	
11:43	61.05	
11:44	61.15	
11:45	61.21	
11:48	61.26	
11:50	61.39	
11:52	61.52	
11:54	61.63	
11:56	61.62	
11:58	61.57	
12:00	61.42	
12:05 PM	61.47	
12:10	61.55	
12:15	61.73	
12:20	61.72	
12:25	61.53	
12:30	61.47	
12:45	61.29	
1:00	61.05	
1:15	60.90	
1:30	61.11	
1:45	61.23	
2:00	61.51	
2:15	61.43	
2:30	61.27	
2:45	61.15	
3:00	61.19	
3:15	61.21	
3:30	61.18	
3:45	61.22	
4:00	61.24	
4:05	61.17	
4:06	-	Pump off

WATER-LEVEL DATA-PUMPING TEST
Holly Picnic Area - Natchez Trace Parkway
April 27, 1967

Time	Water Level in Feet Below Measuring Point	Remarks
4:07	49.14	
4:08	43.63	
4:09	39.65	
4:10	36.66	
4:11	34.33	
4:12	32.60	
4:13	31.34	
4:14	30.41	
4:15	29.70	
4:16	29.19	
4:18	28.51	
4:20	28.14	
4:22	27.92	
4:24	27.86	
4:26	27.70	
4:28	27.64	
4:30	27.54	
4:34	27.53	
4:36	27.49	
4:38	27.47	
4:40	27.44	
4:45	27.41	
4:50	27.36	
5:00	27.31	
5:10	27.27	
5:20	27.22	
5:30	27.20	
5:40	27.19	End of test

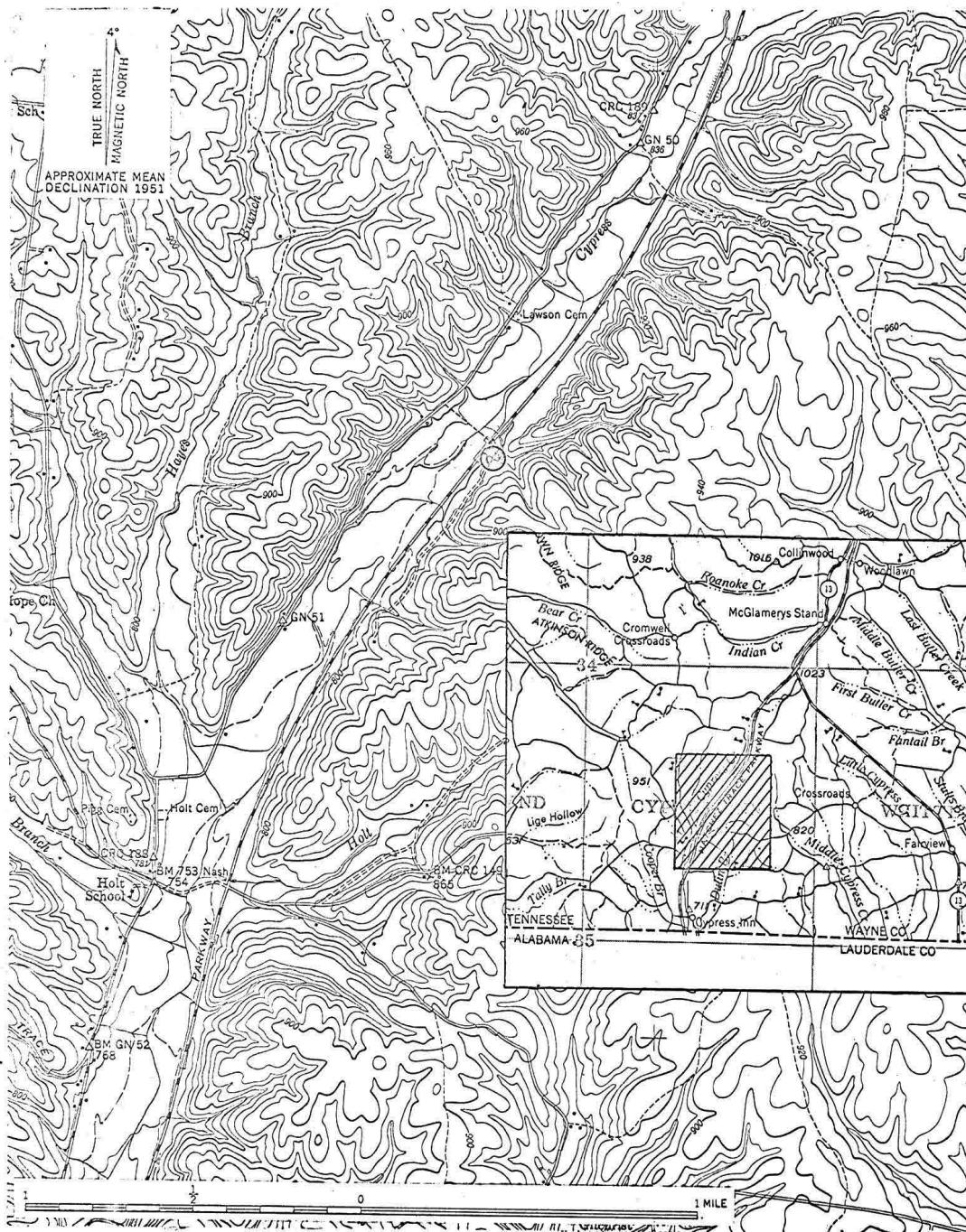
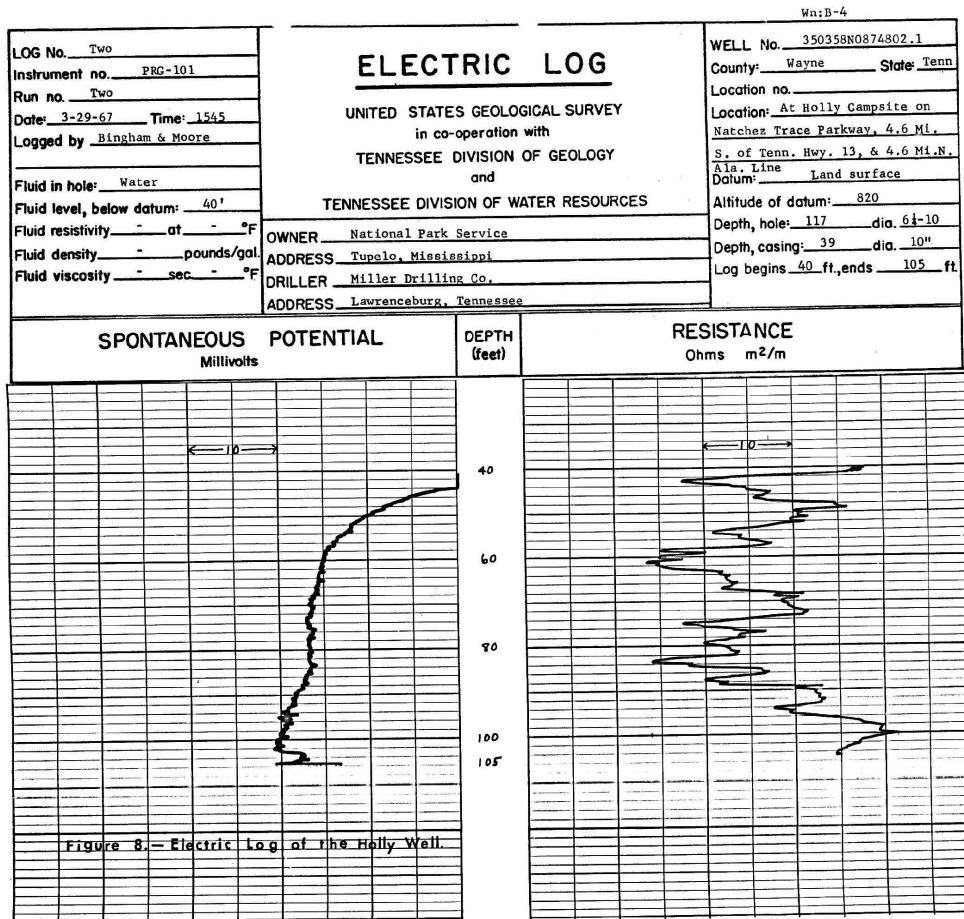
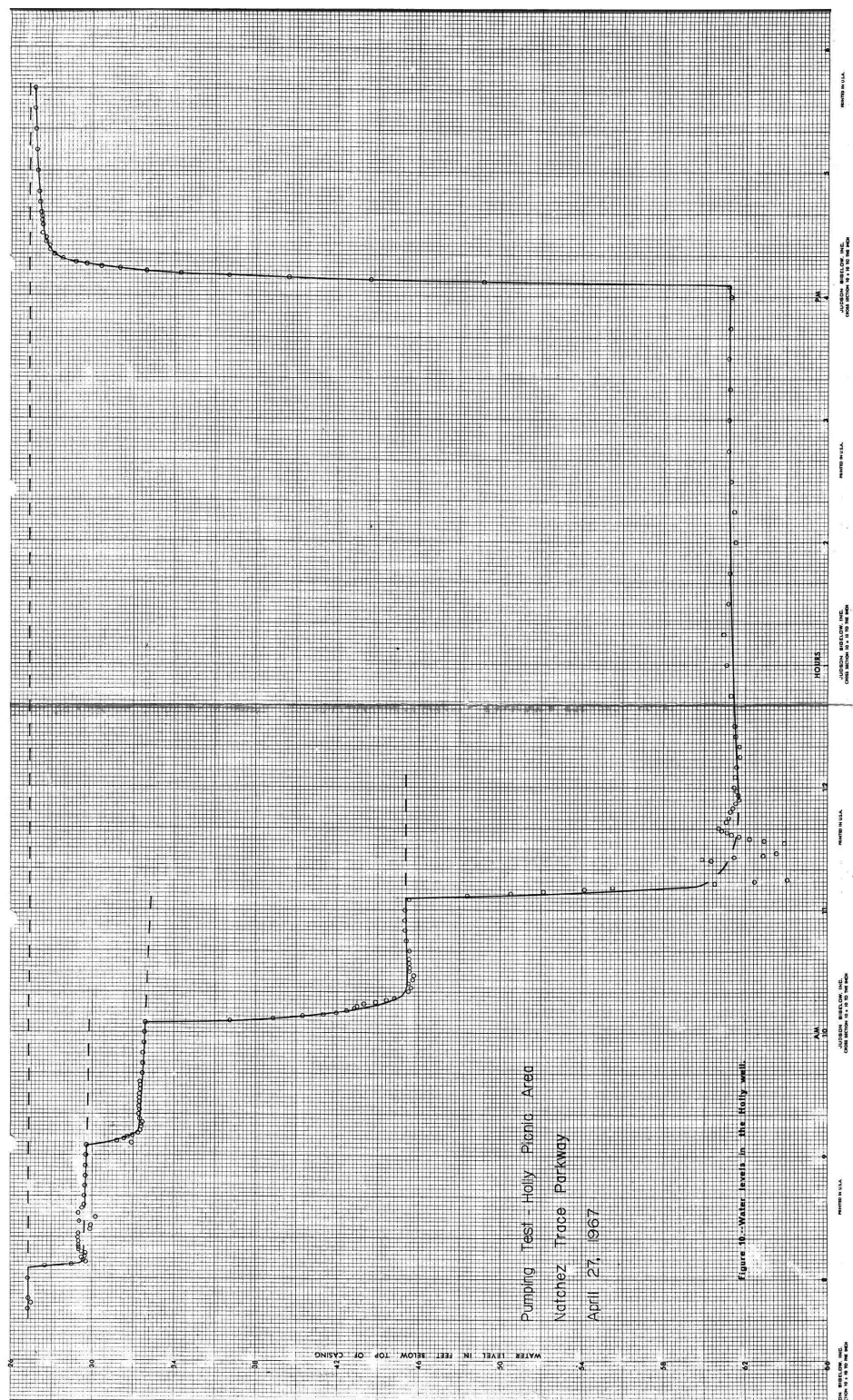


Figure 7.--Location of test hole near Holly picnic area



Wn:B-4

Instrument no. <u>PRG-101</u> Run no. <u>One</u> Date: <u>3-29-67</u> Time: <u>1530</u> Logged by <u>Bingham & Moore</u> Fluid in hole: <u>Water</u> Fluid level, below datum: <u>40'</u> Time constant: <u>6</u> Logging speed: <u>24</u> ft. per min. Log begins <u>3</u> ft., ends <u>106</u> ft. Aquifer: <u>Fort Payne Formation</u>	GAMMA-RAY LOG UNITED STATES GEOLOGICAL SURVEY in cooperation with TENNESSEE DIVISION OF GEOLOGY and TENNESSEE DIVISION OF WATER RESOURCES	WELL NO. <u>350358N0874802.1</u> County: <u>Wayne</u> State: <u>Tenn.</u> Tenn. Coord.: _____ Location: <u>At Holly Campsite on</u> <u>Natchez Trace Parkway, 4.6 Mi. S</u> <u>of Tenn. Hwy. 13, & 4.6 Mi. N.</u> <u>of Ala. Line.</u> Datum: <u>Land surface</u> Altitude of datum: <u>820</u> Depth, hole: <u>117</u> dia. <u>6 1/2-10</u> Depth, casing: <u>39</u> dia. <u>10"</u> Length, screen: <u>10'</u> dia. <u>6"</u>
GAMMA-RADIATION INCREASES →		
DEPTH (feet)		
Figure 9.—Gamma-Ray Log of the Holly Well. Start 3 20 40 60 80 100 106		



NE 10 X 10 TO THE INCH 358-5
NEUPPEL & ESSER CO. MARSHALL, LA.

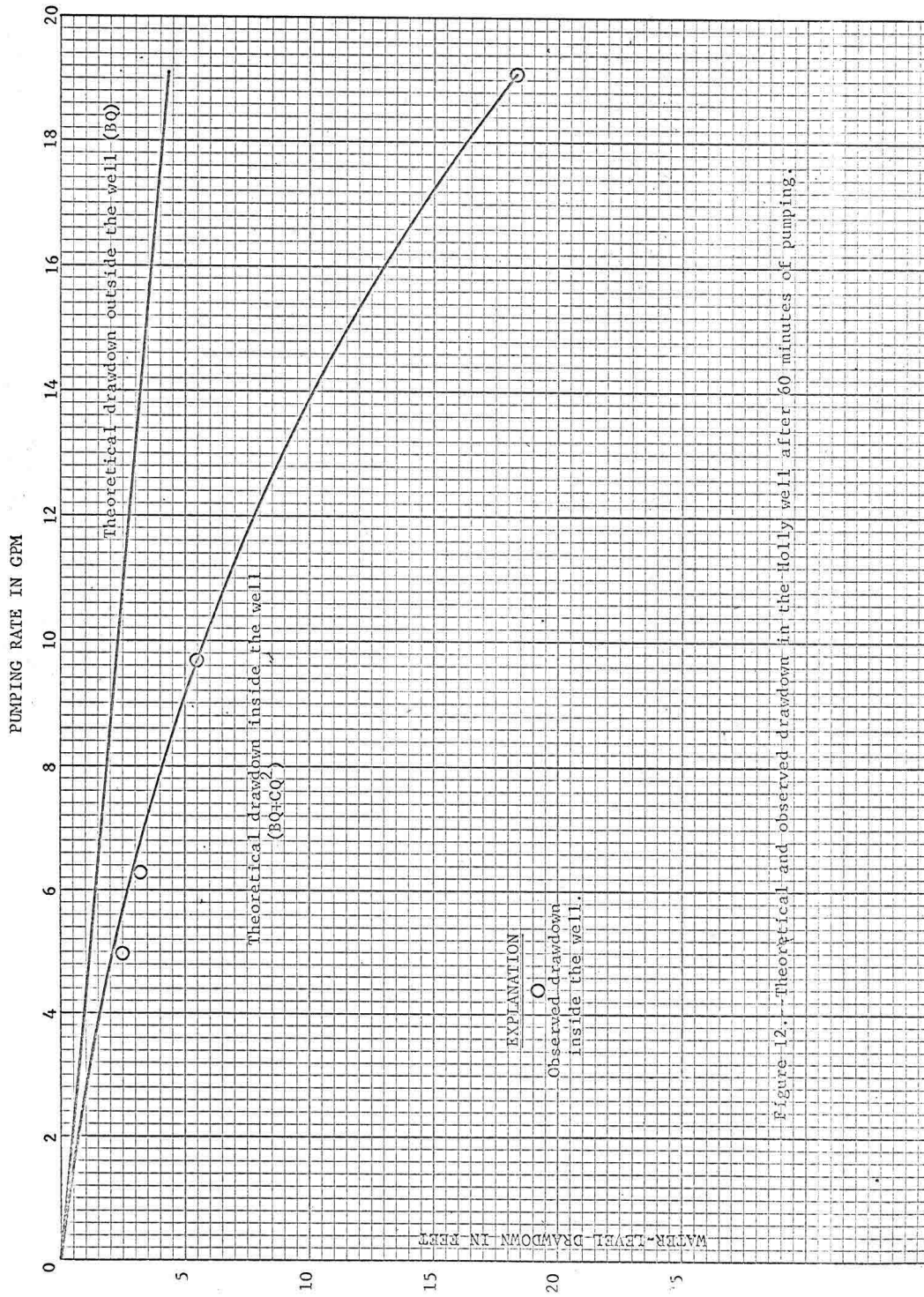


Figure 12.--Theoretical and observed drawdown in the Holly well after 60 minutes of pumping.

NO. 31,193. 20 DIVISIONS PER INCH (120 DIVISIONS) BY TWO 4 1/2-INCH CYCLES RATIO RULING.

CODEX BOOK COMPANY, INC. NORWOOD, MASSACHUSETTS.
PRINTED IN U.S.A.

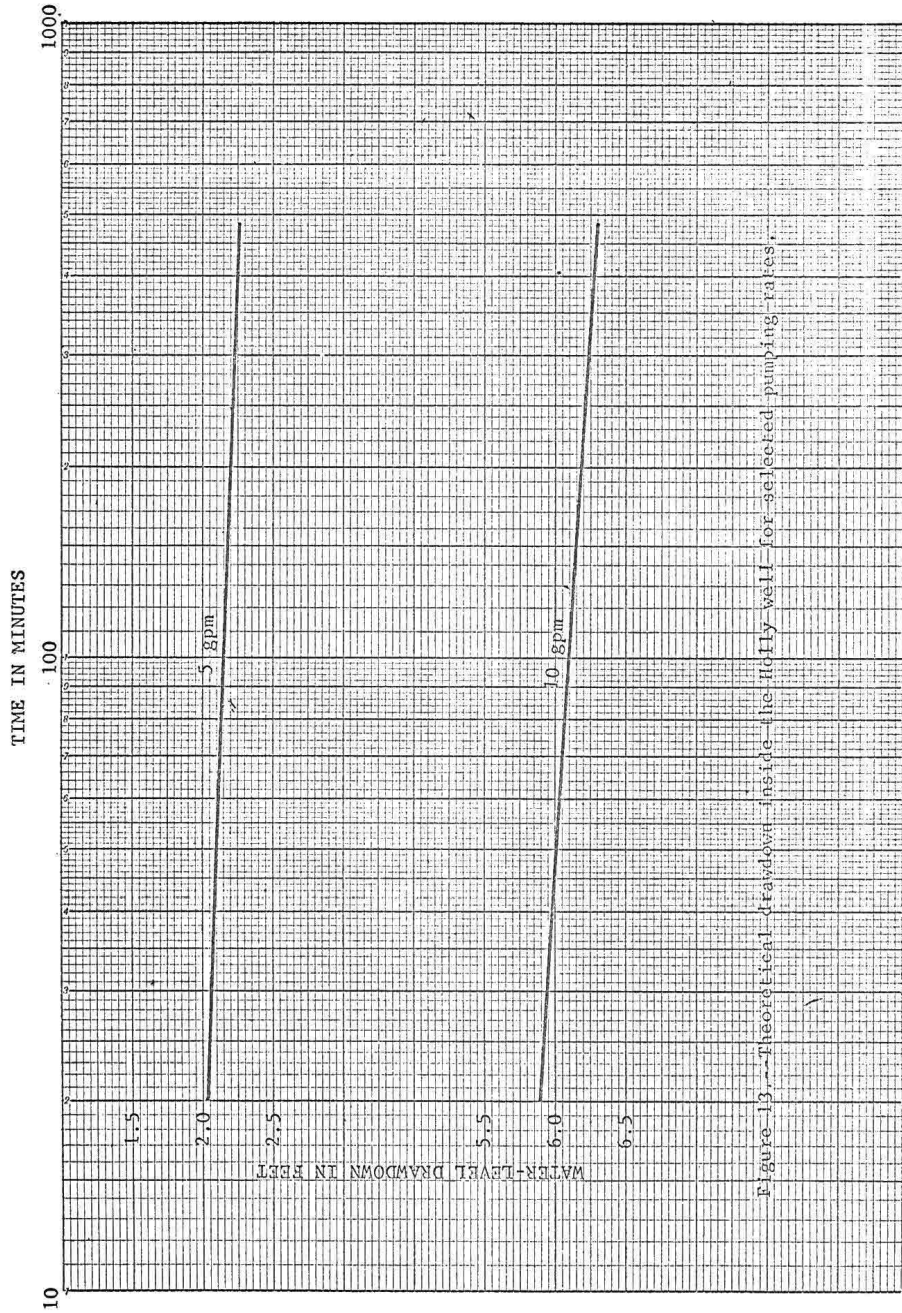


Figure 13.---Theoretical drawdown inside the Holly well for selected pumping rates.

NO. 31,153. 20 DIVISIONS PER INCH (120 DIVISIONS) BY TWO 4 1/2-INCH CYCLES RATIO RULING.



CODER BOOK COMPANY, INC. NORWOOD, MASSACHUSETTS.
PRINTED IN U.S.A.

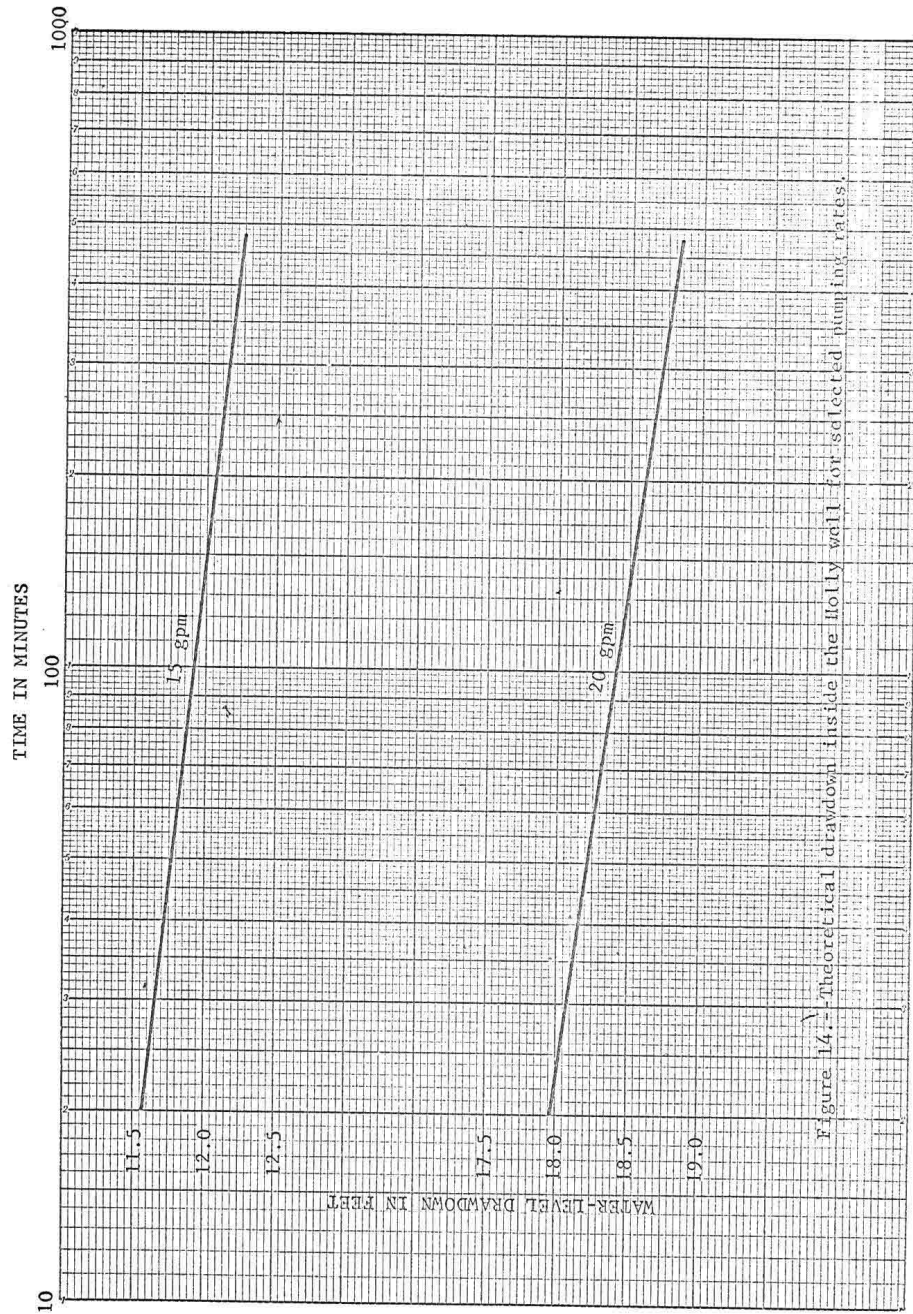


Figure 14. Theoretical drawdown inside the Holly well for selected pumping rates.

WATER SYSTEM DATA

DATE

AREA Natchez Trace Parkway COLLECTED Nov. 22, 1966 COLLECTED BY BSM

1. Name of System: Holly Hill Picnic Area Water System
2. Location: State Mississippi County Attala General Area Kosciusko
Reference to permanent landmark P.O.T. No. 2 on West Boundary
3. Source of Supply: Deep Well* Capacity 1,400+ **
(Well, Spring, Stream, Impoundment, etc.) gph
4. Type of System: Gravity
(Pumped, Gravity, etc.)
5. Treatment: None
(Filtration, Chlorination, Airation, etc.)
6. Distribution Mains: Size 4" Length 302'; Size Length
Size 2" Length 26'; Size Length
Size 1" Length 259'; Size Length
7. Pump Unit: Make Red Jacket; Type Submersible; Model No. 100C1-CB
Serial No. CSN-P-391; Outlet 1" in.; Inlet -- in.
(Size) (Size)
8. Power Source: Electric Motor: Make Red Jacket; HP One;
(Elec., Gas, Generator)
Serial No. CSN-M-391; Voltage 230; Amps 7.5;
RPM 3450; Type ; Phase One;
Cycles 60; Others ;
9. Control: Automatic Electrode (B/W Controller Corp.); Manual --;
(Float, Electrode, Pressure, Time)
Other
(Explain)

*Drilled October 1958 by Robert E. Ratliff Company to a depth of 407' below the ground surface.

**Approximately 287,000 gallons water used annually.

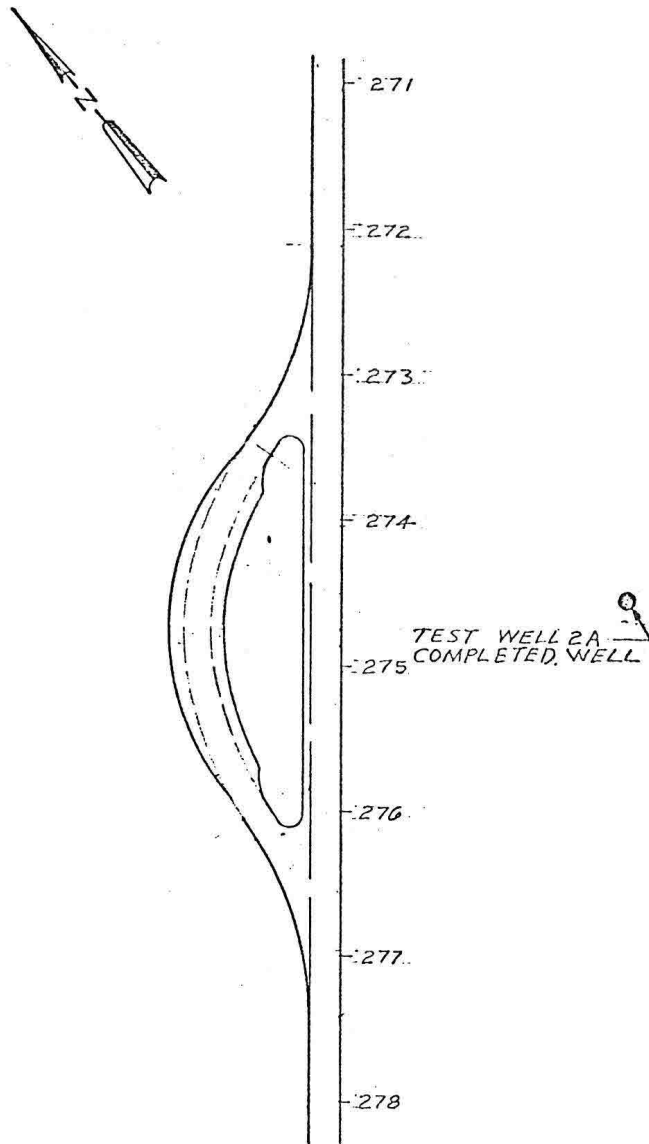
10. Pump Design: Capacity 18+ gpm (Actual) (Design) gpm
Head ft (Actual) (Design) ft
11. Pump Housing: Type Const. Brick (Walls); Asphalt Shingle (Roof); Size 4'-9"x4'-9"
12. Storage: Elevated Tank (Pneumatic, Elevated, Underground, etc.); Type Const. Steel (Concrete, Wood, Steel)
Size ft. (Elev); Capacity 5,000 gal.; Inlet ft. (Size) in.;
Outlet ft. (Elev) in.; Pressure Setting (if pneumatic)
13. Distribution: Water Closets 2; Lavatory 2; Urinal 2;
Drinking Fountain 4; Hose Bibs Residences;
Other ; ; ;
14. Metered or Nonmetered: Nonmetered; No. ; Size ;
No. ; Size ;
No. ; Size ;
15. Fire Protection: Fire Hydrants --; Yard Hydrants ;
16. Water Analysis (If Available): Not Available
;
;
;
17. Condition of System: Complete new water system, built in 1959
(Repairs needed, itemize)
;
;
;

COST ANALYSIS:

Total Contract Cost Water System	\$10,220.50
Tank Footings	329.25
Day Labor	57.86
Subtotal	\$10,607.61
PS&S	1,619.74
Total	\$12,227.35

HOLLY TEST WELL #1 *(shown as T.I.W. IL 2-A on Map)*
Developed

<u>DESCRIPTION</u>	<u>FROM</u>	<u>TO</u>	<u>REMARKS</u>
Chert & gravel mixed	0	7	clay and chert sand & gravel white to light gray up to 2"
Chert and gravel light grey	7	17	hit water at 9" drilling in chert sand and gravel as above.
Chert and gravel white to l. grey	17	22	predominately gravel size
chert and gravel white to l. grey	22	25	hit coarse to coarse chert sand at 25
chert sand white to L. grey	25	28	coarse to very coarse, angular to sub angular, clean
chert sand white to L. grey	28	32	very coarse to granular in size clean - angular to subangular.
chert sand yellow grey	32	36	
chert sand yellow grey	36	40	
clay sand light grey	40	46	
clay sand light grey	46	52	
clay sand light yellow	52	58	
clay sand reddish brown	58	64	
clay sand light brown	64	69	
clay on sand dark	69	74	beginning to pick up water again
clay and sand light brown	74	79	
clay and sand dark brown	79	85	
sand dark	85	90	
chert sand	90	100	
sand dark	100	106	
sand dark	106	120	



SITE PLAN
SITE NO. 2
HOLLY PICNIC PARKING AREA
SCALE : 1"=100'



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COMPLETION REPORT
of
CONSTRUCTION PROJECT

NATCHEZ TRACE PARKWAY

TENNESSEE - ALABAMA - MISSISSIPPI

<u>Project or Job Title</u>	<u>Account</u>	<u>Location</u>
Residences (2); Drawing Numbers PKY/NT 2965 (3 sheets); PKY/NT 2959A (sheet 1)	513.23	(Kosciusko Area, { Section 3-M-1, {
Water Distribution System Extension PKY/NT 2959A (sheet 1)	513.23 --	(Attala County, {
Sewerage System; PKY/NT 2959A (sheets 1 & 2)	513.23	(Mississippi
Comfort Station; PKY/NT 3043B	513.23	(Holly Hill Parking (and Picnic Area, {
Water System; PKY/NT 2991A (sheets 2 & 4)	513.23 --	(Section 3-M-1, (Attala County, {
Sewerage System; PKY/NT 2991A (sheets 2 & 4)	513.23	(Mississippi
Exhibit Shelter; PKY/NT 3004C	513.23 --	(Beaver Dam Parking Area, (Section 3-M-2, (Leake County, Mississippi

GENERAL DRAWINGS

Miscellaneous Construction; Kosciusko District; Cover Sheet-PKY/NT 2964 (1 sheet)
Water & Sewerage Systems; Kosciusko District; Cover Sheet-PKY/NT 2991A (1 sheet)
Kosciusko Residences and Utilities; PKY/NT 2959A (2 sheets)

Form 10-174
(Rev. 8-56)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

COMPLETION REPORT OF CONSTRUCTION PROJECT

REGION One	AREA Natchez Trace Parkway	COUNTY Attala & Leake	STATE Mississippi
PROJECT OR JOB TITLE Kosciusko Res. Area Qtrs. (2) and Utilities; Beaver Dam Exhibit Shelter; Holly Hill (Munson) Pic. Area; Comfort Station		PCP NO. B-137; 138; 139	
LOCATION IN AREA Section 3-M-1		MASTER PLAN NO.	BUILDING NO. 182, 183, 148, 173
WORKING DRAWING NO. AND TITLE Attached			
APPROPRIATION TITLE AND SYMBOL 11X1037 - Construction, Liquidation of Contract Authorization, NPS			WORK ORDER NO. 513.23
CONTRACT NO. See attached Sheet		DATE WORK STARTED August 1958	DATE WORK COMPLETED November 1959
NAME OF CONTRACTOR See attached Sheet		ADDRESS	

COST ANALYSIS

CONSTRUCTION ITEMS	QTY.	UNIT COST IN PLACE	TOTAL COST IN PLACE
Residences - Kosciusko	2		42,322.88
Utilities - Water - Sewer - Gas			6,602.00
Exhibit Shelter, Beaver Dam, including 4 panels	1		5,092.23
Comfort Station, Holly Hill	1		7,320.00
Utilities - Water - Sewer - Electric			14,229.79
Subtotal			75,566.90
PS&S (15.27%)			11,539.06
Fiscal Accounting Office Clearance SIGNED			
V. L. La Follette, Administrative Officer			
TOTAL			87,105.96

SUMMARY OF EXPENDITURES

PERSONAL SERVICES \$270.64	EQUIPMENT Operation 8.23 Depreciation 4.22	MATERIALS AND SUPPLIES \$194.26	
OTHER Contract Payments \$73,317.50; Other Direct \$1,772.05; PS&S \$11,539.06			
CHANGE ORDERS			
ORIGINAL CONTRACT AMOUNT See attached sheets	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) SIGNED John H. Saxon, Parkway Engineer	DATE JUL 1 1960
APPROVED BY (Name and title) SIGNED Malcolm Gardner, Superintendent	DATE JUL 1 1960

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

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300' Wic
F

DISTRIBUTE AMOUNTS & OTHER COSTS

Residential Area; Gas System (Expenditures)	Gas Line	Beaver Dam Area Exhibit Shelter	Holly Hill Picnic Area; Comfort Station & Utilities				Totals
			Comfort Station	Water System	Sewerage System	Electric	
2.00		3,658.00	7,320.00				59,605.00
				3,463.50			3,463.50
				637.00			637.00
				3,880.00			3,880.00
				2,240.00	3,492.00		5,732.00
2.00		3,658.00	7,320.00	10,220.50	3,492.00		73,317.50
							59.88
	238.00						238.00
		1,393.23					1,393.23
		41.00					41.00
						130.18	130.18
				329.25			329.25
				57.86			57.86
2.00	238.00	5,092.23	7,320.00	10,607.61	3,492.00	130.18	\$75,566.90
		5,092.23		21,549.79			
2.49	36.34	777.58	1,117.76	16,19.78	533.23	19.88	11,539.06 Pxs
7.49	2,743.4	5,849.81	8,437.76	12,227.39	4,025.23	150.06	87,105.96 ✓

DISTRIBUTION OF COSTS

<u>Contract No.</u>	<u>Name of Contractor</u>	<u>Kosciusko Maintenance & Residences</u>		
		<u>Residences</u> (2)	<u>Expansion</u> <u>Water System</u>	<u>2 Residences & Utilities</u> <u>Sewerage</u> (2 Residences)
14-10-127-881	Black's Building Supply	\$42,263.00	3,165.00	3,199.00
* 14-10-127-884	Robert E. Ratliff Company Water Supply Well			
* 14-10-127-1007	Herndon Well & Supply Pump & Controls			
* 14-10-127-1006	Industrial Steel & Machine Works Elevated Tank (5,000 gal.)			
* 14-10-127-1005	Donald R. Sharp Water and Sewerage			
Sub-Total Contracts		\$42,263.00	3,165.00	3,199.00
<u>Other and Day Labor</u>				
	Fire Extinguishers (2)	59.88		
	1" Gas Line			
	Museum Division - 4 Panels			
	Installation of 4 Panels			
	Electric Cable & Meter Loop			
	Tank Footings			
	Misc. water connections not included in contracts			
Total Cost Project Features		\$42,322.88	3,165.00	3,199.00
Total Cost Each Group			\$48,924.88	
* Portion of contracts only, other portions accounted for in other project completion reports.		PS & S Total 6462.70 48,785.58	483.30 3,648.30	488.44 3,687.44

Cost distribution, Contract No. 14-10-127-881, estimated.

NARRATIVE TO ACCOMPANY PROJECT COMPLETION REPORT

Employee Residences (2); Water Distribution System Extension; and Sewerage System all at the Kosciusko Residential Area, Section 3-M-1; One Comfort Station; Water Distribution System; and Sewerage System all at Holly Hill Parking and Picnic Area, Section 3-M-1; and One Exhibit Shelter at the Myrick Creek * Parking Area, Section 3-M-2 of Natchez Trace Parkway, Mississippi

General: Contractors were as follows:

1. Blacks Building Supply Company, Nettleton, Mississippi, Contract No. 14-10-127-881 for construction of Residences (2), Water Distribution System Expansion, and Sewerage System at the Kosciusko Residential Area, Comfort Station at Holly Hill, and Exhibit Shelter at Myrick Creek.

2. Robert E. Ratliff Company, Well Driller of Grenada, Mississippi, Contract No. 14-10-127-884, a portion of which was for the well at Holly Hill.

3. Donald R. Sharp, Louisville, Mississippi, Contract No. 14-10-127-1005, a portion of which was for the water distribution system and the sewerage system at Holly Hill.

4. The Herndon Well and Supply Company, Shannon, Mississippi, Contract No. 14-10-127-1007 a portion of which was for submergible type water well pump at Holly Hill.

5. The Industrial Steel & Machine Works, Gulfport, Mississippi, Contract No. 14-10-127-1006, a portion of which was to design footings and design, furnish materials, and erect the 5,000 gallon elevated steel water tank at Holly Hill.

6. Government day labor forces constructed the reinforced concrete tank footings and connected the tank to the water distribution system at Holly Hill and mounted the exhibit panels at Myrick Creek.

Construction pictures, tabulations of overruns and underruns, change orders, etc., are attached following the section of the report to which they refer.

Electric current, 120-240 volt, single phase, was furnished to the Kosciusko area by the City of Kosciusko and to the Holly Hill area by the Central Electric Power Association of Carthage, Mississippi, at no cost.

* This site formerly known as Myrick Creek, but now known as Beaver Dam

NARRATIVE TO ACCOMPANY PROJECT COMPLETION REPORT

WATER SYSTEM
 HOLLY HILL PICNIC AREA
 SECTION 3-M, ATTALA COUNTY, MISSISSIPPI
 NATCHEZ TRACE PARKWAY

Well: Robert E. Ratliff Company started drilling the well, as a portion of Contract No. 14-10-127-884, on October 20, 1958. The hydraulic rotary method of drilling was used. The contractor used a portable, truck mounted rig operated by a gasoline engine. The pilot hole was drilled to the 554' level and sand samples were selected from the strata, which was contemplated to be used for the water bearing stratum, and sent for an analysis. The analysis indicated a size .016" screen should be used. The hole was reamed to approximately 11 1/2" to the 397' level. A 6 inch casing with a four foot length at the top and approximately the top twenty feet galvanized, with stabilizers spaced every second joint to insure casing being centered in the hole, was installed and grout forced down through the casing and up the outside to within 3 feet of the surface. After allowing the grout to set for 72 hours, the grout plug in the bottom of the casing was drilled out and a 5-3/4" hole drilled to the 408' level, which allowed 10 feet of well screen with 16' of blank pipe to be placed with a 15' overlap. The blank pipe was sealed to the inside of the casing with a 6" x 4" standard lead packer seal. The screen installed was a Bar Lug, plain wrap, .016 gauge stainless steel screen with back pressure foot valve, manufactured by the Houston Well Screen Company, 21 N. Hamilton Street, Houston, Texas. The well was developed by pumping and surging. On November 5, 1958, a 7 hour acceptance and drawdown test was completed which produced 22 gpm with a total drawdown of 22 feet.

Water Right Application: The State of Mississippi does not require permits and licenses and hence, no application was made.

Pump: Herndon Well and Supply Company of Shannon, Mississippi, furnished under Purchase Order No. 27-358 during May 1959 a submergible water well pump with underground discharge, check valve, and automatic pump controls. The submergible pump is a Red Jacket Pump Model No. 16 B, Serial No. CSN-P-391, with a direct connected electric motor Model No. 100C1, Serial No. CSN-M-391, 1 h.p., 230 Volt, 7.5 Amps, single phase. The submergible pump unit was manufactured by Red Jacket Manufacturing Company of Davenport, Iowa. One hundred thirty-four feet of 1 inch galvanized steel drop pipe was installed between the pump and the top of the casing. The pump discharge line was installed underground, as indicated in the attached sketch. The pump, in a 5 hour-25 minute field test, delivered 18.4 gpm average to the tank. The automatic pump controls are a

Warrick, heavy duty, floatless control, as manufactured by Charles F. Warrick Company, 1964 N. Eleven Mile Road, Berkley, Michigan, with shielded electrodes suspended in tank for water level control of pumping operations. All control and electric wires are in conduit underground except where they are fastened to tank tower. A weatherproof box set adjacent to the well site contains all the controls. The pumping operation may be set on automatic or switched to manual operation.

The pump and controls were installed and tested in May 1959; however, the completion of the installation of the shielded electrodes in the tank was delayed until the tank was erected in August 1959.

Water Distribution System: Donald Sharp, Contractor, of Louisville, Mississippi, started work on his Contract No. 14-10-127-1005 (of which the water distribution system was a part) on May 5, 1959. The water line trenches were excavated and 4 inch cement asbestos pipe with neoprene gaskets manufactured by Keasbey & Mattison Company, was laid in the trench and backfilled enough to hold the pipe securely while testing with all joints left visible. The line was tested at 90 psi and then backfilled and tamped to the top of the pipe. Then the 3-wire cable for electrical service to the comfort station was laid on the left side of the trench running from the comfort station to the power pole. An additional one foot of dirt was backfilled and tamped over the line and the balance of the trench filled by a bulldozer. The drinking fountains were constructed on the job substantially in accordance with the plans and specifications. The work was completed on this phase of the water system on June 2, 1959.

Elevated Water Tank: Industrial Steel and Machine Works, P. O. Box 2217, Gulfport, Mississippi, under Contract No. 14-10-127-1066, designed the reinforced concrete footings for the elevated tank legs and pedestal and designed, furnished materials, and erected the 5,000 gallon covered steel tank elevated 30' above the top of the footings in accordance with the specifications and unnumbered drawing of Industrial Steel Machine Works. The tank and tower were painted outside with "Degraco" B-10, Gray Syn Gard Metal Finish. The interior of the tank was painted with (2) two coats of No. 827 water resistant black paint. Both the exterior and the interior paints were manufactured by Detroit Graphite Division of the Valspar Corporation, 7701 W. 47th Street, Lyons, Illinois. The reinforced concrete footings were constructed by Government day labor forces.

All work was completed on the elevated tank on August 14, 1959. Government forces connected the tank to the pump discharge and the main water distribution lines which had been completed to within 5' of the stand-pipe by the water distribution line contractor.

The completed water distribution system was put in operation on November 23, 1959.

Chlorination: When the entire water distribution system was completely installed, the 5,000 gallon tank was filled with water and all the lines were repeatedly flushed to be sure they were thoroughly cleaned out. Calcium Hypochlorite powder (HTH) was introduced into the well casing and the tank at the rate of 10 ounces per 1,000 gallons of water (50 PPM). Each outlet was then opened until a chlorine odor was noticed and then closed off. The solution was allowed to remain in the tank and lines for 24 hours; the entire system was then flushed and put into operation. A sample of the water was tested by the State Board of Health and the report showed absence of coliform organisms.

EXPLANATION OF CONTRACT OVERRUNS AND UNDERRUNS
WATER SUPPLY WELL

Item No.	Description	Unit Price	Estimated		Amount	Final	
			Quan.	Unit		Quan.	Amount
1.	Drilling well hole (0-400') to receive a 6" I.D. casing & 2" min. grout ring & furnishing 6" I.D. casing and installing and sealing it with a 2" min. grout ring.	8.00	400	per ft	3,200.00	397	3,176.00
2.	Drilling well hole (below 400') as stated above.	8.00	20	per ft	160.00	0	.00
3.	Determining the approximate yield and securing water samples as directed.	20.00	8	per hr	160.00	0	.00
4.	Furnishing and installing well screen with 5" approximate outside diameter.	20.00	10	per ft	200.00	10	200.00
5.	Testing for yield and drawdown.	12.50	12	per hr	150.00	7	87.50
					<u>\$ 3,870.00</u>		<u>\$ 3,463.50</u>
					Estimate		Final

Change Orders: None

Bid Items

1. Decreased - reached good water bearing sand sooner than expected.
3. No water samples taken.
4. No increase or decrease.
5. Decreased - prolonged pumping did not materially lower the water table further therefore seven hours was deemed sufficient.

EXPLANATION OF CONTRACT OVERRUNS AND UNDERRUNS
WATER DISTRIBUTION SYSTEM

Item No.	Description	Unit Price	Estimated		Amount	Final	
			Quan.	Unit		Quan.	Amount
1.	4" Cement lined cast iron or asbestos cement water pipe.	3.50	320	per ft	1,120.00	302	1,057.00
2.	2" Galvanized steel water pipe.	2.50	35	per ft	87.50	26	65.00
3.	1" Galvanized Steel water pipe.	2.00	170	per ft	340.00	259	518.00
4.	Drinking fountain and appurtenances	200.00	4	each	800.00	3	600.00
					<u>\$ 2,347.50</u> Estimate		<u>\$ 2,240.00</u> Final
Total Contract Amount							2,240.00
PS&S							342.05
TOTAL							<u>\$ 2,582.05</u>

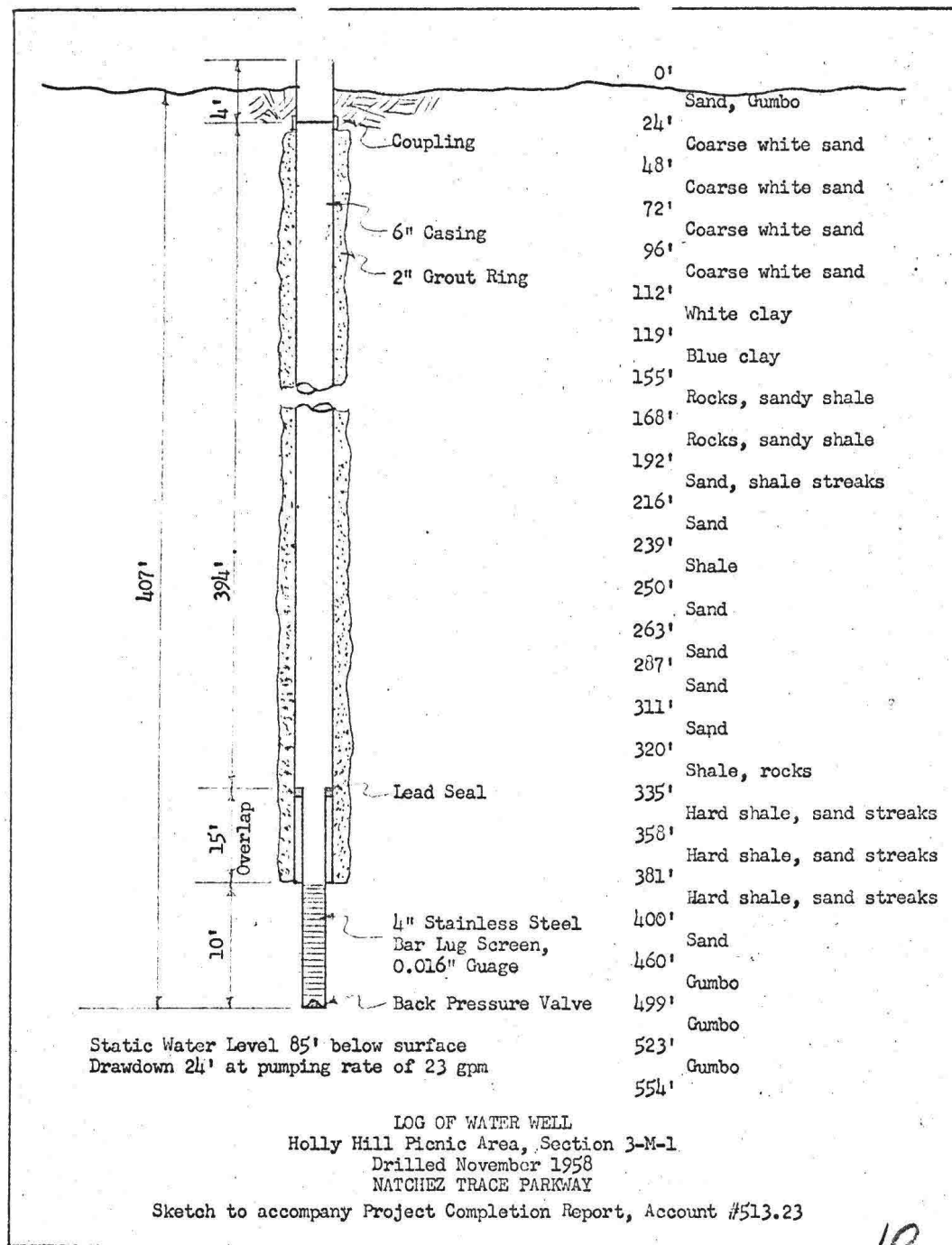
No Change Orders

Items No. 1, 2, and 3 - variation of quantities due to estimating from topographic maps.

Item No. 4 - reduced because three were found to be sufficient when located in the field.

RECAPITULATION OF COST
WATER SYSTEM
HOLLY HILL
Section 3-M, Natchez Trace Parkway
Work Order No. 513.23

Water Supply Well	\$ 3,463.50
Water Supply Pump	637.00
Water Distribution System (See attached sheet for breakdown)	2,240.00
5,000 gallon Elevated Tank	3,880.00
Total for contracts	\$ 10,220.50
Other & Day Labor	
Tank footings	329.25
Miscellaneous water connections	57.86
Subtotal	10,607.61
PS&S	1,619.74
TOTAL	\$ 12,227.35



RECORD OF SEVEN HOUR ACCEPTANCE TEST OF WATER WELL

Holly Hill Picnic Area
Natchez Trace Parkway

Test begun at 11 a.m., November 5, 1958

Static Water Level Below Ground 85 Feet

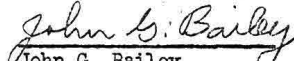
<u>Time</u>	<u>Water Level Below Ground</u>	<u>Flow-Gallons Per Minute</u>
11:00 A.M.	108	20
To		
11:30 A.M.	109	25
To		
12:00 Noon	109	22
To		
12:30 P.M.	109	23
To		
1:00 P.M.	109	23
To		
1:30 P.M.	109	23
To		
2:00 P.M.	108	23
To		
2:30 P.M.	108	23
To		
3:00 P.M.	108	23
To		
3:30 P.M.	107	23
To		
4:00 P.M.	107	23
To		
4:30 P.M.	107	23
To		
5:00 P.M.	108	23
To		
5:30 P.M.	108	22
To		
6:00 P.M.	107	22

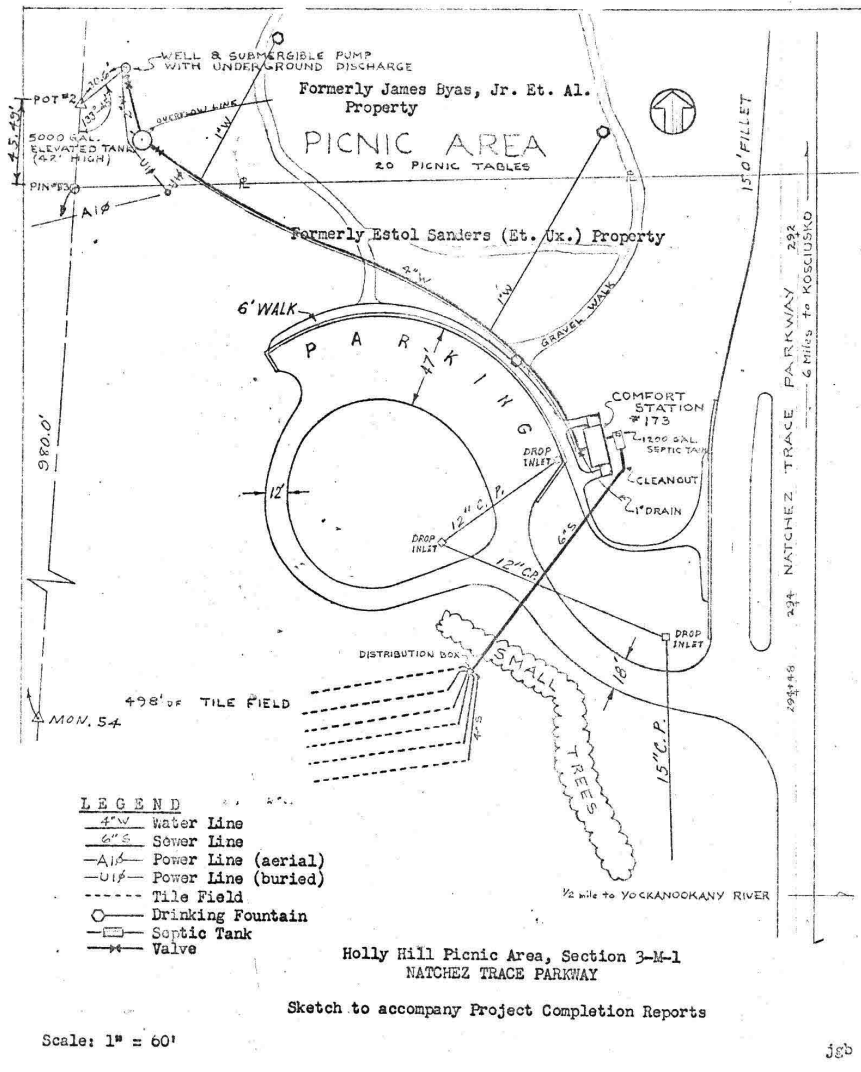
Recovery to static water level was 9 minutes.

Above well drilled and tested by Robert Radliff Company,
Grenada, Mississippi.

Water level depth was measured with a Fisher M-Scope electrical instrument and flow was determined with a 5 gallon bucket and watch. Pumping was done by air pressure.

I certify that the above test was observed and the data recorded by me on November 5, 1958.


John G. Bailey
Jr. Asst. San. Eng. (R)



Other Supporting Information

Natchez Trace Parkway
Tupelo, Mississippi 38801

L54

October 6, 1967

Memorandum

To: Chief, Office of Land and Water Rights, WSC

From: Superintendent, Natchez Trace

Subject: Comprehensive study of water resources potential
of Natchez Trace Parkway

Enclosed are one copy of a narrative and one print of a map entitled, "Water Resources Study, Natchez Trace Parkway," dated September 19, 1967. The narrative and map have been prepared by members of the engineering staff of Natchez Trace Parkway. The map and narrative combine to show locations of existing and proposed facilities which require various quantities of water, and the narrative attempts to give an estimate of existing and future water quantities.

We realize that the Master Plan Study Team is soon to visit this area and that the study quite possibly will have a bearing on the comprehensive study of water resources. However, we believe it would be well for the enclosed information to go forward for comments, and later revisions can be made as a result of both the Master Plan study and the comments received. Some of the areas listed as requiring resources studies are not presently shown on the Master Plan in such a category. Here again we believe they should be included for consideration.

We have had discussions and correspondence with the U. S. Geological Survey in regard to the comprehensive study, primarily with the Jackson, Mississippi, office, and we enclose a copy of correspondence of September 14, 1967, which explains one step that they have taken. We have advised the U.S.G.S. that we will let them know at a later date when we have something concrete to discuss with them, and at that time they will be in a position to give us estimates of cost, etc.

Copies of the above-listed materials are being forwarded to our Regional Office, and by copy of this memorandum we are asking for their comments as soon as possible so that proposed work which is programmed for this fiscal year will not be too long delayed.

(Sgd.) Joseph C. Rumburg, Jr.

In duplicate

Joseph C. Rumburg, Jr.

Enclosures

cc:

Regional Director, Southeast, w/c encls.

October 1967

Natchez Trace Parkway
WATER RESOURCES STUDY

(Location Listing is from South to North)
(See Attached Map)

Natchez Terminus:

There are no existing facilities, but a visitor center is proposed for this location. The estimated peak water demand is approximately 10,000 gpd. Water and sewer facilities will be available from the city of Natchez. No test well drilling is required.

Propinquity Historic House Museum:

No existing facilities. Present proposals for the area do not include need for water. However, if future proposals include a need for water, it can be obtained from the existing community water system.

Emerald Mound:

This area is listed as Priority No. 9. There are at present no existing facilities requiring a water supply at this location. There is no proposed construction that would require water, but it is possible that a water supply will be required in the future. Any future quantity of water would be dependent on size and number of facilities. Proposed study should include this area, since a picnic area, etc., may be required here. ✓

Natchez Subdistrict Headquarters:

Existing facilities at the Natchez Subdistrict Headquarters are one (1) residence, one (1) maintenance building, one (1) wayside exhibit shelter with comfort station, and one (1) historic house museum. A maximum of three (3) additional residences is proposed for this area. The peak water demand is, estimated to be about 6,000 to 8,000 gpd, excluding fire demand. The existing deep well in the maintenance area will produce in excess of 116 gpm. No additional test well drilling is required for this area.

Coles Creek Picnic Area:

The Coles Creek Picnic Area has one (1) existing comfort station. Facilities for swimming are proposed for this area. One (1) additional picnic area, two (2) campgrounds, six (6) comfort stations, one (1) service station and concession operation, and one (1) residence are also proposed for this area. The peak water demand is estimated to be 40,000 to 50,000 gpd. The existing well at Coles Creek will produce 110 gpm. No additional test well drilling is required for this area.

Port Gibson Subdistrict Headquarters:

At present there are one (1) maintenance building and two (2) residences at the Port Gibson Headquarters. One (1) additional residence is proposed at this area. Water for this area is piped from the town of Port Gibson water system. No test well drilling will be required for this area. The peak water demand is estimated to be approximately 3,000 to 4,000 gpd, excluding fire demand.

Rocky Springs Park:

Rocky Springs Park is listed as Priority No. 1. Existing facilities at this area are two (2) residences, three (3) comfort stations, two (2) picnic areas, and one (1) campground. A visitor contact station, a small maintenance area, and concessioner operation are proposed for this area. Also, impoundment of water for a 60+ acre lake and related facilities are proposed, which will add considerably to visitation of the area. The peak water demand is estimated to be 30,000 to 40,000 gpd. The existing deep well will produce about 14 gpm. Additional studies and test well drilling are required for this area.

*Test well
authorized
in current
1968 F.T. program.*
✓

Ridgeland District Headquarters:

Existing facilities at Ridgeland District Headquarters are two (2) residences, one (1) wayside museum with comfort station, one (1) office building, one (1) oil and wash, one (1) warehouse, and one (1) equipment storage building. Three (3) additional residences are proposed for this area. The peak water demand is estimated to be approximately 7,000 gpd, excluding fire demand. Water for this area is furnished by the town of Ridgeland water system. No test well drilling is required for this area.

River Bend Picnic Area:

Existing facilities at River Bend Picnic Area are one (1) comfort station and one (1) picnic shelter. A campground, three (3) additional comfort stations, and concessioner-operated service station, snack bar, camping supplies, and picnic supplies are proposed. The peak water demand is estimated to be 15,000 gpd. The existing well at River Bend will produce in excess of 50 gpm. No additional test well drilling is required for this area.

Yockanookany Picnic Area:

This location is listed as Priority No. 12. Existing facilities are twelve (12) picnic sites. This is a beautiful area for picnicking and is in an area where future additional picnicking and comfort station facilities will likely be required. The estimated peak water demand will be 2,500 gpd. This area should be included for a study and test well drilling. ✓

Highway 16 Concessioner Operation:

This location is presently listed as Priority No. 7. A service station with snack bar and an Indian trading post are presently proposed at this location. The estimated peak water demand is 5,000 to 6,000 gpd. A study and test well drilling will probably be required for this area. *X out per Mr. 64mm*

Holly Hill Picnic Area:

Holly Hill has one (1) existing comfort station. No additional construction is proposed for this area. The peak water demand is estimated to be 2,000 gpd. The existing well will produce in excess of 20 gpm. No additional test well drilling is required for this area.

Kosciusko Subdistrict Headquarters:

The existing facilities at Kosciusko Subdistrict Headquarters are two (2) residences, one (1) maintenance building, one (1) warehouse, and one (1) equipment storage building. Two (2) additional residences are proposed for this area. The peak water demand is estimated to be 5,000 gpd. Water for this area is furnished by the city of Kosciusko water system. No test well drilling is required for this area.

Bethel Mission Picnic Area:

Bethel Mission Picnic Area is listed as Priority No. 10. There are no existing facilities at this area. A picnic area and comfort station are presently proposed. The peak water demand is estimated to be 2,000 gpd. A study and test well drilling will probably be required for this area. ✓

Yowani Picnic Area:

Yowani Picnic Area has one existing comfort station. No additional construction is proposed for this area. The peak water demand is estimated to be 2,000 gpd. The existing well will produce in excess of 20 gpm. No additional test well drilling is required for this area.

Jeff Busby Park:

Existing facilities at Jeff Busby Park are two (2) residences, one (1) maintenance building, one (1) service station and snack bar, two (2) comfort stations, one (1) exhibit shelter with comfort station, picnic areas, and campground areas. Additional construction proposed for this area includes expanded concession operation. The peak estimated water demand is 15,000 gpd. The existing well at Jeff Busby will produce in excess of 80 gpm. No additional test well drilling is required for this area.

Highway 8 Concessioner Operation:

This location is presently listed as Priority No. 8. A service station and snack bar are proposed. The estimated peak water demand is 4,000 gpd. Study and test well drilling will probably be required at this location.

X out
per Nov. 14 memo

Dancy Subdistrict Headquarters:

Existing facilities at Dancy Subdistrict are two (2) residences, one (1) maintenance building, and one (1) equipment storage building. One (1) additional residence is proposed for this area. The peak water demand is estimated to be 4,000 gpd. The existing well will produce in excess of 60 gpm. No additional test well drilling is required for this area.

Witch Dance Picnic Area:

Existing facilities at Witch Dance are one (1) comfort station and a picnic area. No additional construction is proposed for this area. The estimated peak water demand is 2,000 gpd. The existing well will produce in excess of 25 gpm. No additional test well drilling is required for this area.

Tombigbee Horse Trail Parking Area:

Tombigbee Horse Trail Parking Area is listed as Priority No. 11. There are no existing facilities at this location. A parking area and horse trail are proposed. It is possible that a comfort station will be required. If so, the estimated peak water demand will be 3,000 gpd, and studies and test well drilling will be required. *X out per Nov. 14 memo*

Tupelo Headquarters:

Existing facilities at Tupelo Headquarters are thirty-one (31) residences, four (4) apartments, one (1) maintenance building, one (1) warehouse, and one (1) visitor center and office. A picnic area and one (1) comfort station are proposed for this area. The estimated peak water demand is 28,000 to 35,000 gpd, excluding fire demand. There are two (2) existing wells at Tupelo Headquarters. Each well will produce over 200 gpm. No additional test well drilling is required at Tupelo Headquarters.

Saltillo Picnic Area:

There are no existing facilities at Saltillo Picnic Area. A comfort station and picnic area were previously proposed at this location. However, facilities for boating, swimming, picnicking, etc., have been provided by the Mississippi Game and Fish Commission at nearby Lake Lee (only about 3 miles) which it is believed satisfies the needs for the vicinity. (See Pharr Mounds below.)

Pharr Mounds Historic Site:

Pharr Mounds Historic Site is listed as Priority No. 3. There are no existing facilities at Pharr Mounds. An exhibit shelter with comfort station is proposed at this location. Also, it is proposed that picnic facilities be provided at this area in lieu of those previously proposed at the Saltillo Picnic Area. The estimated peak water demand is 5,000 gpd. Study and test well drilling will be required at this location. ✓

Tishomingo State Park:

Tishomingo State Park is listed as Priority No. 2. There are no existing Government facilities at the present. A contact station with comfort station and one (1) residence are proposed as minimum required facilities at this location. Other facilities may be required. The peak water demand is estimated to be 5,000 to 10,000 gpd. A study and test well drilling will be required at this area. *~~X out~~ per Nov. 14 memo* ✓

Cherokee Subdistrict Headquarters:

Existing facilities at Cherokee Subdistrict are one (1) maintenance building and one (1) storage shed. Four (4) residences are proposed at this area. The estimated peak water demand is 5,000 gpd, excluding fire demand. The existing well at Cherokee will produce in excess of 60 gpm. No additional test well drilling is required at this area.

Colbert Park:

There are no existing facilities at Colbert Park. Proposed facilities are as follows: One (1) service station, eight (8) residences, maintenance facilities, one (1) horse concession, twenty-eight (28) house-keeping cabins, one (1) laundry center, one (1) restaurant and lodge, one (1) contact station with comfort station, thirteen (13) comfort stations, one (1) bathhouse, marina facilities, picnic areas, and campground sites. The estimated peak water demand is 150,000 gpd. There are two (2) existing wells at Colbert Park--one capable of producing approximately 200 gpm and the other capable of producing in excess of 100 gpm. No additional test well drilling is proposed at this area.

Lauderdale Park (North side of Pickwick Lake):

There are no existing facilities at Lauderdale Park. Comfort stations, picnic facilities, marina shop, and other facilities are proposed in the future at this area. The peak water demand is estimated to be 20,000 to 25,000 gpd. The existing well will produce 40 gpm. No additional test well drilling is proposed for this area at this time.

Holly Picnic Area:

Picnic facilities are now available at Holly Picnic Area. A comfort station is proposed at this location. The existing well will produce in excess of 20 gpm. The estimated peak water demand is 2,000 gpd. No additional test well drilling is required at this area.

*Different
from Holly Hill
Picnic Area on
p. 3?
Must be*

Glenrock Picnic Area:

Existing facilities at Glenrock Picnic Area are two (2) comfort stations and two (2) picnic areas. No additional construction is proposed at this area. The estimated peak water demand is 4,000 gpd. There are two (2) existing wells at Glenrock Picnic Area. One will produce 5 gpm, and the other will produce 8 gpm. No additional test well drilling is proposed for this area.

Jacks Branch Picnic Area:

Existing facilities at Jacks Branch Picnic Area are one (1) comfort station and picnic facilities. A picnic shelter is proposed at this area. The peak estimated water demand is 2,000 gpd. The existing well will produce in excess of 10 gpm. No additional test well drilling is required at this area.

Meriwether Lewis Park and Little Swan Area:

Existing facilities at Meriwether Lewis Park are three (3) residences, one (1) museum, one (1) maintenance building, one (1) warehouse, one (1) equipment building, and one (1) picnic area. Three (3) additional residences, one (1) contact station with comfort station, and concessioner-operated service station, snack bar, and camp supplies are proposed at this location. The estimated peak water demand for this area is 10,000 gpd. The existing facilities at Little Swan are two (2) comfort stations, campground facilities, and picnic facilities. Two (2) additional comfort stations are proposed at this location. The estimated peak water demand for this area is 10,000 gpd. The existing water system at Little Swan is connected to the Meriwether Lewis Park water system. The well at Meriwether Lewis Park is capable of furnishing the estimated peak water demands at Meriwether Lewis Park and the Little Swan Area. Test well drilling was made at Little Swan in 1964, but no water was found. The existing well will produce in excess of 90 gpm. No additional test well drilling is required for these areas.

Gordon House Historic Area:

Gordon House Historic Area is presently listed as Priority No. 6. There are no existing facilities at this area. Presently there is no proposed construction that would require water, but it is possible that water will be required in the future for this area. It should be included in the water resources study.

done
X

Leipers Fork Subdistrict Headquarters:

Leipers Fork Subdistrict Headquarters is listed as Priority No. 4. There are no existing facilities at Leipers Fork. Three (3) residences and office and maintenance facilities are proposed at this location. The estimated peak water demand is 5,000 gpd. A study and test well drilling are required at this location.

done
✓

Nashville Terminus:

The Nashville Terminus is listed as Priority No. 5. There are no existing facilities. A visitor center and two (2) residences are proposed at this location. The estimated peak water demand is 10,000 gpd. A study and test well drilling are required at this location.

done
✓



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

P. O. Box 2052
Jackson, Mississippi 39205

September 14, 1967

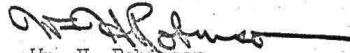
Mr. Joseph C. Rumburg, Jr.
Superintendent, Natchez Trace Parkway
P. O. Box 948
Tupelo, Mississippi 38801

Dear Mr. Rumburg:

Our Regional Office agreed with our suggestion that the Geological Survey should have a single coordinator for the water supply studies for the Natchez Trace Parkway. They have requested that the Mississippi District fill this role. Therefore, as soon as you have completed your plans and are in a position to discuss the water study, please let us know. We will be pleased to go to Tupelo to work out the details of the program.

We are looking forward to continuing working with you and your staff on water supply problems on the Natchez Trace Parkway.

Sincerely yours,


Wm. H. Robinson
District Chief

TEST WELL DRILLING PRIORITIES
IN
NATCHEZ TRACE PARKWAY

<u>PRIORITY</u>	<u>AREA</u>	<u>LAND STATUS</u>
✓ 1.	Rocky Springs Park (Mississippi)	U.S.
2.	Tishomingo State Park (Mississippi)	State
3.	Pharr Mounds Historic Site (Mississippi)	U.S.
✓ 4.	Leipers Fork Subdistrict Headquarters (Tennessee)	Private
✓ 5.	Nashville Terminus (Tennessee)	Private
✓ 6.	Gordon House Historic Area (Tennessee)	Private
7.	Emerald Mound (Mississippi)	U.S.
8.	Bethel Mission Picnic Area (Mississippi)	U.S.
9.	Yockanookany Picnic Area (Mississippi)	U.S.
Unassigned ✓	Cypress Creek Picnic Area (Tennessee)	U.S.
" ✓	Metal Ford Historic Area (Tennessee)	Private
"	Natchez Visitor Center (Mississippi)	U.S.
"	Turpin Creek Picnic Area <i>where?</i>	U.S.
"	Jackson Visitor Center	Private



IN REPLY REFER TO:
D52

AIRMAIL

Memorandum

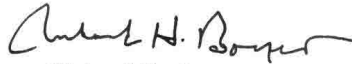
To: Director
Attention: Mr. E. W. Reed, Chief, Branch of Water Resources

From: Acting Superintendent, Natchez Trace

Subject: Abstract of Bids - Test Wells (3), Glenrock Picnic Area,
Holly Picnic Area, and Colbert Park North, Natchez Trace
Parkway

Enclosed is a copy of Abstract of Bids for Invitation No. 604-1
opened at 2:00 P.M., CST, February 15, 1967.

We propose to make an award to the low bidder, Miller Drilling Co.,
Lawrenceburg, Tennessee, whose bid was in the amount of \$8,887.00.


Richard H. Boyer

Enclosure

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

RECEIVED
NATIONAL PARK SERVICE
WASHINGTON OFFICE

February 16, 1967

FEB 20 11 11 PM '67

120-2-23-67

Reed
End
2/23
PK.

Return to Reed

1 of 2 Sheets

TIME OPENED 2:00 P.M.				DATE 2/15/67				PLACE Tapelo, Mississippi				BID NO. 1				BIDDER NAME Bridges				BID NO. 2				BIDDER NAME Bridges				BID NO. 3				BIDDER NAME Bridges				BID NO. 4				BIDDER NAME Bridges				GOVERNMENT ESTIMATE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
FOR TEST WALLS - Glenwood Pione Area and Holly Pione Area, located on the Highway 200, between the Parkway, Hancock County, Alabama.																				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Form 10-335
(Rev. 4/61)UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

ABSTRACT OF BIDS DATA

For: Test Wells - Glenrock Picnic Area and Holly Picnic area, Natchez Trace Parkway, Wayne Co., Tenn.; Colbert Park North, Natchez Trace Parkway, Lauderdale Co., Ala.		Invitation No. 604-1	
Date of Issue January 20, 1967	Opening Date February 15, 1967	No. Mailed 13	Bids Received 2

The bids received in response to this invitation were opened at the exact time and place specified in the invitation. All bids were abstracted except the following which were returned unopened in accordance with the terms and conditions of the invitation:

BIDDER	CITY	POSTMARKED		RECEIVED		DELIVERED BY
		Date	Time	Date	Time	
NOT APPLICABLE						

In addition to the bids abstracted on this form, invitations to bid were:

- ☒ Sent to those listed (See Attachment A)
☒ Posted in public places (See Attachment B)
☐ Advertised in the newspapers (See Attachment C)

OR ☐ Without advertising in accordance with _____

(Include written findings required by law and determination as Attachment D.)

AWARDED TO:	IN THE AMOUNT OF:
Miller Drilling Company	\$8,887.00
Route 5	Less _____
Lawrenceburg, Tennessee 38464	

Please check one:

- ☒ The lowest bidder as to price (Expenditures).
☐ The highest bidder as to price (Receipts)
☐ Other than low (high) bidder because (See Attachment E)

Exceptions, if any, to specifications:

Bids Abstracted by: (Signature) <i>William D. Turner, Jr.</i>	Bids Checked for Accuracy by: (Signature) <i>Donald R. Sarver</i>
William D. Turner, Jr., General Supply Specialist	Donald R. Sarver, Administrative Officer
Recommended for Acceptance by: (Signature & Title) <i>Glenn C. Ferrar</i>	
Glenn C. Ferrar, Supervisory Civil Engineer	

CONTRACT NUMBER 14-10-1-604-196 dated February 16, 1967
 is awarded by signature of the contracting officer on Standard Form 23 attached.

ATTACHMENT A

1. Miller Drilling Co., Route 5, P. O. Box 19, Lawrenceburg, Tenn. 38464
2. Layne-Central Co., 2075 Chelsea, Memphis, Tenn. 38108
3. Copley Drilling Co., 1101 Second Ave., Lawrenceburg, Tenn. 38464
4. Watson Drilling Co., 1642 Whitehaven, Copleville Road, Whitehaven, Tenn.
38116
5. Adams Bros. Drilling Co., Eads, Tenn. 38028
6. A. D. Liggett, 385 East Preston, Jackson, Tenn. 38301
7. Lloyd R. Stephenson, 415 West Forest, Jackson, Tenn. 38301
8. John M. Leake, Collierville, Tenn. 38017
9. Hawley Dodson, Box 529, Fayetteville, Tenn. 37334
10. T. M. Parks Drilling Co., Houlka, Miss. 38850
11. Herndon-Roman Well & Supply, Shannon, Miss. 38868
12. Robert E. Ratliff Co., Grenada, Miss. 38901
13. Hemphill & Shelby Drilling Co., 420 N. Michigan, Tulsa, Oklahoma 74115

ATTACHMENT B

Post Offices:

Tupelo, Miss. 38801
Florence, Ala. 35630
Sheffield, Ala. 35660
Tuscumbia, Ala. 35674
Cherokee, Ala. 35616
Lawrenceburg, Tenn. 38464
Waynesboro, Tenn. 38485

PROJECT STATUS UNDER WATER RESOURCES STUDIES AND WATER RIGHTS ACQUISITION PROGRAMS

<u>Washington Service Center</u>	<u>1967</u>	<u>5/11/67</u>
(Service Center Office)	(Fiscal Year)	(Date)

Natchez Trace
(Area)

FUNDING STATUS

	M&P			CONSTRUCTION		
(Site or Activity)	Authorized	Obligated	Paid	Authorized	Obligated	Paid
Park participation				\$6,202	\$6,202	\$2,473.76
Geological Survey	\$2,000	\$2,000	\$	\$3,625	3,625	625.00
Private				24,105	13,862.32	13,862.32

(Site or Activity)
Park participation
Geological Survey
Private

(Site or Activity)
Park participation
Geological Survey
Private

PROJECT PROGRESS

(Site or Activity)

(Site or Activity)

(Site or Activity)

REMARKS

Contract #14-10-1-604-196 - awarded to Miller Drilling Company for drilling wells at Glenrock Picnic Area, Holly Picnic Area, Colbert Park, for \$8,887 in February 16, 1967. Five holes were drilled at Colbert Park without significant flow. Parkway was authorized to drill a maximum of two additional holes in area and to extend one hole beyond the Chattanooga Shale for further observations.

*memo 7/27/67
from WSC transmitted
USGS reports on
Glenrock & Holly site
Holly - Max yield 209 gpm
Glenrock - 6 gpm high in
min & manganese.*



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
WASHINGTON PLANNING AND SERVICE CENTER
1730 NORTH LYNN STREET
ARLINGTON, VIRGINIA 22209

IN REPLY REFER TO:

L54 WSC-OLW

July 27, 1967

USGS report file
7/31
WTS

Memorandum

To: Chief, Branch of Water Resources, WASO
From: Chief, Office of Land and Water Rights, WSC
Subject: Ground-Water Resources at the Glenrock and Holly Sites,
Natchez Trace Parkway

Enclosed is a final report on two of the wells drilled at Natchez Trace during the 1967 fiscal year. They seem quite complete and should be of use to all offices concerned with development of the areas.

At the Holly site we seem to have acquired all the water that the Park feels will be required and the chemical quality tests are satisfactory. However, at the Glenrock Picnic area the results are marginal. The report states on the first page, "a reasonable guess on the perennial yield of the No. 2 well is about 6 gpm." This must be considered when designing facilities. Also iron and manganese are tentatively analyzed at 0.79 ppm. This problem also exist at Tupelo headquarters. On page 6, the writers state that the iron content may be due only to the fact that it "was caused by iron particales attached to the suspended clay particales in the water samples." They plan to make additional water quality tests after the well has been pumped enough to produce clear water. We will held off recommending any iron reduction facilities until we have these additional tests.

La - a. Linn

Enclosure

cc:
Regional Director, Southeast w/c of enc.
Superintendent, Natchez Trace w/o copy of enc.
Chief, D&C, PSC w/c of enc.

GROUND-WATER RESOURCES AT THE GLENROCK AND HOLLY SITES,
NATCHEZ TRACE PARKWAY, WAYNE COUNTY, TENNESSEE

by Gerald K. Moore and Charles R. Burchett
U.S. Geological Survey

Evaluation of the Glenrock Site

Summary.--Four test holes (Nos. 2-5) were drilled near the Glenrock picnic area at the locations shown on the attached map (fig. 1) in March and April, 1967. The No. 2 well was the only test hole that yielded a significant quantity of water. This well was test pumped at rates ranging from 1.6 to 10 gpm (gallons per minute) for a total period of 8 hours on April 25, 1967. The maximum yield of the No. 2 well at the time of the pumping test proved to be about 8.5 gpm. Some development of the well occurred during the pumping test and the water discharged from the well was still not clear at the end of the test. Additional pumping of this well will be necessary to obtain clear water. Some additional well development may occur with pumping, and the final yield of the well for short periods of time may be about 9 gpm. This yield can be expected to decrease during the dry seasons of the year. A reasonable guess on the perennial yield of the No. 2 well is about 6 gpm. The intake on the permanent pump should be positioned at a depth of at least 61.5 feet, the depth of the water-bearing crevice. The chemical quality of the water meets Public Health Service standards for drinking water in all constituents that were determined, except for iron and manganese. Treatment of the water for iron removal may not be necessary, because there is some question whether this iron is in solution. Another water sample should be collected after clear water is obtained.

Results of Test Drilling.--The first test hole (No. 3) was drilled at the Glenrock site March 14, 1967. This hole penetrated 35 feet of cherty overburden and then 82 feet of siliceous limestone and dolomite of the Fort Payne Formation to a total depth of 117 feet. About 0.5 gpm of water was found in the overburden at the top of bedrock. No water-bearing zones or crevices were found in the bedrock. The No. 3 test hole was filled in and abandoned.

The No. 4 test hole was drilled at Glenrock March 15, 1967. No water was found in the 14 feet of cherty overburden. The test hole penetrated 124 feet of bedrock of the Fort Payne Formation and then through 12 feet of Silurian age rock (probably the Dixon Formation) to a total depth of 150 feet. A description of the rock cuttings collected during the drilling is attached. A 3-inch crevice in the bedrock at a depth of 18 feet and a 2-inch crevice at 21 feet were apparently dry. A small crevice at a depth of 47 feet yielded 0.5 gpm. The No. 4 test hole was filled-in and abandoned.

The No. 2 test hole was drilled March 16, 1967. The hole penetrated 39 feet of overburden and then through 48 feet of bedrock of the Fort Payne Formation and 32 feet of Silurian age rock to a total depth of 119 feet. A description of the drill cuttings from this hole is attached. A small amount of water was found in the overburden on top of the bedrock, and a crevice in the bedrock at a depth of 61.5 feet yielded an additional 4 gpm. This test hole was later developed into a water well because it showed promise of meeting the water needs at Glenrock.

The No. 5 test hole was drilled April 6-7, 1967. This was thought to be the most favorable site at Glenrock for ground-water development but the test hole produced only about 2 gpm from a crevice at 25 feet. An additional thin layer of weathered rock at 39 feet was apparently dry or nearly dry. After penetrating 3 feet of overburden, the test hole went through 134 feet of bedrock in the Fort Payne Formation and then through 8 feet of the Dixon Formation of Silurian Age to a total depth of 145 feet. Attached is a description of the drill cuttings. The test hole was filled in and abandoned.

Except for not finding water in the anticipated amounts, the test drilling at Glenrock was about as expected. The predicted average well depth prior to drilling was 115 feet. The four test holes averaged 133 feet deep. The predicted thickness of overburden was less than 20 feet. The average thickness in the test holes was about 23 feet. Prior to drilling, the rock formations were thought to dip to the east. The test holes showed that the base of the Fort Payne Formation actually dips to the south; however, this condition apparently has little if any influence

on the abundance of ground water available to wells. The black Chattanooga Shale at the base of the Fort Payne Formation was absent in the Glenrock test holes. This was not completely unexpected, because the formation is very thin elsewhere in this general area. The water level in the No. 2 well is at 817 feet above sea level; the water level in the old No. 1 well was 760 feet above sea level. This shows that ground water in the Glenrock area is moving toward the south or southeast as predicted.

Conclusions from Test Drilling.--Ground water in the valley of Glenrock Branch occurs in very small openings along the bedding planes of the rock layers and in the overburden immediately overlying the bedrock. Although three of the five wells (including the old No. 1 well) found small amounts of water at an elevation of about 730 feet, no two wells had equal yields, indicating that the water-bearing openings are either very narrow or irregular in size and shape. All water-bearing crevices in the five wells were penetrated at a depth of 75 feet or less.

Most well locations in the valley will provide less than 3 gpm; the chance of finding 10 gpm or more in the vicinity of the picnic area is very slim. It is possible that the saturated overburden on the hills above Glenrock Branch may be thick enough to furnish an adequate water supply, but this is not likely.

If additional expansion of the water supply at Glenrock should be necessary in the future, the most likely locations for wells are (1) in the valley of Sweetwater Branch to the south, and (2) near the Ovilla Lookout Tower to the north. The cost of developing ground water in either of these areas should be compared with the cost and advisability of developing a surface-water supply closer to the picnic area.

Well Completion.--The No. 2 test hole was completed as a water well by setting a short section of 6-inch diameter well screen at the top of bedrock, so that water could be produced from both the crevice at 61½ feet and from the saturated

overburden. Other completion work, as specified by the Park Service in the drilling contract, was also performed by the contractor.

Results of Pumping Test.--The No. 2 well was pumped for a period of 8 hours on April 25, 1967. An electrically-driven submersible pump, installed by the drilling contractor, was used for the test. The pumping rate was controlled by means of a gate valve on the discharge pipe, and pump discharge was measured by timing the filling of $\frac{1}{2}$ -gallon and 5-gallon containers with a stopwatch. The first water level measurements were made with a steel tape. As the water level dropped during the test, it became necessary to use an electric tape to obtain accurate measurements. From 11:20 AM until the pump was turned off at 4:10 PM, measurements of the water level became difficult because of water pouring into the well from the screened interval. During this period of time, therefore, measurements were made to the nearest 0.1 foot only. Attached are a record of the water-level measurements and graphical plots of the water levels (fig. 2) and pumping rates (fig. 3).

During the pumping test, considerable difficulty occurred in holding the pumping rate constant. No single setting of the gate valve produced a constant discharge for any appreciable period of time. Therefore, it was necessary to keep adjusting the valve to produce approximately the desired discharge. As a result of the fluctuations in pump discharge, fluctuations in the water level also occurred. The fluctuations are apparent in both the graphical plots of the water level and discharge. The lines on these graphs represent the average conditions for each portion of the test.

A pumping test of the type made at Glenrock is called a step test because both the pumping-rate plot and water-level plot show steps. In most cases, this is the most valuable type of test in hard-rock aquifers because predictions of water-level drawdown can be made for a variety of different pumping rates and periods of time. It is also possible to calculate well efficiency at various

pumping rates from a step test. Well efficiency is a ratio of formation or aquifer loss (the drawdown of water level in the aquifer just outside the well) to the total drawdown inside the well.

The theoretical water-level drawdowns inside and outside the Glenrock well after 88 minutes of pumping at rates up to 8.5 gpm are shown on figure 4. Both curves on this figure were calculated from the observed water levels in the well. Figure 4 may be used to estimate the drawdown in the Glenrock well at any rate from 0 to 8.5 gpm, after 88 minutes of pumping.

The theoretical drawdown of water level in the Glenrock well at pumping rates of 2, 4, 6, and 8 gpm for periods of time ranging from 30 to 400 minutes is shown in figures 5 and 6. The data from the Glenrock test indicates that a change in aquifer characteristics some distance from the pumping well causes a decreasing rate of drawdown after 10 to 20 minutes of pumping. Thus the curves shown on figures 5 and 6 should not be extrapolated to predict drawdowns for periods of time less than 30 minutes. The curves can be extrapolated for periods of continuous pumping longer than 400 minutes, but the likelihood of accurate drawdown predictions may decrease. Pumping water levels can be predicted from figures 4, 5, and 6 by adding the drawdown on these curves to the water level prior to pumping.

The Glenrock well had not been fully developed prior to running the pumping test, and the performance of the well improved slightly as the well developed. This is shown by the gradual rise in water level during the latter part of the first step. Alternately, throughout the test the water became muddy and then gradually became clearer. However, the water was still cloudy at the end of the test. The turbidity was caused by suspended clay particles--only two or three grains of sand or silt could be seen in water samples that were allowed to settle. To obtain clear water, additional pumping of the well will be necessary. This pumping probably will result in a slight increase in well yield (as additional clay is removed from the aquifers), but it is doubtful that the well will develop

enough to yield more than 9 gpm. If the Glenrock well had been thoroughly developed by a combination of surging and pumping prior to the pumping test, somewhat more accurate and reliable results could have been obtained from the pumping test data.

The chemical analysis (follows) of a water sample collected at the end of the pumping test shows insignificant concentrations of all analyzed constituents except iron and manganese. These elements total 0.79 ppm, and the limit recommended by Public Health Service is 0.3 ppm. An iron determination during the pumping test, however, showed a concentration of only 0.1-0.2 ppm. This discrepancy apparently was caused by iron particles attached to the suspended clay particles in the water samples. The field test did not reveal these ions but the laboratory test did. It is impossible to predict what the iron concentration will be when clear water is obtained from the well. It is therefore recommended that Park Service notify us when the additional pumping has been done, and we will collect another water sample for analysis.

Conclusions from Pumping Test.--The maximum yield of the No. 2 well was 8.5 gpm at the time of the pumping test. Pumping at rates greater than this produced a drawdown of the water level below the water-bearing crevice at a depth of 61.5 feet.

The intake of the permanent pump should be at a depth of 61.5 feet in order to take advantage of the maximum available drawdown. No additional advantage would be obtained by a deeper setting.

The pumping test was made at a period of time when the water table was near its annual peak. As the water level in the well drops during the summer and fall, the yield of the well will decrease because there will be less drawdown available. The amount of this seasonal drop in water level varies from well to well, ranging from 0.1 foot to 20 feet, and is impossible to predict for any individual well. Thus the perennial yield of the Glenrock well cannot be accurately predicted. A reasonable guess would be about 6 gpm.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

2GW

WATER ANALYSIS 351552N0873744.1

Location On Natchez Trace Parkway, Tennessee County Wayne
 Source Well No. 351552N-0873744.1 (Wn: M-31) Depth (ft) _____ Diam (in.) _____
 Cased to (ft) _____ Date drilled _____ Point of coll. Glenrock Picnic Area
 Owner National Park Service
 Treatment _____ Use _____
 WBF Ft. Payne WL _____ Yield _____
 Temp (°F) 60 Appear. when coll. Cloudy
 Collected April 25, 1967 By G.K. Moore & C. R. Burchett
 Remarks _____

	ppm	epm		ppm	epm
<u>Silica (SiO₂)</u>	<u>8.2</u>		<u>Bicarbonate (HCO₃)</u>	<u>96</u>	<u>1.57</u>
<u>Aluminum (Al)</u>			<u>Carbonate (CO₃)</u>	<u>0</u>	<u>.00</u>
<u>Iron (Fe)</u>	<u>.69</u>				
<u>Manganese (Mn)</u>	<u>.10</u>		<u>Sulfate (SO₄)</u>	<u>4.0</u>	<u>.08</u>
			<u>Chloride (Cl)</u>	<u>1.5</u>	<u>.04</u>
			<u>Fluoride (F)</u>	<u>.1</u>	<u>.00</u>
<u>Calcium (Ca)</u>	<u>22</u>	<u>1.10</u>			
<u>Magnesium (Mg)</u>	<u>5.7</u>	<u>.47</u>	<u>Nitrate (NO₃)</u>	<u>.1</u>	<u>.00</u>
<u>Sodium (Na)</u>	<u>1.8</u>	<u>.08</u>			
<u>Potassium (K)</u>	<u>.5</u>	<u>.01</u>			
Total		1.66	Total		1.69

	ppm		
		<u>Specific conductance</u> (micromhos at 25° C)	<u>158</u>
<u>Dissolved solids:</u>		<u>pH</u>	<u>7.5</u>
<u>Calculated</u>	<u>92</u>	<u>Color</u>	<u>5</u>
<u>Residue on evaporation at 180° C</u>	<u>96</u>		
<u>Hardness as CaCO₃</u>	<u>78</u>		
<u>Noncarbonate</u>	<u>0</u>		

Lab. No. 35628

Field No.

Project

Evaluation of the Holly Site

Summary.--One test hole was drilled near the Holly picnic area at the location shown on the attached map (fig. 7) in March, 1967. It penetrated three good water-bearing zones before drilling was stopped at a depth of 119 feet and was developed into a water well. An 8-hour pumping test was run April 27, 1967, at various discharge rates between 5 and 28 gpm. The maximum yield of the well proved to be about 20 gpm. The water cleared during the test and remained clear to the end of the test. The maximum perennial yield of this well should be about 19 gpm but a pumping rate of 15 gpm would be preferable because of the unexplained drawdown that occurred during the April 27 test when the pumping rate was changed from 19 to 20 gpm. The intake on the permanent pump should be positioned as deep as possible to take advantage of the maximum available drawdown. The chemical quality of the water is excellent; all of the analyzed constituents are present in insignificant quantities.

Results of Test Drilling.--The site of the test hole at the Holly picnic area proved to be the location of an ancient stream channel. Rounded gravel, sand, and clay were found to a depth of about 85 feet. Mixed rounded gravel and angular chert gravel derived from the Fort Payne Formation were found between 85 and 119 feet, the total depth. The test hole did not reach bedrock. Three good water-bearing zones were found in the test hole at depths of 10 to 25 feet, 33 to 38 feet, and 93 to 119 feet. The intervening layers consisted of soft, sticky clay mixed with the gravel described above. This clay isolates the three water zones, and each zone has a different water level. The water level for the 10- to 25-foot interval was about 2 feet below land surface; the water level in the 33- to 38-foot interval was about 18 feet below land surface; the water level in the 93 to 119 foot interval was 25.54 feet below land surface on April 24, 1967.

Samples from the test drilling were not described, because washing during the collecting procedure removed the interstitial clay, leaving only the coarser fractions of each sample.

An electric log (fig. 8) and a gamma-ray log (fig. 9) of the test hole are attached. These logs indicate that there is considerable variation in the clay content of individual beds and that the least clay is present in the 10-to 25-foot water-bearing zone.

The test hole was developed into a water well as it showed promise of amply meeting the water needs at Holly.

The test drilling at Holly generally produced the expected results. The overburden contained more clay than had been anticipated, but the water-bearing zones were also more permeable than had been expected. The anticipated well yield of 75 gpm was overly optimistic but considerably more water could have been obtained, if desired, by screening all three water-bearing zones.

Conclusions from Test Drilling.--There are ample amounts of ground water available near the Holly picnic area. Any of the three water zones in the test hole could have supplied the desired 5 to 10 gpm, and additional water zones may occur at deeper depths. The 93 to 119 foot zone was screened because it was thought to be less subject to contamination than the shallower water zones. If all three zones had been screened, the well would probably have produced about 50 gpm.

The limits of the ancient stream channel at the site of the Holly well are not known with any degree of certainty. Bedrock is exposed in the old gravel pit 0.1 mile northeast of the Holly well; the limit of the channel in this direction is probably about halfway between the well and the gravel pit. The seismic survey 0.1 mile southwest of the well did not find any evidence of bedrock to a depth of 85 feet. Therefore, the channel is at least 0.15 mile wide and probably trends northwest across Cypress Creek valley.

Several alternatives are possible if additional expansion of the water supply at Holly should be necessary in the future: (1) Another well screened in either the 10- to 25-foot zone or the 33-to 38-foot zone could be drilled next to the present well. Because of the intervening clay layers, there would be little or no interference between wells. (2) Another well screened in the 93- to 119-foot zone could be drilled at almost any desired location northwest or southwest of the present well. In this case the well should be some distance from the present well to prevent excessive drawdown caused by interference between wells but not so far away that it would miss the old stream channel. (3) A test hole in any location could be drilled to determine the water-bearing potential of the over-burden and bedrock below the depth of the present well.

Well Completion.--The Holly test hole was completed as a water well by setting a section of 4-inch diameter well screen in the water-bearing zone at the bottom of the hole. Other completion work, as specified by the Park Service in the drilling contract was also performed by the contractor.

Results of Pumping Test.--The Holly well was pumped for a period of 8 hours on April 27, 1967. An electrically driven submersible pump installed by the drilling contractor was used for the test. The pumping rate was controlled by means of a gate valve on the discharge pipe, and pump discharge was measured by using a stopwatch to time the filling of 5-gallon and 55-gallon containers. Water level measurements were made with an electric tape. Attached are a record of the water-level measurements and graphical plots of the water levels (fig. 10) and pumping rates (fig. 11).

As happened in the Glenrock test, considerable difficulty occurred in holding the pumping rate constant during the Holly test. The fluctuations in pump discharge produced corresponding water-level changes, and the lines on the graphical plots represent average conditions for each portion of the test.

Several conditions caused difficulty in analyzing the data from the April 27 pumping test. The main problem was the large drop in water level that resulted when the pumping rate was increased from 19 to 20 gpm. The only explanation that can be offered is that the 20 gpm rate is very close to the maximum yield of the well. This phenomenon has been observed before in a few other wells but is not understood. The second problem was one of evaluating the effects caused by well development during the test and the effects of varying conditions in the portion of the aquifer affected by the pumping. To aid in this evaluation the Holly Well was pumped again with USGS equipment on May 24 and May 26, 1967. The well was pumped for short periods of time on these days at rates of 2, 5, and 10 gpm. The resulting data is not included in this report but was used in the interpretations of well performance below.

The theoretical drawdowns inside and outside the Holly well after 60 minutes of pumping at rates up to 19 gpm are shown on figure 12. This curve may be used to estimate the drawdown in the Holly well at any rate from 0 to 19 gpm after 60 minutes of pumping. Pumping water levels can be predicted from figure 12 by adding the drawdown shown to the water level prior to pumping.

The theoretical drawdown of water level in the Holly well at pumping rates of 5, 10, 15 and 19 gpm for periods of time from 20 to 480 minutes is shown in figures 13 and 14. Because a change in aquifer characteristics some distance from the pumping well causes a decreasing rate of drawdown after 5 to 12 minutes of pumping, the curves should not be extrapolated for periods of time less than 20 minutes. The probability of accurate drawdown predictions may decrease for extrapolations of continuous pumping for longer periods of time.

The chemical analysis (follows) of a water sample collected at the end of the pumping test shows insignificant concentrations of all constituents that were analyzed. The hardness and dissolved-solids concentration are very low in comparison with other wells in the same formation.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER ANALYSIS

2GW

Location On the Natchez Trace Parkway, Tennessee County Wayne
 Source Well No. 350400N-0874801.1 (Wn:B-4) Depth (ft) _____ Diam (in.) _____
 Cased to (ft) _____ Date drilled _____ Point of coll. Holly Picnic Area
 _____ Owner National Park Service
 Treatment _____ Use _____
 WBF Ft. Payne WL _____ Yield _____
 Temp (°F) 59 Appear. when coll. Clear
 Collected April 27, 1967 By R. H. Bingham
 Remarks _____

	ppm	epm		ppm	epm
Silica (SiO ₂)	8.6		Bicarbonate (HCO ₃)	17	0.28
Aluminum (Al)			Carbonate (CO ₃)	0	.00
Iron (Fe)	.05				
Manganese (Mn)	.05		Sulfate (SO ₄)	1.6	.03
			Chloride (Cl)	.5	.01
			Fluoride (F)	.0	.00
Calcium (Ca)	3.2	0.16			
Magnesium (Mg)	.4	.03	Nitrate (NO ₃)	.1	.00
Sodium (Na)	1.0	.04			
Potassium (K)	.3	.01			
Total		.24	Total		.32

	ppm		
		Specific conductance (micromhos at 25° C)	31
Dissolved solids:		pH	6.4
Calculated	24	Color	2
Residue on evaporation at 180°C	24		
Hardness as CaCO ₃	10		
Noncarbonate	0		

Lab. No. 35627

Field No.

Project

Conclusions from Pumping Test.--The maximum yield of the Holly well was about 20 gpm at the time of the pumping test on April 27. Although the pumping test was made at a period of time when the water table was near its annual peak, a drop in water level during the summer and fall probably will have little effect on the maximum yield of the well. Ample drawdown is available to take care of any drop in the water table.

It would be advisable to pump the Holly well at slightly less than the maximum rate. As mentioned previously, the conditions that caused the large drop in water level for a change in pumping rate from 19 to 20 gpm are not well understood. A pumping rate of 15 gpm should be safe.

LS4-CBL

November 7, 1958

Memorandum

To: Regional Director, Region One
From: Chief, Water Resources Section
Subject: Mississippi Appropriative Water Laws and Proposed Filings
for Hatches Trace

The memorandum of October 14 from Mr. Ludgate suggested that both copies of Form 56-1, Claim for the Establishment of Surface Water Rights were sent to your office, and both Forms 58-1, Application for Permit were sent EODC with copies of my memorandum of October 8 to you. We forwarded photostat copies of Form 58-1 to you with memorandum of October 21. During the Southeastern Water Resources Conference in Miami on October 29-31, I obtained an extra copy of each form and an extra copy of Facts About Mississippi Water Resources, which I gave to Mr. Kiener.

With my memorandum of October 8 I also sent you and EODC each a copy of a one page set of instructions Procedures for Obtaining a Permit to Appropriate the Public Waters of the State of Mississippi, if they were not inadvertently both attached to the copy of the memorandum for one office. Please advise if you did not receive that sheet, of which no copies were available in Miami. The second item gave the only instructions for the preparation of the map to support the filing.

From the above instruments and the discussion at Miami, it appears that we are only concerned with the establishment of rights to the use of surface water at Hatches Trace, or any other area in Mississippi, at this time. We do not have to establish rights to the use of well water. According to Mr. Kiener, most water supplies are from wells, or from adjacent city supplies. Accordingly, the number of filings, with supporting maps, which we show now make, are not numerous. However, the instructions refer to maps showing "points of diversion or withdrawal of water", and "withdrawal" normally refers to water pumped from a well.

I suggest that each area in Mississippi supply a list of all water systems, with indication of whether the sources are municipal supplies, surface diversions, or wells. Each Superintendent, or the Park Engineer, should also supply estimates of the costs of surveys and drafting needed to prepare data for the proper Form 56-1 or 58-1, and to complete the supporting maps. These estimates should be in form suitable for work order under Account 14X1035 (0343) General Ledger Account 102.4, with separate estimates for work for surface and groundwater claims.

SIGNED

A. van V. Dunn
Chief, Water Resources Section

Copy to: Chief, EODC
Mr. Dunn

AvVDunn:lct

JACK W. PEPPER
WATER ENGINEER

C. W. STEADMAN
AGRICULTURAL ENGINEER



BOARD OF WATER COMMISSIONERS
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INTERIOR DEPT.

OCT 9 - 1958

SOLICITOR

September 10, 1958

Mr. L. W. V. [unclear]
Chief, Water Resources Section
U. S. Department of the Interior
National Park Service
Washington 25, D. C.

Dear Mr. [unclear]:

Under separate cover we are sending you four copies of "Facts About Mississippi's Water Resources". This report contains a copy of the Inter-Rights Law and gives some of the activities of this Board during the two years that it has been in existence.

We are also sending copies of Form 56-1, Claim Sheet and Form 58-1, Application for Permit. Persons who actually used surface water prior to April 1, 1958 should claim their right on Form 56-1. Any additional uses (except Domestic) proposed after April 1, 1958 must first receive a permit. Applications for permits are made on Form 58-1.

If we can be of further service, please do not hesitate to call on us.

Sincerely yours,

Jack W. Pepper
Jack W. Pepper
Water Engineer

B. J. Lee
9/18
Sander #18115
Garrett A. [unclear]
Files

Page 1

Docket Information

Number of Documents in Docket 65

Documents Dated from 9/10/1958 to 10/15/1967

Docket Compiled: 5/27/2011