



WATER-RIGHT DOCKET

Buffalo National River

Docket No: 18

STEEL CREEK X WELL

Supporting Hydro Data

05-21-1981: letter regarding development concept plans -- steel creek, lost valley, and buffalo river; may 21, 1981

RECEIVED
NATIONAL PARK SERVICE
WASHINGTON OFFICE

MAY 23 9 42 AM '81

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MAY 21 1981

*Meq: file
Please place
in Buffalo Riv.
Wak Riv. file
Cons. file*

Memorandum

To: Manager, Denver Service Center
Attention: Assistant Manager, Southeast/Southwest Team
Bob Budz, Chief, Branch of Design

From: Acting Associate Regional Director, Park Operations, SWR

Subject: Development Concept Plans - Steel Creek-Lost Valley,
Buffalo National River

In response to the U. S. Geological Survey's memorandum dated January 23, 1981 (copy enclosed), the production rates specified on page 71 of the Development Concept Plan for Steel Creek-Lost Valley at Buffalo National River were the driller's estimate based on "blow out" capacities.

Analyses of the driller's log suggest that water is entering the wells through secondary openings (fractures, joints, or solution channels) intercepted by the well. In all cases, the static water level measured was above the first reported zone which classifies the wells as non-flowing artesian types.

Field work, completed by representatives of the National Park Service in October 1977 and August 1980 including production test of the wells, shows the aquifers are limited (time-drawdown analysis) with the following estimated aquifer characteristics.

<u>Area</u>	<u>Specific Capacitance</u>	<u>Transmissivity</u>
Lost Valley	0.09	46.4
Villines Farmstead	0.43	236
Steel Creek X	0.40	500
Steel Creek (residence)	0.33	150(?)

Recovery (residual-drawdown) analyses indicate that recovery rate is fairly rapid suggesting that all wells will be capable of delivering the total quantity of water needs projected for each development area if each well is equipped with a high and low water cutoff electrical system.

Chemical analyses of waters indicate that minimum water treatment will be required.

2

In accordance with practice, all waters withdrawn from each well will be chlorinated. Bacteriological sampling will be maintained on a continuing basis and at a minimum frequency of one per month. Complete chemical analysis for each water source will be made once every 3 years.

Tables 1 and 2 provide some physical and aquifer characteristic measurements made on each well.

Should you have any questions, please contact Garland Moore of this office at FTS 476-1368.

/s/ Cloyd A. Kump

Enclosure

cc:

Supt., Buffalo w/c of enclosure

Chief, Water Resources Division WASO/497 (Attn: Vic Berte') w/c of enclosure



United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VA. 22092

JAN 26 1981

JAN 23 1981

Memorandum

To: Superintendent, Buffalo National River, National Park Service
Harrison, Arkansas

Through: Assistant Secretary--Energy and Minerals

From: Director, Geological Survey

Subject: Review of proposal/assessment and development concept plan
for Steel Creek-Lost Valley, Buffalo National River, Arkansas

We have reviewed the subject document as requested in a notice of
December 22 from the Regional Director.

The document should identify and describe the aquifers used--at least
by type (e.g., confined, unconfined, or semi-confined; with intergranu-
lar or fracture permeability or with permeability resulting from disso-
lution of carbonate rock). It should address measures taken to ensure
continuing good quality of drinking water for the visiting public (e.g.,
practices in locating and completing wells and periodic water analysis).
Page 71 should specify whether the "flows" mentioned are natural
(artesian) flows or pump capacities.

Hillary C. Oden

for H. William Menard

cc:
AS/EM (2)
Advance, NPS
Gen. Files, MS114, Reston
Dir. Chron.
RB
EGS:LBonham:m1c 1/19/81

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TABLE 1

PHYSICAL DATA OF SELECTED WELLS

	Total Depth (ft) BSL	Diameter (in)	Length casing (ft)	Length grout (ft)
Lost Valley	?	6	?	?
Villines Farmstead	475	6	90	88
Steel Creek X	610	6	102	100
Steel Creek (residence)	477	6	108	106

TABLE 2

AQUIFER CHARACTERISTICS OF SELECTED WELLS

	Total Depth ^{a)} BSC (ft)	Static Water Level Depth		Land Surface ¹⁾ Elevation (ft) msl	Log ²⁾ on File	Analysis ²⁾ on File	Water Bearing Formation	Remarks ⁴⁾
		BTC (ft)	Date Measured					
Lost Valley	?	58.51 73.02	10/12/77 8/02/80	1140	-	X	Boone fm. (Missippian)	Production test 10/12/77 8/02/80
Villines Farmstead	475	93.06	8/05/80	1100	X	X	St. Peter SS, Everton fm. (Ordvician)	Production test 8/05/80
Steel Creek X	610	104.21	8/07/80	1140	X	X	St. Peter SS, Everton fm. (Ordvician)	Production test 8/07/80
Steel Creek (residence)	600	14.13	10/07/77	1010	X	X	St. Peter SS, Everton fm. (Ordvician)	Production test 10/07/77

1) Estimated from U. S. Geological Survey, PONCA quadrangle topographic map.

2) On file in Water Resources - National Park Service, Southwest Regional Office, Santa Fe, New Mexico.

3) Determined from preliminary geologic map by Bush.

4) Production test data on file in Water Resources - National Park Service, Southwest Regional Office, Santa Fe, New Mexico.

Well #3

Drilled by: Harold King Well Drilling Company, Everton, Arkansas
 Date drilled: 10/12/77
 Project Supervisor: Garland Moore, Southwest Region, Water Resources
 Location: Steel Creek Campground Well, Buffalo National River
REPLACES STEEL CREEK X, WELL

Driller's Log

<u>Depth</u>	<u>Description</u>
0'	Dirt clay and gravel
18'	Brown sandstone
23'	Dark brown sand and gravel
30'	Light brown sand
50'	Cave, 10'
60'	Solid rock
98'	4" craves
130'	White sandstone
140'	Dark gray lime
190'	Alternate layers of lime
202'	Water? 28 to 20 g.p.m.
240'	Light gray lime
384'	Water
420'	Quartz water, total 50 to 60 g.p.m.
430'	Light gray lime
510'	Shite sand
540'	Alternate layers of lime
610'	Light gray lime
718'	Water gray lime and gray flint
780'	Light gray and brown lime
790'	Dark gray lime

5 - Joints
 6 1/4" New steel casing - each 21' 2"

46 - 2:50 - 3:05 - 15 min.
 47 - 3:13 - 3:31 - 18 min.
 48 - 3:38 - 3:56 - 18 min.
 49 - 4:11 - 4:29 - 18 min.
 50 - 4:38 - 4:57 - 19 min.
 51 - 5:05 - 4:23 - 18 min.
 52 - 5:31 - 5:51 - 20 min.

75 g.p.m. clear water
 685' clean well
 grouted casing
 44' into solid
 7 to 8' cave 50' to 60'

Well #3 (Observation Well)

Drilled by: Harold King Well Drilling Company, Everton, Arkansas

Date drilled: 10/2/77

Project Supervisor: Garland Moore, Southwest Region, Water Resources

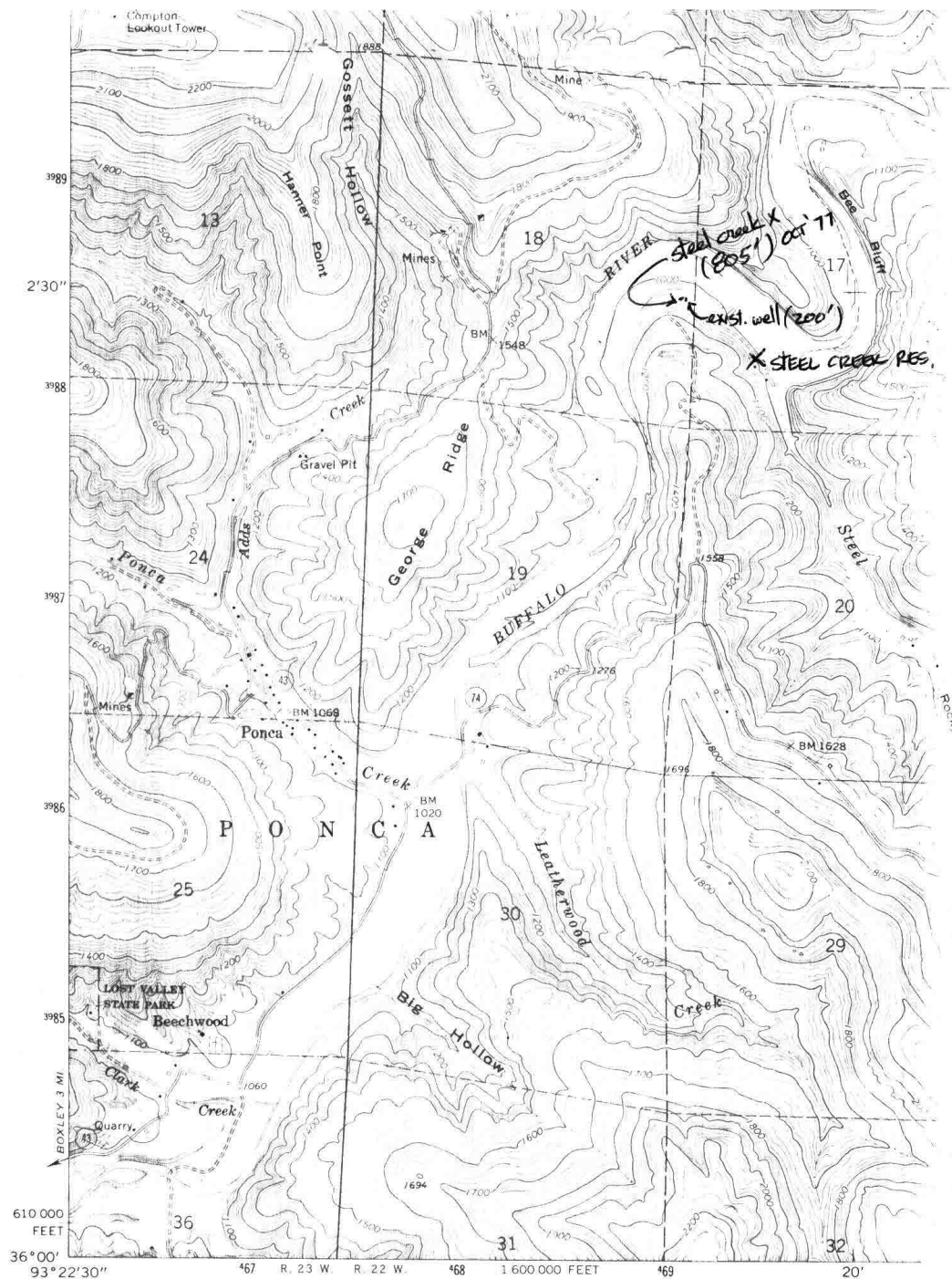
Location: 250 ft. towards Buffalo River from Steel Creek
Campground Well

Driller's Log

<u>Depth</u>	<u>Description</u>
0' to 10'	Dirt and chunk rock
18'	Solid rock gray lime
82'	Dark gray lime
90'	Light gray lime
126'	Broken Formation 2' and mudie water

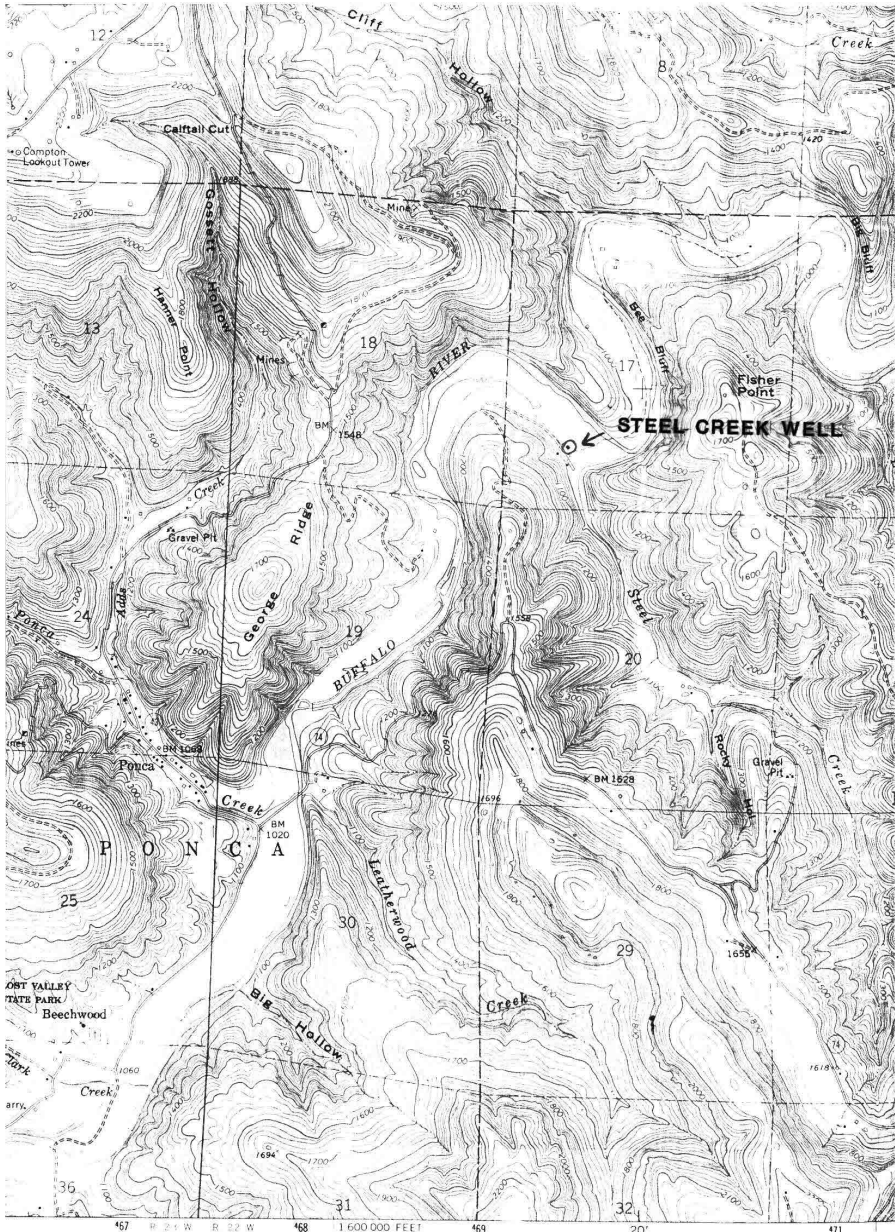
40+g.p.m.

Maps and Miscellaneous Information



Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS

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ed, edited, and published by the Geological Survey
 l by USGS and USC&GS
 apy by photogrammetric methods from aerial
 raphs taken 1964. Field checked 1967
 nic projection. 1927 North American datum
 3-foot grid based on Arkansas coordinate system, north zone
 meter Universal Transverse Mercator grid ticks,
 5, shown in blue
 id dashed lines indicate selected fence and field lines where
 lly visible on aerial photographs. This information is unchecked



THIS MAP COMPLIES
 FOR SALE BY U.S. GEOLOGICAL SURV
 AND BY THE ARKANSAS GEOLO
 A FOLDER DESCRIBING TOPOGR/

Docket Information

Number of Documents in Docket 9

Documents Dated from 10/2/1977 to 5/21/1981

Docket Compiled: 2/10/2011