



WATER-RIGHT DOCKET

Ozark National Scenic Riverways

Docket No: 9

JERKTAIL LANDING WELL

Supporting Hydro Data

07-15-1975: memorandum to denver service center from regional director, midwest region regarding water quality analysis jerktail

RECEIVED
NATIONAL PARK SERVICE
WASHINGTON OFFICE

JUL 21 8 49 AM '75

JUL 15 1975

L54 MWR PW

*file
USGS
OZARK
CONS. file*

Memorandum

To: Manager, Denver Service Center
To the attention of: Midwest Team

From: Regional Director, Midwest Region

Subject: Water Quality Analysis Jerktail Landing,
Ozark National Scenic Riverway

As stated in our memorandum to you on May 7, enclosed is a copy of the chemical analysis of the Jerktail Well. This should be filed with the final report that was supplied with the memorandum of May 7.

Individual parameters, including metals, are well below PHS standards as listed in sections 5.21 and 5.22 of the 1962 PHS Drinking Water Standards. However, the combined mineralization of the water reported (571 mg/l) exceeds the recommended limits (500 mg/l). This office does not consider this serious and we feel the water can be used immediately if it is bacteriologically safe.

(SGD) MERRILL D. BEAL

Regional Director

Enclosure

cc:
Superintendent, OZAR, w/encl
Mr. Berte, Park System Management, WASO, w/encl

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CENTRAL LABORATORY, SALT LAKE CITY, UTAH

PROVISIONAL RECORDS
SUBJECT TO REVISION

WATER QUALITY ANALYSIS
LAB ID # 120026 RECORD # 10290

PROVISIONAL
SUBJECT TO REVISION

SAMPLE LOCATION: JERKTAIL LANDING CAMPSITE WELL
STATION ID: 371353091183600 LAT.LONG.SEQ.:
DATE OF COLLECTION: BEGIN--750425 END-- TIME--0700
COUNTY CODE: PROJECT IDENTIFICATION: 026
DATA TYPE: 2 SOURCE: GROUND WATER GEOLOGIC UNIT:
COMMENTS:

FIELD VALUE USED FOR PH BICARB CARBONATE & COND

ALK, TOT (AS CaCO3)	MG/L	269	NITR. NO2 AS N TOTAL	MG/L	0.00
ARSENIC TOTAL	UG/L	0	NITR. NO3 AS N TOTAL	MG/L	0.08
BARIUM TOTAL	UG/L	0	NITROGEN NH4 ASN TOT	MG/L	0.06
BICARBONATE	MG/L	328	NITROGEN TOT AS N	MG/L	0.68
BORON TOTAL	UG/L	300	NITROGEN TOT AS NO3	MG/L	3.0
CADMIUM TOTAL	UG/L <	10	NITROGEN TOT ORG N	MG/L	0.54
CALCIUM DISS	MG/L	55	NITROGEN TOTKJD AS N	MG/L	0.60
CARBONATE	MG/L	0	NO2 + NO3 AS N TOT	MG/L	0.08
CHLORIDE DISS	MG/L	91	PH		7.5
CHROMIUM TOTAL	UG/L	0	PHOSPHORUS DIS AS P	MG/L	0.01
COD LOW LEVEL	MG/L	9	PHOSPHORUS TOT AS P	MG/L	0.04
COLOR		3	POTASSIUM DISS	MG/L	2.0
CONDUCTIVITY		1000	RESIDUE DIS CALC SUM	MG/L	562
COPPER TOTAL	UG/L <	10	RESIDUE DIS TON/AFT		0.78
FLUORIDE DISS	MG/L	1.4	RESIDUE DIS 180C	MG/L	571
HARDNESS NONCARB	MG/L	41	SAR		2.5
HARDNESS TOTAL	MG/L	310	SELENIUM TOTAL	UG/L	0
IRON DISSOLVED	UG/L	50	SILICA DISSOLVED	MG/L	9.7
IRON TOTAL	UG/L	110	SILVER TOTAL	UG/L <	10
LEAD TOTAL	UG/L <	100	SODIUM DISS	MG/L	100
MAGNESIUM DISS	MG/L	42	SODIUM PERCENT		41
MANGANESE DISSOLVED	UG/L	30	SULFATE DISS	MG/L	99
MANGANESE TOTAL	UG/L	30	WATER TEMP (DEG C)		15.5
MERCURY TOTAL	UG/L	0.0	ZINC TOTAL	UG/L	200

CATIONS

	(MG/L)	(MEQ/L)
CALCIUM DISS	55	2.745
MAGNESIUM DISS	42	3.455
POTASSIUM DISS	2.0	0.052
SODIUM DISS	100	4.350
TOTAL	---	10.601

ANIONS

	(MG/L)	(MEQ/L)
BICARBONATE	328	5.376
CARBONATE	0	0.000
CHLORIDE DISS	91	2.568
FLUORIDE DISS	1.4	0.074
SULFATE DISS	99	2.062
TOTAL	---	10.078

PERCENT DIFFERENCE = 2.53

L54 MWR PW

MAY 14 1975

file
USGS
OZARK
COWES. Nk
MAY 14 1975
S. J. M. '75

Memorandum

To: Manager, Denver Service Center
To Attention of: Midwest Team

From: ^{Acting} Regional Director, Midwest Region

Subject: Test Results Water Supply Jerktail Landing,
Ozark National Scenic Riverway

Enclosed for your use is a copy of the test results for the water supply at Jerktail Landing, Ozark National Scenic Riverway. Please note that the drawdown is extreme at 30 or more gallons per minute. We would suggest a pumping rate of no more than 25 gpm. Even at this rate the pump should be set at about the level of the test pump, namely minus 365 feet.

In our reply to the United States Geological Survey we requested, as indicated last year, that all heavy metals and trace elements be included in the water analysis. This information will be transmitted to you as quickly as it is received.

(SGD) JAMES L. RYAN

^{Acting} Regional Director

Enclosure

cc:

Superintendent, OZAR

Mr. Berte', Park System Management, WASO

RECEIVED
NATIONAL PARK SERVICE
WATER DIVISION OFFICE

JERKTAIL WELL

MAY 16 9 14 AM '75

Shannon County
29N-3W-sec.6

Notes by W. S. Oakes

The Jerktail well was started April 2, 1975, and the pumping test was completed April 25, 1975. The well was drilled (6 in) to 400 feet and did not reach the Potosi Dolomite.

The upper 40 feet was mud and boulders (driller's log); hard rock was encountered at 40 feet.

The driller's log shows a bad mud seam at 148 to 152 feet, from which there was no return of rock samples to the surface. The hole was reamed to 10 inches, 40 feet deep to set 10-inch surface pipe; then drilling was continued to the total depth, 400 feet.

From examination of the rock cuttings by the Geological Survey it was determined the casing should be set at 180 feet (30 ft below the mud seam at 152 ft).

The 180 feet of 19-pound welded casing was set April 9, 1975. The well was cemented with 64 (100-lb) bags of cement pumped into the well, good circulation was obtained, and cement appeared at the surface. Static water level before grouting was 43.7 feet below land surface and after grouting was 58.9 feet.

The bridge was drilled out, the well was surged, flushed, blown, and developed the length of the open hole and the yield of the well was estimated to be 20-30 gpm, April 14, 1975.

The 10-hp test pump was set to 365 feet April 23, 1975. The maximum capacity test began at 1100 April 24, 1975 at 20 gpm. Yield was increased in steps to 42 gpm at 1210; the pump was shut down for 3 hours. During this time the water level returned to near its original level.

The long test was started at 1509 hours on the same day and continued for 17.5 hours.

The pumping rate was maintained at approximately 25 gpm. Total drawdown was 220 feet and the specific capacity was 0.111 gpm per foot of drawdown.

Water samples were taken at 0700 just before the pump was shut down.

Recovery was measured for 1 hour on the completion of the test.

It is recommended that the pumping rate should be no greater than 25 gpm. The conductance of the water is unusually high, 1,000 micromhos. The analyses may shed some light on nature of the mineralization of the water.

JERKTAIL CAMPSITE WELL

Driller's Log April 4, 1975 at 1600 hours

Log:

0 -----	40-----	Mud and boulders
40-----	50-----	Rock
50-----	52-----	Mud seam
52-----	57-----	Rock
57-----	60-----	Mud seam
60-----	80-----	Rock
80-----	?-----	Last return
148-----	152-----	Mud seam broken - caving
152-----	220-----	Rock no return
220-----	240-----	Rock
240-----	264-----	Rock
264-----	265-----	Small opening
265-----	320-----	Rock

Static water level 43.7 below land surface.

Note:--Instructed the driller to ream the upper 40 feet of the hole and install 10-inch surface pipe, to stop the residual material from caving down hole.

The second set of samples 40 feet - 180 feet was collected during the reaming of the hole; these samples were of good quality and representative of the zone.

Jerktail Campsite Well - Recovery			
Date	Time	min	Depth water
4/25/1975	0841	1	251.90
		2	226.65
		3	217.10
		4	209.35
	0845	5	201.15
		6	193.55
		7	186.50
		8	183.00
		9	181.65
		10	179.20
	0852	12	170.45
		14	163.50
		16	156.55
		18	149.55
		20	143.50
		22	139.65
		24	135.55
		25	133.80
		30	126.15
		35	120.00
	0940	40	115.70
		45	111.75
		50	108.30
		60	103.10

Jerktail Campsite Well - STEP Test.						
April 24, 1975						
Date	Time	Min	Depth To Water feet	Yield Gpm	Drawdown	Remarks
4/24/75	1105	0	58.9	0	0	Below m.p.-2.5 ft.
		1	76.75		17.85	
		2	84.40		25.50	
		3	95.50	20	36.60	
	1110	4	100.40		41.50	
				35		Increased Rate
		5	104.70		45.80	
		6	110.60		51.70	
		7	118.65		59.75	
		8	123.75		64.85	
		9	127.00		68.10	
	1115	10	130.05	12	71.15	
				20		Reduced Rate
		11	133.60		74.70	
		12	144.45		85.55	
		14	145.00	18	86.10	Reduced Rate
		16	152.00		93.10	
		17	157.10		98.20	
		18	161.40		102.50	
		19	166.50	20	107.60	Increased Rate
		20	182.30		123.40	
		21	183.00		124.10	
	1135	30	218.20	40	159.30	Increased Rate
		35	227.95		169.05	
		37	250.00	32	191.10	Reduced Rate
		38	255.80		196.90	
	1145	40	266.80		207.90	
		45	300.00	42	241.10	Increased Rate
		50	326.40	40	267.50	Reduced Rate
	1200	55	340.00	35	281.10	Reduced Rate

Jerktail campsite Well - Pumping Test.

Date	Time	Min	Depth Water	yield GPM	Draw Down	Remarks
4/24/1975	1509	0	66.60	0	0	
		1	132.10	30	65.50	
		2	155.00		88.40	
		3	170.05		103.45	
		4	177.65		111.05	
		5	178.80		112.20	
		7	183.25	30	116.65	
		8	184.60		118.00	5/10 sec.
		9	198.90		132.30	
	1519	10	204.60		138.00	
		12	213.45		146.85	
		14	221.10		154.50	
		17	232.20	30	165.60	
		21	245.85		179.25	
		25	256.60		190.00	5/10 sec.
		29	268.00		201.40	
		36	281.85	30	215.25	
	1600	51	308.00		241.40	$T=15.5^{\circ}C; k=1000$
	1605	56	303.40	25	236.80	Reduced Rate
		66	304.95		238.35	5/12
		78	300.90		234.30	Tape hung up.
	1635	86	302.10		235.50	
		96	304.45		237.85	$T=15.5^{\circ}C; k=1000$
		106	307.95		241.35	5/12
		121	310.80		244.20	
		131	310.40		243.80	
		141	309.80		243.20	Adjusted Discharge
		151	319.20		252.60	5/12 sec.
		161	319.60		253.00	
	1810	181	318.96		252.36	

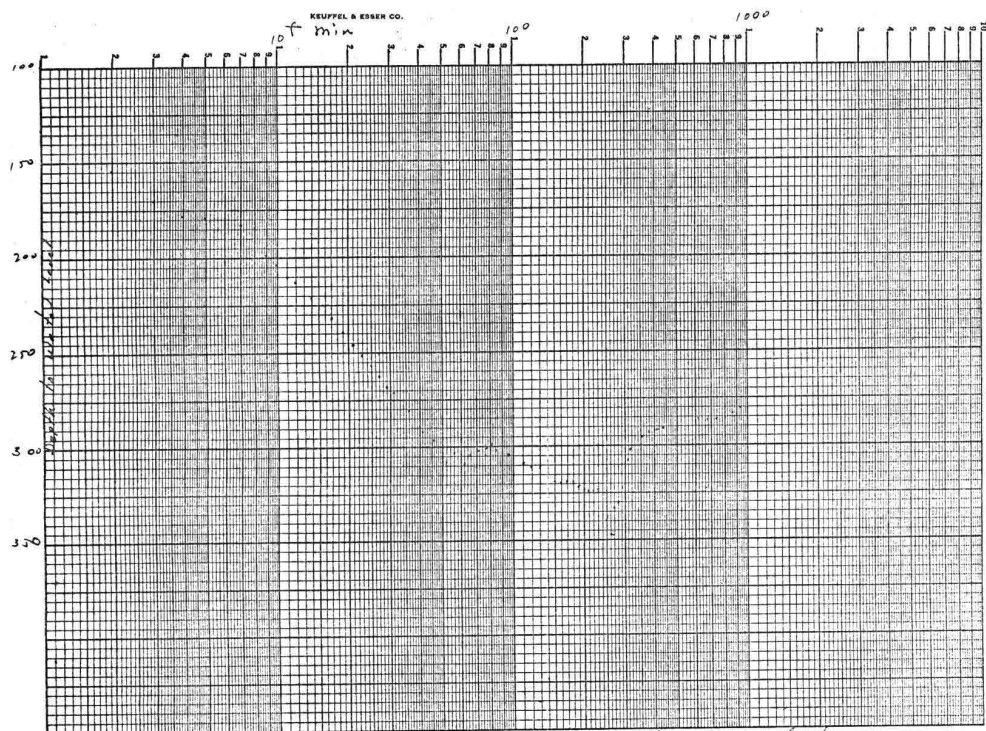
2.

Jerktail Campsite Well - Step Test (continued)

Date	Time	min	Depth To water feet	yield Gpm	Dawdown	Remarks
4/24/75	1205	60	341.20		282.30	
		62	341.60		282.70	Broke suction
	1210	65	340.00	30	281.10	
	1210					Pump shut down Recovery
	1245	35	100.50			
	1308	58	85.00			
	1320	70	80.00			
	1329	79	78.00			
	1340	90	75.00			
	1347	97	73.80			
	1400	110	72.00			
	1410	120	70.70			
	1430	140	68.60			
	1440	150	67.60			
	1450	160	67.10			
	1455	165	66.60			

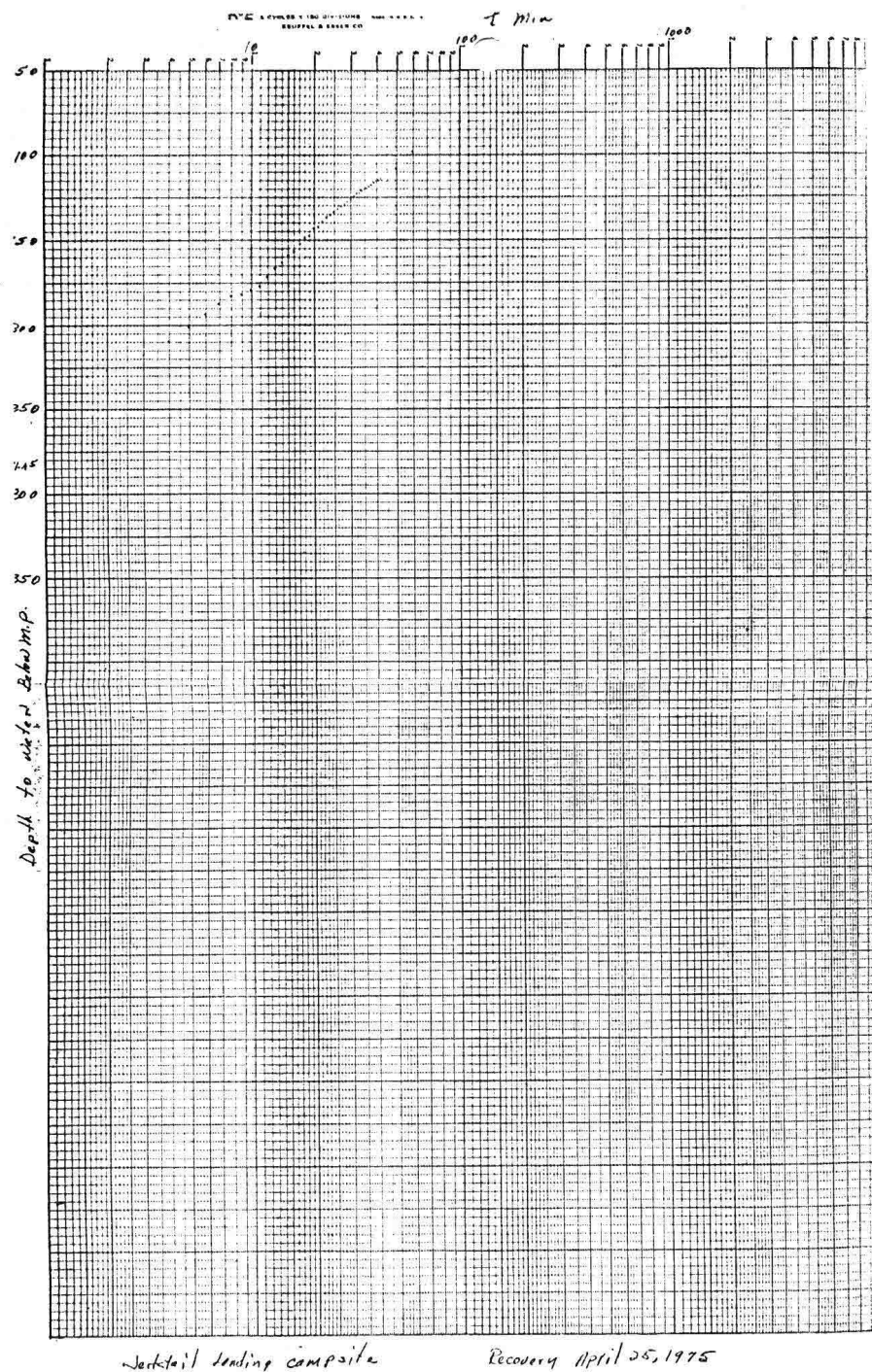
Jerktail Campsite well - Pumping Test.

Date	Time	Min	Depth Water	yield Gpm	Draw down	Remarks
4/24/1975	1820	191	324.00		257.40	Adjusted Discharge
		201	324.40		257.80	
	1850	221	324.05		257.45	Adjusted Discharge
		231	323.60		257.00	5/12 sec 25 Gpm
	1920	251	339.10		272.50	
		261	345.60		279.00	
		271	333.55	21.5	266.95	5/14 21.5
		286	330.30	25	264.70	5/12
	2010	306	307.30		230.70	"Meter slow" - not
		316	302.20		235.60	reading Discharge
		341		5/15 = 20		5 Gpm off. Correct 14 - Resorted
	2100	356	295.00		228.40	to 30 Gal can.
	2130	386	293.00		226.40	Gpm = $Q \times 60$
	2200	416	292.15		225.55	10/28
	2230	446	290.90		224.30	
4/25/1975	0130	626	286.75	20.2	220.15	Gpm = $\frac{32 \times 60}{85 \text{ sec.}}$
	0230	686	287.55		220.95	
	0330	746	287.10	20.3	210.50	37/80
	0550	886	283.75	21	217.15	
	0650	946	281.60		215.00	samples collected T=15°C; k=1000
	0750	1006	281.40	24	214.80	37/80
	0840	1056	281.45		214.85	
			Pump off.			



Jacktail composite, pump test 4/24.25/75

Wenktaill Landing Well. Step Test 4/24/75



Other Supporting Information

Form Approved
OMB No. 158-R0116

U.S. ENVIRONMENTAL PROTECTION AGENCY WATER PROGRAM OPERATIONS (WH-450) WASHINGTON, D.C. 20460		INVENTORY OF PUBLIC WATER SUPPLIES (See instructions on the reverse)		KEY IDENTIFICATION NUMBER 1 14															
NAME OF WATER UTILITY 15 <u>USNPS OZARK NATL SCENIC RIVERWAY</u> 46																			
ADDRESS 47 <u>PO BOX 448</u> 76																			
CITY 77 <u>VIAM BUREN</u> 101																			
COUNTY 102 <u>SHANNON</u> 126																			
STATE 127 <u>MO</u> 128		ZIP 129 <u>63965</u> 133		PHONE AREA CODE 134 <u>314</u> 136															
		TELEPHONE NUMBER 137 <u>3234236</u> 143																	
UTILITY OWNER (Check one) (144)																			
☐ MUNICIPALITY, DISTRICT, ETC. 1 ☐ INVESTOR 2 ☒ FEDERAL 3 ☐ STATE 4 ☐ OTHER (Specify in remarks) 5																			
RETAIL POPULATION SERVED 145 <u>800</u> 153		NUMBER SERVICES 154 <u>10</u> 160		NUMBER METERS 161 <u>1</u> 167															
NUMBER OF WHOLESALE CUSTOMERS 168 <u>0</u> 170																			
PREDOMINANT CHARACTERISTIC(S) OF YOUR SERVICE AREA																			
COMMUNITY COMPANY TOWN RECREATION AREA MOBILE HOME PARK INSTITUTION SCHOOL OR COLLEGE MOTEL RESTAURANT SERVICE STATION CAMPGROUND PICNIC AREA LODGE WARRINA SKI RESORT BATHING AREA VISITOR CENTER HIGHWAY SAFETY REST AREA AIRPORT OTHER (Specify in remarks)																			
☒ ☐ ☐ ☒ ☒ ☒ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐																			
CAPACITIES																			
PRODUCTION, NORMAL OPERATION (Gal/Day) 190 <u>35000</u> 199		EMERGENCY POWER ONLY (Gal/Day) 200 <u>0</u> 209																	
DISTRIBUTION STORAGE, GRAVITY FLOW (Gallons) 210 <u>0</u> 219																			
PRODUCTION																			
AVERAGE DAY (Gal/Day) 220 <u>15000</u> 229		MAXIMUM DAY (Gal/Day) 230 <u>25000</u> 239																	
DATE FORM COMPLETED 240 <u>7509</u> 243																			
SOURCE																			
			INTAKE LOCATION		MARK (One only)		TREATMENT				LAB - CONTROL								
			LATITUDE LONGITUDE																
0 1 <u>R</u> <u>WELL</u>			37 14 06		☒														
A 244 91 18 42																			
0 2 <u>R</u>																			
A 243																			
0 3 <u>R</u>																			
A 345																			
0 4 <u>R</u>																			
A 351																			
REMARKS (Up to 50 characters) (783 - 832) <u>* INCLUDES AVERAGE DAILY SUMMER VISITATION</u>																			
<u>JERKTAIL LANDING</u>																			

EPA Form 7500-11 (9-74) REPLACES EPA-16 (CIN) WHICH IS OBSOLETE.

INSTRUCTIONS

1. **IDENTIFICATION NUMBER** – This is a 14 digit code number that geographically identifies the location of the utility. It will be filled in by EPA personnel.
2. **NAME OF WATER UTILITY** – This is the complete, official name of the utility.
3. **ADDRESS** – This is the mailing address of the utility (*this may be but does not necessarily have to be the physical location of the treatment plant*).
4. **CITY, COUNTY, STATE** – This is the city, county and state of the mailing address of the utility.
5. **ZIP CODE** – This is the zip code of the mailing address of the utility.
6. **IS THE UTILITY OWNED BY A MUNICIPALITY, DISTRICT, INVESTOR OWNER, STATE OR OTHER** (*specify in remarks*) – Place an **X** in the box that describes the type of ownership of the utility.
7. **RETAIL POPULATION SERVED - NUMBER SERVICES, METERS** – Fill in these boxes with the most current information available. Do Not include the population served by water utilities that purchase water from you wholesale.
8. **NUMBER OF WHOLESALE CUSTOMERS** – In cases where water is sold to wholesale customers (*customers who buy water from you for resale*) fill in the boxes with the number of this type of customer.
9. **WHAT IS THE CHARACTERISTIC(S) OF YOUR SERVICE AREA?** – Place an **X** in the boxes necessary to describe the predominant characteristic(s) of your service area.
10. **CAPACITIES** – Fill in these boxes with the most current information available. Report all storage that does not have to be pumped into the system, whether it is elevated or ground storage.
11. **PRODUCTION** – Fill in these boxes with the most current information available.
12. **DATE FORM COMPLETED** – Fill in the numeric designation of the month (01 - 12) and the last two digits of the year when the form was completed.
13. **REMARKS** – Additional information can be provided (*maximum of 50 Alpha and/or Numeric characters*).
14. **SOURCE AND TREATMENT** – Write in the spaces below Name the name of the river, lake, other utility, well field, or other source from which the supply of water is taken. Circle "R" for regular source or "A" for auxiliary source. If more than one source is used, use separate lines for each source. If more than four sources are used, then list on a second form starting with 05. Place an **X** in the block(s) for the types of treatment rendered the raw water. Mark each source separately.
15. **INTAKE LOCATION** – Latitude and Longitude of intake.
16. **LABORATORY CONTROL** – Place an **X** in the box for the type of types of laboratory analyses made at the treatment facility. Leave these blocks blank if no laboratory analyses are performed.

☆U. S. GOVERNMENT PRINTING OFFICE: 1974-625-309/72 3-1

Docket Information

Number of Documents in Docket 16

Documents Dated from 4/4/1975 to 7/15/1975

Docket Compiled: 6/7/2011