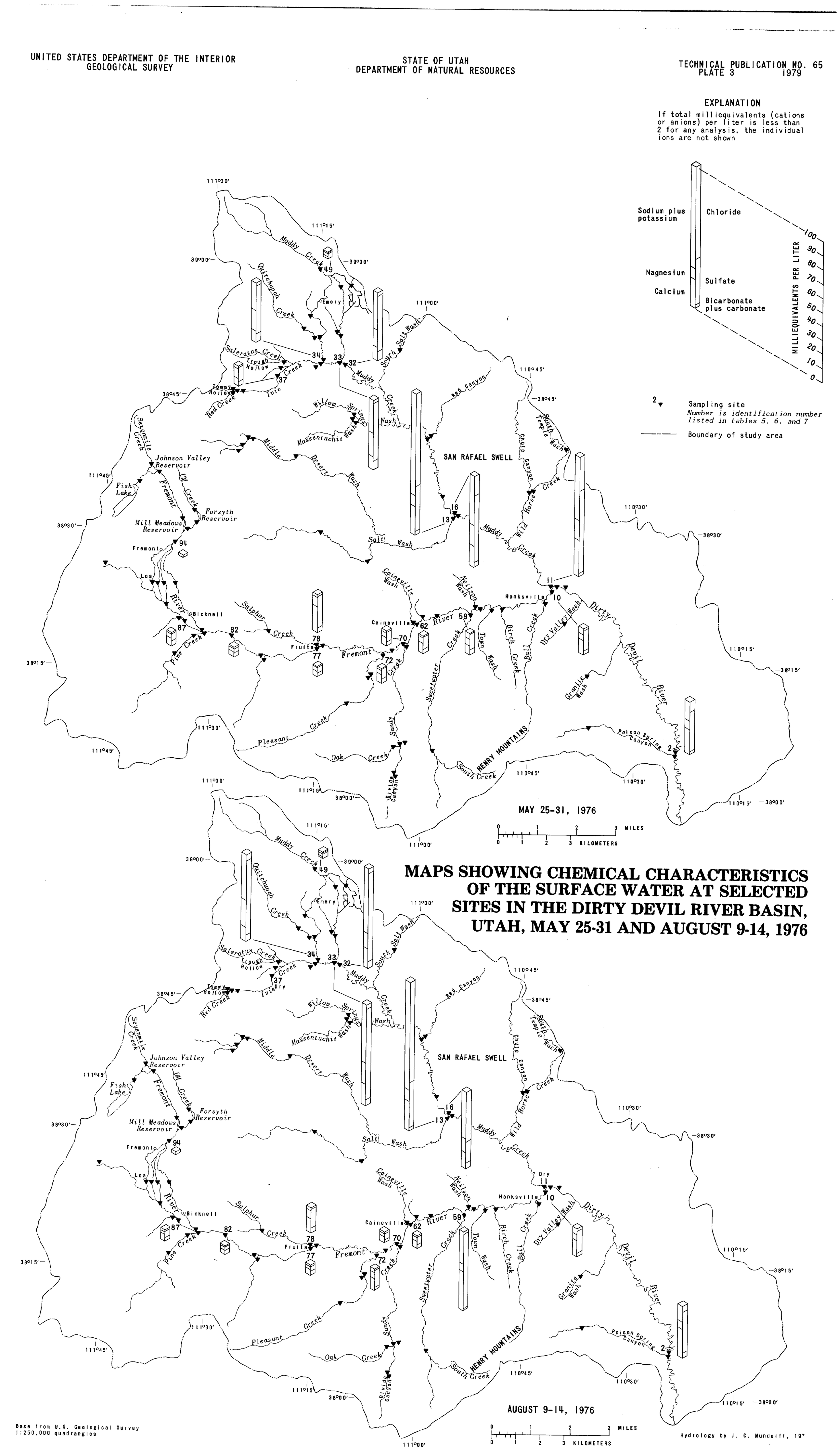

MAPS SHOWING CHEMICAL CHARACTERISTICS OF THE SURFACE WATER AT SELECTED SITES IN THE DIRTY DEVIL RIVER BASIN, UTAH, MAY 25-31 AND AUGUST 9-14, 1976

Base from U.S. Geological Survey
1:250,000 quadrangles

Hydrology by J. C. Mundorff, 197

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES

Technical Publication No. 65

RECONNAISSANCE OF CHEMICAL QUALITY OF SURFACE WATER AND FLUVIAL SEDIMENT IN THE DIRTY DEVIL RIVER BASIN, UTAH

by

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Prepared by
the United States Geological Survey
in cooperation with
the Utah Department of Natural Resources,
Division of Water Rights,
and the U.S. Environmental Protection Agency

1979

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CONVERSION FACTORS: INCH–POUND TO METRIC

Most values are given in this report in inch-pound units followed by metric units. The conversion factors are shown to four significant figures. In the text, however, the metric equivalents are shown only to the number of significant figures consistent with the accuracy of the value in inch-pound units.

Inch-pound Units (Multiply)	Abbreviation	(by)	Metric Units (to obtain)	Abbreviation
Acre		0.4047	Square hectometer	hm^2
		.004047	Square kilometer	km^2
Acre-foot	acre-ft	.001233	Cubic hectometer	hm^3
		1233	Cubic meter	m^3
Cubic foot per second	ft^3/s	.02832	Cubic meter per second	m^3/s
Foot	ft	.3048	Meter	m
Mile	mi	1.609	Kilometer	km
Square mile	mi^2	2.590	Square kilometer	km^2
Ton (short)		.9072	Metric ton	t
Inch	in.	25.4	Millimeter	mm
		2.54	Centimeter	cm

Chemical concentration and water temperature are given only in metric units. Chemical concentration is given in milligrams per liter (mg/L). For concentrations less than 7,000 mg/L, the numerical value is about the same as for concentrations in the inch-pound unit, parts per million. Chemical concentration in terms of ionic interacting values is given in milliequivalents per liter (meq/L). Meq/L is numerically equal to the inch-pound unit equivalents per million.

Water temperature can be converted from degrees Celsius (°C) to degrees Fahrenheit (°F) by use of the following table:

TEMPERATURE–CONVERSION TABLE

Temperatures in °C are rounded to nearest 0.5 degree. Underscored temperatures are exact equivalents. To convert from °F to °C where two lines have the same value for °F, use the line marked with an asterisk (*) to obtain equivalent °C.

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
-20.0	-4	-10.0	14	0.0	32	10.0	50	20.0	68	30.0	86	40.0	104
-19.5	-3	-9.5	15	+0.5	33	10.5	51	20.5	69	30.5	87	40.5	105
-19.0	-2	-9.0	16	1.0	34	11.0	52	21.0	70	31.0	88	41.0	106
-18.5	-1	-8.5	17	1.5	35	11.5	53	21.5	71	31.5	89	41.5	107
-18.0 *	0	-8.0 *	18	2.0 *	36	12.0 *	54	22.0 *	72	32.0 *	90	42.0 *	108
-17.5	0	-7.5	18	2.5	36	12.5	54	22.5	72	32.5	90	42.5	108
-17.0	1	-7.0	19	3.0	37	13.0	55	23.0	73	33.0	91	43.0	109
-16.5	2	-6.5	20	3.5	38	13.5	56	23.5	74	33.5	92	43.5	110
-16.0	3	-6.0	21	4.0	39	14.0	57	24.0	75	34.0	93	44.0	111
-15.5	4	-5.5	22	4.5	40	14.5	58	24.5	76	34.5	94	44.5	112
-15.0	5	-5.0	23	5.0	41	15.0	59	25.0	77	35.0	95	45.0	113
-14.5	6	-4.5	24	5.5	42	15.5	60	25.5	78	35.5	96	45.5	114
-14.0	7	-4.0	25	6.0	43	16.0	61	26.0	79	36.0	97	46.0	115
-13.5	8	-3.5	26	6.5	44	16.5	62	26.5	80	36.5	98	46.5	116
-13.0	9	-3.0	27	7.0	45	17.0	63	27.0	81	37.0	99	47.0	117
-12.5	10	-2.5	28	7.5	46	17.5	64	27.5	82	37.5	100	47.5	118
-12.0 *	10	-2.0 *	28	8.0 *	46	18.0 *	64	28.0 *	82	38.0 *	100	48.0 *	118
-11.5	11	-1.5	29	8.5	47	18.5	65	28.5	83	38.5	101	48.5	119
-11.0	12	-1.0	30	9.0	48	19.0	66	29.0	84	39.0	102	49.0	120
-10.5	13	-0.5	31	9.5	49	19.5	67	29.5	85	39.5	103	49.5	121

RECONNAISSANCE OF CHEMICAL QUALITY OF SURFACE WATER AND FLUVIAL SEDIMENT IN THE DIRTY DEVIL RIVER BASIN, UTAH

by

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ABSTRACT

The water-quality reconnaissance in the Dirty Devil River basin, Utah, covered an area of about 4,300 square miles (11,100 square kilometers). Data were obtained by the U.S. Geological Survey one or more times at 104 sites during the period July 1975 to September 1976; and during visits to 34 other sites during the same period, the streams were dry.

Precipitation was below normal in both 1975 and 1976 at weather stations at Emery and Capitol Reef National Park and was above normal in 1975 and below normal in 1976 at Hanksville. Streamflow was near normal in the Dirty Devil River basin in 1975 and was much below normal in 1976.

Rocks that crop out in the basin range in age from Permian to Quaternary. The Carmel Formation of Jurassic age and various members of the Mancos Shale of Cretaceous age are major contributors of dissolved solids to streams in the basin.

Major diversions are made from Muddy Creek for irrigation in the Emery area. Downstream reaches of Muddy Creek commonly receive only seepage and irrigation return flow. Three major irrigation diversions near Fremont commonly remove nearly all the flow from the upper Fremont River. Major flow accretions to the Fremont River in Bicknell Bottoms furnish water for additional diversions along the remaining length of the Fremont River.

The most pronounced change in chemical characteristics of water in streams in the Dirty Devil River basin occurs in a 15-mile (24-kilometer) reach of Muddy Creek between the major diversions 5 miles (8 kilometers) north of Emery and the point at which Highway I-70 crosses Muddy Creek. Dissolved-solids concentrations at the diversions are generally less than 300 milligrams per liter and at the lower end of the reach are commonly greater than 2,000 milligrams per liter. Factors that contribute to the deterioration in the chemical quality of water in the Emery area are the soluble minerals in the rocks of Cretaceous age that crop out in the area, the major or total diversion of flow of Muddy Creek, and the irrigation of and return flow from soils that have commonly developed on material derived from gypsum-bearing marine shale. Dissolved-solids concentrations remain high to the mouth of Muddy Creek near Hanksville. Only one perennial stream--Salt Wash--enters Muddy Creek between Highway I-70 and the mouth. The discharge of Salt Wash is usually 2.0 to 2.5 cubic feet per second (0.057 to 0.071 cubic meter per second), and the dissolved-solids concentration ranges from about 5,400 to 5,900 milligrams per liter.

Unlike Muddy Creek, the Fremont River receives significant inflow at many points in the long reach between the most upstream major diversion near Fremont and the mouth of the river. Futhermore, the geologic environment in the upper Fremont River basin is more favorable than that of Muddy Creek basin for the maintenance of lower concentrations of dissolved solids. The return flow from irrigated areas in the upper basin generally has relatively low dissolved-solids concentrations. Nearly all the runoff from the part of the Fremont River basin upstream from Fremont is diverted near Fremont for irrigation in the upper Fremont River valley. Major flow accretion to the Fremont River, mainly from ground-water inflow as the stream crosses Bicknell Bottoms, results in adequate water for additional downstream diversions. This accretion also maintains the relatively low dissolved-solids concentrations in the Fremont River despite the inflow of tributaries having relatively high dissolved-solids concentrations.

The Dirty Devil River, which is formed by the confluence of Muddy Creek and the Fremont River, has no perennial tributaries. Except during short periods of thunderstorm runoff in tributaries, the flow is simply a composite of flow from Muddy Creek and the Fremont River. Salts are deposited in the channel of the Dirty Devil River during periods when evapotranspiration removes all or nearly all the water in the 55-mile (88-kilometer) reach of the stream between Hanksville and the Dirty Devil River above Poison Spring Wash. An increase in dissolved-solids concentration may occur as a result of resolution of these salts during later periods of flow.

Except for high concentrations of strontium--as much as 11,000 micrograms per liter--no unusually high concentrations of 13 other trace elements were found in the surface water.

A few data on total coliform, fecal coliform, and fecal streptococci bacteria suggest a general absence of major biologic pollution in the basin. A few observations of dissolved-oxygen concentrations suggest that the concentrations are not especially low, even when water temperatures and dissolved-solids concentrations are high.

Flow conditions under which nearly all fluvial sediment transport occurs could not be covered under the scope of this water-quality reconnaissance. Sediment records obtained from March 1967 to May 1972 on the Fremont River near Caineville show that about 65 percent of the suspended-sediment discharge occurred during only 1 percent of the time during the approximately 5-year period. Records obtained from April 1969 to May 1972 show that about 83 percent of the sediment discharge of Pleasant Creek near Caineville occurred during only 0.6 percent of the time.

Sediment discharge from the upper 1,000 square miles (2,590 square kilometers) of the Fremont River basin and from the upper 400 square miles (1,040 square kilometers) of Muddy Creek basin is a very small part of the sediment discharge of the Dirty Devil River. Less than half of the remaining 2,900 square miles (7,510 square kilometers) of the drainage area of the Dirty Devil River probably contributes most of the sediment that is discharged by the streams during a very small part of the time each year.

INTRODUCTION

This report on the quality of surface water in the Dirty Devil River basin, Utah, was prepared by the U.S. Geological Survey in cooperation with the Utah Department of Natural Resources, Division of Water Rights, and the U.S. Environmental Protection Agency. The purpose of the water-quality reconnaissance on which this report is based was to obtain information about (1) the general inorganic chemical characteristics of the surface water throughout the Dirty Devil River basin, (2) some of the effects of the natural environment and present water use on the chemical characteristics of the surface water in the basin, and (3) some general characteristics of fluvial sediment in the basin.

Thus, the principal objective of the study was a general definition of water-quality characteristics of the basin; a secondary objective was the definition of specific problem areas on stream reaches. The water-quality reconnaissance of the Dirty Devil River basin was limited in scope; it did not include intensive study of the effects of municipal sewage, irrigation, or mining on water quality.

Methods of investigation

Water-quality data were obtained one or more times by the U.S. Geological Survey at 104 sites in the study area (pl. 1) during the period July 1975 to September 1976. During the same period, the streams were dry at 34 other sites which were visited. Concentrations of dissolved solids and of major ions were determined for most samples and concentrations of 14 trace elements determined for selected samples. Chemical analyses of samples obtained for this investigation were made by standard methods of the Geological Survey.

Water-quality data obtained at 104 sites during the 1975-76 water years[1] are presented in table 5. Specific-conductance data, including those obtained about monthly at Geological Survey gaging stations during the 1971-76 water years, are presented in table 6. Data obtained by the U.S. Bureau of Reclamation at several sites in the Dirty Devil River basin, a few data obtained by Utah State University in 1949, and data obtained by the Geological Survey before 1960 were used in the preparation of this report but are not given in table 5.

The reconnaissance of the Dirty Devil River basin was primarily based on a seasonal sampling schedule. Seasonal collection of data during a short period of relatively stable flow conditions, however, is not compatible with the collection of sediment data for the computation of the quantity and characteristics of fluvial sediment transported within and from the basin. Therefore, the only useful sediment data available for this study were those collected at a few sites for reservoir-design purposes during the past 30 years.

Most of the water-discharge data were obtained by nonstandard methods using a greatly reduced number of sections for velocity determinations. A fairly reliable approximation of discharge was regarded as adequate for this reconnaissance.

[1] A water year is the 12-month period from October 1 through September 30 designated by the calendar year in which it ends.

Previous studies and acknowledgments

Previous hydrologic studies in the Dirty Devil River basin generally have involved only the collection of data at specific sites relative to the design of reservoirs or the management of local water projects. Streamflow records in the Dirty Devil River basin were first obtained in 1909 at two stations and in 1911 at one station; data collection continued until 1914 at two of the stations. Streamflow records were not obtained at any station during the period 1915-37. Since 1937, records have been obtained for various periods of time at 14 stations. In 1977, records were being obtained at eight stations.

Water-quality data have been obtained on a continuing basis at only one station--Dirty Devil River near its mouth--where water-quality data were obtained daily during the period 1948-54.

Waddell and others (1978, 1979), in an investigation of the hydrology of the Wasatch Plateau-Book Cliffs coal-fields area, obtained data on the quality of ground and surface waters. Their area of investigation included the upper part of the basin of Muddy Creek, a tributary to the Dirty Devil River. Goode and Olson (1977) made a hydrologic reconnaissance of the Henry Mountains coal-field area, which included the southeastern part of the basin of the Fremont River, another tributary to the Dirty Devil River. Hood and Danielson (1979) investigated water in bedrock in the lower Dirty Devil River basin area with special emphasis on the Navajo Sandstone.

Iorns, Hembree, Phoenix, and Oakland (1964) and Iorns, Hembree, and Oakland (1965) included the Dirty Devil River basin in their comprehensive study of the water resources of the Upper Colorado River Basin.

Elmer Gerhart gave valuable assistance in the collection of the field data on water quality and streamflow during July 1975 to September 1976. His detailed knowledge of many remote parts of the basin made possible the collection of more and better data than would otherwise have been collected.

Numbering system for selected hydrologic-data sites

Some of the data sites referred to in this report are assigned a number along with the stream name, such as "North Last Chance Creek at mouth at (D-25-4)11aaa," to specifically locate sites in areas remote from towns, roads, or other easily identified features. The system of numbering these sites in Utah is based on the cadastral land-survey system of the U.S. Government. The number describes the position of the site in the land net. By the land-survey system, the State is divided into four quadrants by the Salt Lake base line and meridian, and these quadrants are designated by the uppercase letters A, B, C, and D, indicating the northeast, northwest, southwest, and southeast quadrants, respectively. Numbers designating the township and range (in that order) follow the quadrant letter, and all three are enclosed in parentheses. The number after the parentheses indicates the section, and is followed by one, two, or three letters indicating the quarter section, the quarter-quarter section, or the quarter-quarter-quarter section. The letters a, b, c, and d indicate, respectively, the northeast, northwest, southwest, and southeast quarters of each subdivision. Thus, (D-25-4)11aaa designates a site in the NE$\frac{1}{4}$NE$\frac{1}{4}$NE$\frac{1}{4}$ sec. 11, T. 25 S., R. 4 E. The numbering system is illustrated in figure 1.

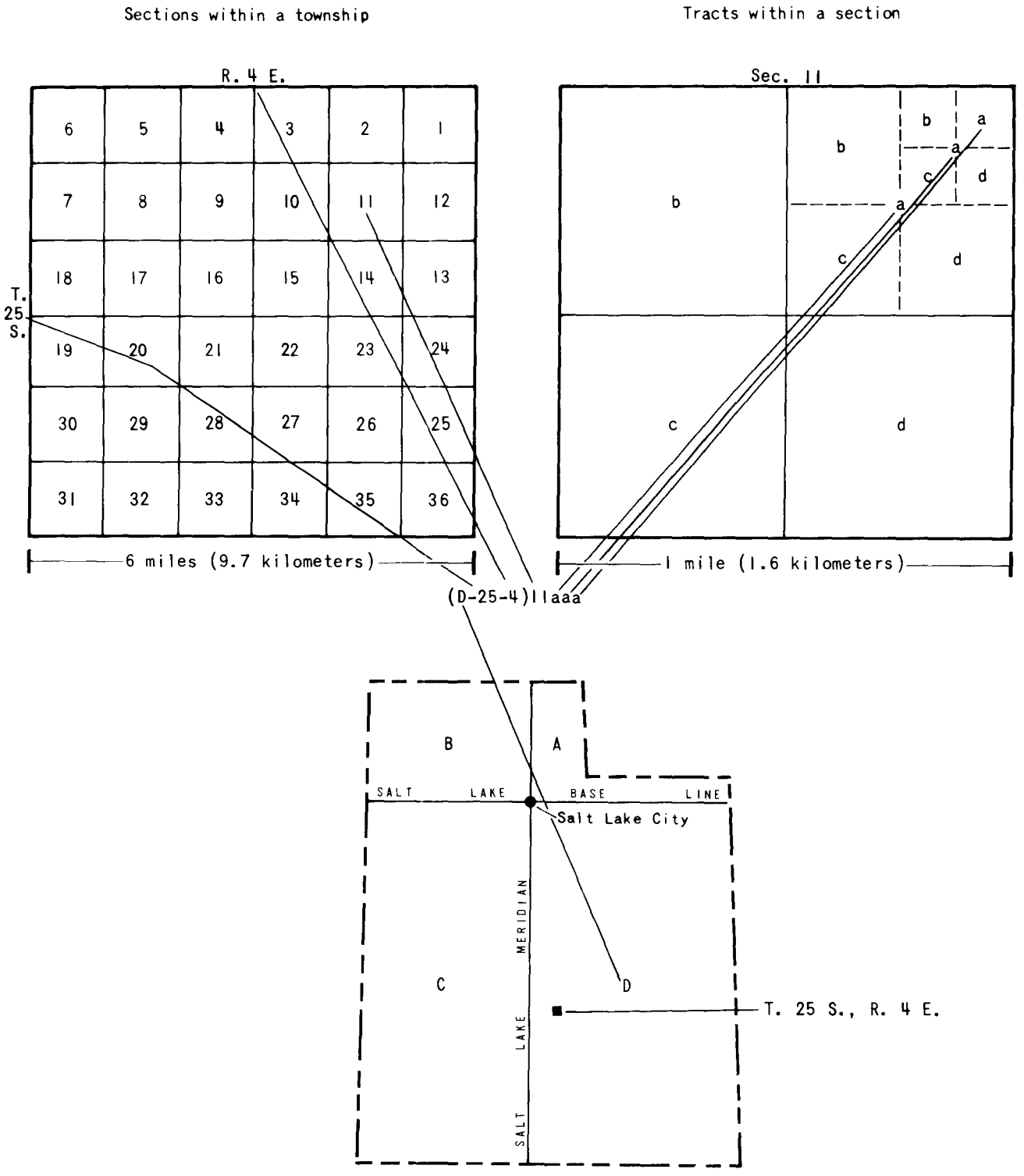


Figure 1.—Numbering system for selected hydrologic-data sites.

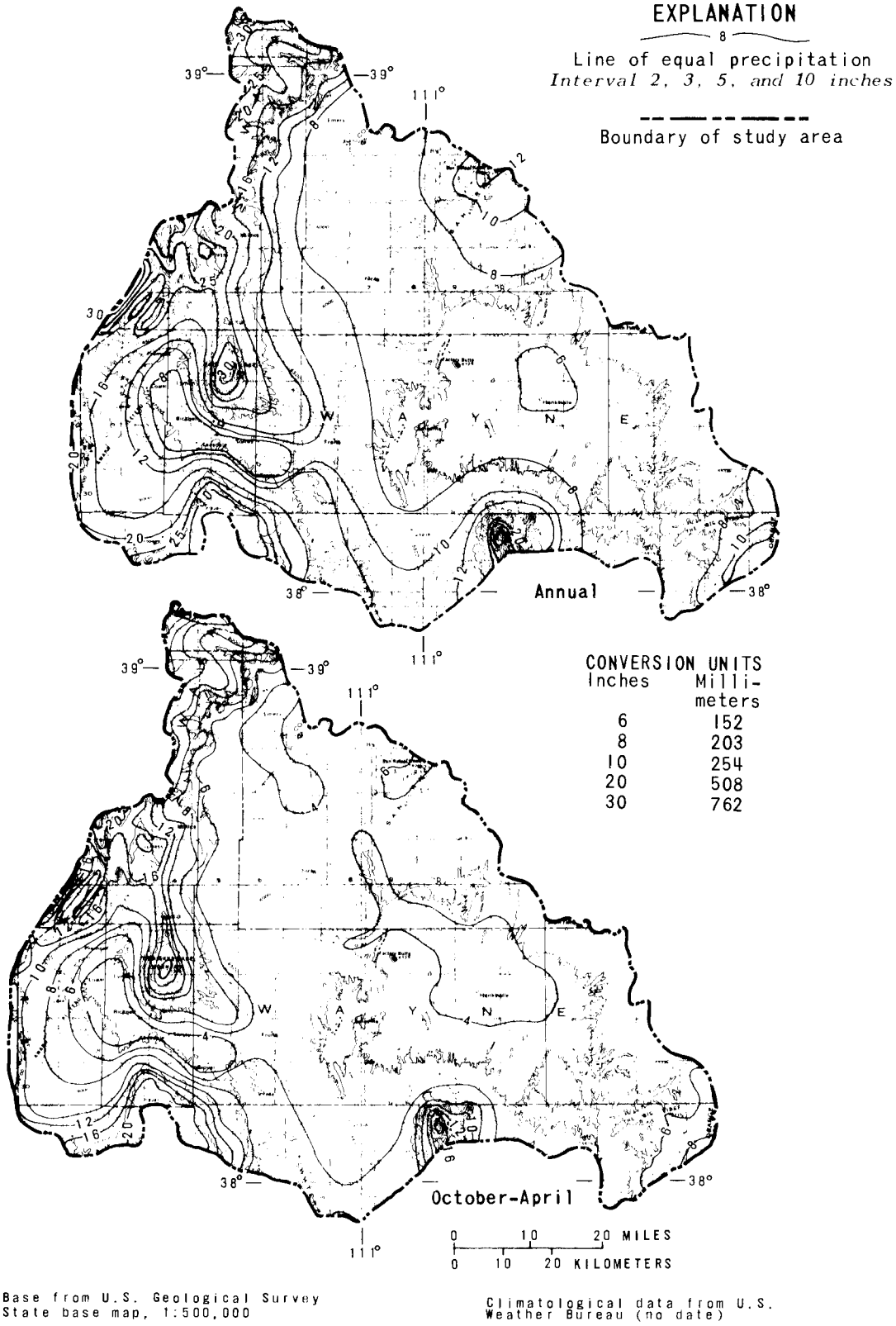


Figure 2.—Maps showing normal annual precipitation (1931-60) and normal October-April precipitation (1931-60) in the Dirty Devil River basin.

Soils

A detailed soil survey is available only for an area of irrigation agriculture in the vicinity of Emery (Swenson and others, 1970). That part of the Dirty Devil River basin included in the soil survey is only about 2 percent of the total area of the basin; but because Muddy Creek shows a pronounced deterioration in water quality as it crosses this small area, the soils information is significant.

Figure 3 shows the five soil associations that are within that part of the Dirty Devil River basin included in the soil survey by Swenson, Erickson, Donaldson, and Shiozaki (1970). Each association consists of two or more dominant soils and generally has several other soils of lesser extent. Swenson, Erickson, Donaldson, and Shiozaki (1970) also show detailed soils maps for the area covered by the soil association map. The Saltair series and the Libbings series of the Saltair-Libbings soil association (fig. 3) are strongly saline. The Billings and Chipeta series of other associations are slightly to strongly saline. Large areas of the Hunting series that is included in the Ravola-Billings-Penoyer soil association in the vicinity of Emery are commonly moderately to strongly saline.

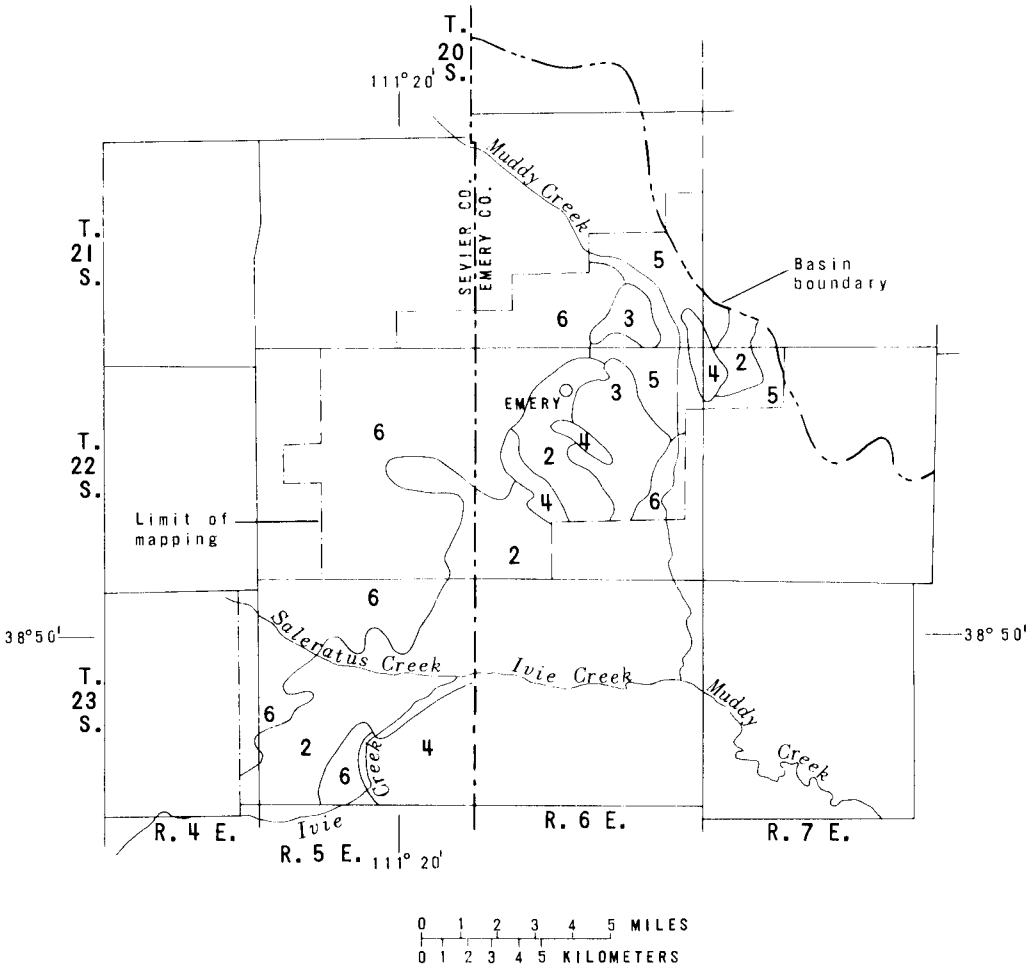
Water diversions and irrigation

Major diversions are made from Muddy Creek at (D-21-6)21aba and 22cba for irrigation in the Emery area. These diversions commonly begin in April or May and continue into October. When irrigation needs are greatest during July and August, all the flow is usually diverted. Downstream reaches of Muddy Creek then receive only seepage and irrigation return flow, except during periods of runoff from thunderstorms.

Three major irrigation diversions in the vicinity of Fremont commonly remove nearly all the flow from the reach of the Fremont River between Fremont and the mouth of Pine Creek near Bicknell. (See pl. 1.) For example, on August 27, 1975, the discharge at site 94 was 115 ft^3/s (3.26 m^3/s), at site 91 it was 1.5 ft^3/s (0.042 m^3/s), and at site 89 it was 3.0 ft^3/s (0.085 m^3/s); on August 9, 1976, the discharge at site 94 was 110 ft^3/s (3.11 m^3/s), at site 91 it was 1.0 ft^3/s (0.028 m^3/s) and at site 89 it was 6.0 ft^3/s (0.17 m^3/s). Similar flow depletions occur throughout the irrigation season. Major flow accretion to the Fremont River, as it crosses Bicknell Bottoms between sites 87 and 84 (pl. 1), and to the lower 3 mi (4.8 km) of Pine Creek in Bicknell Bottoms furnishes adequate water for several additional irrigation diversions along the remaining length of the Fremont River to its mouth near Hanksville.

Major water-storage facilities in the upper Fremont River basin are Fish Lake with a usable capacity of 34,200 acre-ft (42.16 hm^3), Johnson Valley Reservoir with a usable capacity of 7,880 acre-ft (9.72 hm^3), Mill Meadow Reservoir with a usable capacity of 5,230 acre-ft (6.45 hm^3), and Forsyth Reservoir with a usable capacity of 3,420 acre-ft (4.22 hm^3).

No significant storage facilities are in Muddy Creek basin.



EXPLANATION

SOIL ASSOCIATIONS

2	Ravola-Billings-Penoyer association: Nearly level to gently sloping, deep, well drained and moderately well drained, medium textured and moderately fine textured soils on alluvial fans and flood plains and in alluvial valleys
3	Saltair-Libbings association: Nearly level to gently sloping, deep and moderately deep, salty, moderately fine textured soils on bottom lands and foothills
4	Sanpete-Minchey association: Gently sloping, deep, well-drained, medium textured to moderately fine textured soils over gravel on mesas, benches, and old alluvial fans
5	Chipeta-Persayo-Badland association: Gently sloping and gently rolling to steep, well-drained, moderately fine textured and medium textured soils that are shallow over shale, and eroding shale outcrops on uplands
6	Rock land-Shaly colluvial land-Castle Valley-Kenilworth association: Gently sloping to very steep, shallow to deep, gravelly and stony soils, and rock land on benches and hills

From Swenson, Erickson, Donaldson, and Shiozaki (1970)

NOTE: This map is intended for general planning. Each delineation may contain soils having ratings different from those shown on the map. Use detailed soil maps for operational planning.

Figure 3.— Map showing soil associations in the vicinity of Emery.

Classification of water for public supply and irrigation

The U.S. Public Health Service (1962, p. 6-8) established standards to which drinking water and water-supply systems used by common carriers and others subject to Federal quarantine regulations must conform. They state that water should contain no impurity which would cause offense to the sense of sight, taste, or smell. Included in the standards are the following chemical substances which should not exceed the listed concentrations if other more suitable supplies are or can be made available:

Substance	Concentration (mg/L)
Chloride (Cl)	250
Sulfate (SO_4)	250
Total dissolved solids	500
Nitrate (NO_3)	45 (10 mg/L expressed as N)

Fluoride:

Annual average of maximum daily air temperature[1] (°F)	Recommended control limits--fluoride concentrations, in mg/L		
	Lower	Optimum	Upper
50.0-53.7	0.9	1.2	1.7
53.8-58.3	.8	1.1	1.5
58.4-63.8	.8	1.0	1.3
63.9-70.6	.7	.9	1.2
70.7-79.2	.7	.8	1.0
79.3-90.5	.6	.7	.8

[1]Based on temperature data for a minimum of 5 years.

The recommended control limits for fluoride concentration were not exceeded for any observed streams during 1975-76.

The property of hardness has been associated with effects observed in the use of soap; hardness may be said to represent the soap-consuming capacity of a water (Hem, 1970, p. 224). Because hardness is a property not attributable to a single constituent but to the presence of alkaline earth metals--mainly calcium and magnesium, it is usually reported in terms of an equivalent concentration of calcium carbonate. (See table below.) Hardness, as calcium carbonate, may be computed by multiplying the sum of milliequivalents per liter of calcium and magnesium by 50. Durfor and Becker (1964, p. 27) use the following classification of hardness ranges:

Description	Hardness Range (mg/L of $CaCO_3$)
Soft	0-60
Moderately hard	61-120
Hard	121-180
Very hard	More than 180

At most sites for which analyses were made, the water was classified as hard to very hard.

A diagram for the classification of irrigation waters was devised by the U.S. Salinity Laboratory Staff (1954, p. 80). The U.S. Salinity Laboratory Staff emphasizes that in the classification of irrigation waters, the assumption is made that the water will be used under average conditions with respect to soil texture, infiltration rate, drainage, quantity of water used, and salt tolerance of the crops. Large deviations from the average for one or more of these variables may make unsafe the use of what, under average conditions, would be good water. For example, if the water is applied to heavy-textured poorly drained soils in an area of extremely high evaporation rates, the salinity and alkali hazards would increase.

The occurrence of boron in toxic concentrations in certain irrigation waters makes it necessary to consider this element in assessing water quality. The recommended limits of boron, in micrograms per liter[1] for several classes of irrigation waters (U.S. Salinity Laboratory Staff, 1954, table 14) are given below.

Boron class	Sensitive crops	Semitolerant crops	Tolerant crops
1	Less than 330	Less than 670	Less than 1,000
2	330 to 670	670 to 1,330	1,000 to 2,000
3	670 to 1,000	1,330 to 2,000	2,000 to 3,000
4	1,000 to 1,250	2,000 to 2,500	3,000 to 3,750
5	More than 1,250	More than 2,500	More than 3,750

CHEMICAL QUALITY OF THE SURFACE WATER

The chemical composition of natural water is derived from many different sources of solutes, including gases and aerosols from the atmosphere, weathering and erosion of rocks and soil, solution or precipitation reactions occurring below the land surface, and cultural effects resulting from activities of man (Hem, 1970, p. 1). The streams in the Dirty Devil River basin drain areas have markedly different geology, land use, vegetation, altitude, and climate.

Some general chemical characteristics of the water at 104 sites in the Dirty Devil River basin are given in table 7. In this table, the columns "Dominant cations" and "Dominant anions" list the ions that, if expressed as milliequivalents per liter, are usually dominant during low flow and during high flow. If more than one cation or anion is shown as dominant, the order of listing indicates the commonest order of abundance. Because some of the streams have water of highly variable composition, the order of abundance is not always the same under a given flow condition.

The columns in table 7 under "Public supply" contain entries when concentration commonly equals or exceeds the recommended standards of the U.S. Public Health Service (1962, p. 6-8). Entries in these columns do not mean

[1]Many tables in the literature on irrigation practices express the limits in milligrams per liter (mg/L) or in parts per million (ppm). One mg/L or one ppm is equivalent to one thousand micrograms per liter (µg/L) for the concentration range in the above table. To convert the above concentrations in µg/L to mg/L or to ppm, move the decimal place three places to the left. For example, 670 µg/L equals 0.67 mg/L.

that the values are invariably exceeded in the given stream, but only that the data indicate that the values are commonly exceeded.

The classification of the water relative to salinity hazard and sodium hazard in the columns in table 7 under "Irrigation supply" is according to the U.S. Salinity Laboratory Staff (1954, p. 80).

Approximate ranges of dissolved-solids concentations in the water in streams in the Dirty Devil River basin are shown on plates 2A and 2B during six periods in 1975 and 1976. On some of the maps, ranges are shown for reaches that extend for appreciable distances upstream from the most upstream observation site. These ranges are estimates based on observations during other periods, on geology, and on land use. For some of the streams, flow was observed at upstream sites, but the stream was dry at a downstream site. The distance that flow extended downstream from observed flow was estimated.

Plate 3 shows graphically the major cations and anions in the water at selected sites in the basin during May and August 1976. Maximum snowmelt from mountainous areas usually occurs during May, but the downstream effects of this snowmelt are commonly minimal because of upstream diversions and storage. The effects of intensive irrigation are represented by the data for August.

Variations in the general chemistry of the water

Muddy Creek drainage area

Variations in the chemical characteristics of the surface water in the Dirty Devil River basin are shown on plates 2A, 2B, and 3. Runoff from headwaters areas of Muddy Creek and the Fremont River generally has dissolved-solids concentrations less than 300 mg/L. The Fremont River shows a progressive downstream increase in dissolved-solids concentration and deterioration in chemical quality of the water. Muddy Creek shows a relatively abrupt increase in dissolved solids and a much greater deterioration in chemical quality of the water in a downstream direction.

The most pronounced change in chemical characteristics of the water occurs in a 15-mi (24-km) reach of Muddy Creek between the area of major diversions about 5 mi (8 km) north of Emery (site 49) and the point at which Highway I-70 crosses Muddy Creek (site 32). Chemical analyses and specific-conductance measurements (table 5) indicate that dissolved-solids concentrations at site 49 are generally less than 300 mg/L and at site 32 are commonly greater than 2,000 mg/L. The summary of selected hydrologic data (table 7) shows that dissolved-solids concentrations ranged from 175 to 250 mg/L at site 49 and from 431 to 6,310 mg/L at site 32.

Factors that contribute to the deterioration in the chemical quality of water in the Emery area are (1) the characteristics of the rocks between sites 32 and 49, (2) major, and at times total, diversion for irrigation of flow in Muddy Creek downstream from site 49, and (3) irrigation of and return flow from soils that have commonly developed on material derived from gypsum-bearing marine shale. The Emery Sandstone Member, Blue Gate Member, and Tununk Member of the Mancos Shale of Cretaceous age crop out between sites 49 and 32 (pl. 1). They are fine-grained marine deposits that contain soluble evaporite minerals. Irrigation of the soils developed on these rocks or on their weathering products probably results in irrigation return flow having high

concentrations of calcium, sodium, and sulfate and consequently of total dissolved solids. Many of the soils in the Emery area (fig. 3) are moderately to strongly saline; thus, runoff and return flow from such soils would be expected to have high concentrations of dissolved solids. The chemical characteristics of the inflow to Muddy Creek between sites 49 and 32, in conjunction with the drastic depletion of flow during prolonged periods, results in the observed changes in chemical characteristics of the water in a relatively short reach.

The water in the approximately 40-mi (64-km) reach of Muddy Creek between sites 32 and 11 is similar in chemical characteristics to the water at site 32. Plates 2A and 2B show that the dissolved-solids concentrations remain high from site 32 to the mouth of Muddy Creek at site 11. The only known perennial stream that is tributary to Muddy Creek between sites 32 and 11 is Salt Wash, which is perennial between Caine Springs and the mouth of Salt Wash. Most of the Salt Wash drainage area downstream from site 15 is underlain by the Carmel Formation of Jurassic age. Discharge of the springs and of Salt Wash at site 13 commonly ranges from 2.0 to 2.6 ft^3/s (0.057 to 0.074 m^3/s) and the dissolved-solids concentration ranges from about 5,400 to 5,900 mg/L. During the prolonged periods of upstream flow depletion in the Emery area, the discharge from Salt Wash is a significant part of the downstream discharge of Muddy Creek; and this results in an appreciable increase in dissolved-solids concentration of the water in Muddy Creek. (See fig. 3 and pls. 2A and 2B.)

The effects of evapotranspiration and of seepage losses from the channel of Muddy Creek between sites 32 and 11 are not known. Appreciable evaporation and a resulting increase in dissolved-solids concentration may occur as the stream crosses the desert environment between these sites. Additional flow depletion may result from seepage from the channel.

Even during flash floods and high water discharges resulting from intense thunderstorms, the chemical quality of the water does not necessarily improve. For example, at Muddy Creek at mouth near Hanksville (site 11) on May 7, 1976, the water discharge was 3,810 ft^3/s (107.9 m^3/s) but the dissolved-solids concentration remained high--4,250 mg/L (table 5). The high concentrations during the infrequent high discharges may result from the solution of large quantities of soluble salts, which are precipitated in drainage channels during long periods of low flow, and large amounts of salt efflorescence, which develops on saline and alkali soils and in areas of shale outcrops. It is postulated that these soluble salts are dissolved during infrequent periods of intense runoff.

In summary, variations in the chemical characteristics of surface water in the Muddy Creek drainage of the Dirty Devil River basin are a result of the following factors:

1. Most of the runoff originates from snowmelt in mountainous areas upstream from any area of significant use by man.

2. Most of this runoff, which has dissolved-solids concentrations of less than 300 mg/L, is diverted for irrigation in the Emery area.

3. The water that enters the stream downstream from the points of diversion has much higher dissolved-solids concentrations than does the diverted

water. Intensive irrigation in the Emery area and geologic factors are the cause of these higher concentrations.

4. Significant quantities of inflow do not enter Muddy Creek downstream from the Emery area; therefore, the chemical quality of the water does not improve between the Emery area and the mouth of Muddy Creek.

Fremont River drainage area

The Fremont River drainage area is similar to the Muddy Creek drainage area in that most of the total annual runoff originates from snowmelt in the mountainous headwaters and in that precipitation is slight in the lower parts of the drainage area (fig. 2). Unlike Muddy Creek, the Fremont River receives significant inflow at many points in the long reach between the most upstream major diversion (near site 94) and its mouth (near site 10), and many additional diversions are made from this long reach. Fish Lake, Johnson Valley Reservoir, and Mill Meadow Reservoir on the Fremont River and Forsyth Reservoir on UM Creek (pl. 1) have a combined usable storage capacity of about 51,000 acre-ft (62.88 hm^3), which is available for irrigation diversions from the streams below the reservoirs.

The geologic environment in the Fremont River basin is more favorable than that of Muddy Creek basin for the maintenance of lower concentrations of dissolved solids in the surface water. Most of the total annual runoff in the Fremont River basin originates in areas of volcanic rocks of Tertiary age or sedimentary rocks and deposits of Tertiary and Quaternary age (pl. 1). These geologic units and those underlying the irrigated areas contain fewer readily soluble minerals than those that underlie the irrigated areas in Muddy Creek basin. Much of the irrigation in the Fremont River basin is in areas with soils developed on weathering products of these rocks, which are low in readily soluble minerals. Therefore, the return flow from irrigated areas generally has relatively low dissolved-solids concentrations. Plates 2A and 2B indicate that the dissolved-solids concentration of the Fremont River 1 mi (1.6 km) above the mouth (site 10) was less than 2,000 mg/L during the six observation periods. Table 7 shows that the maximum concentration of dissolved solids observed at site 10 was less than the minimum concentration observed at Muddy Creek at mouth (site 11).

Data on water discharge and dissolved-solids concentrations at selected sites on the Fremont River (table 1) indicate the downstream variability of discharges and concentrations. During the observation periods in August 1975 and May 1976, all the flow was diverted between sites 94 and 91 for irrigation. The water at site 91 was return flow from irrigated areas. It entered the stream downstream from site 94 and had much higher dissolved-solids concentration than that of the diverted water. Inflow to the Fremont River between sites 89 and 84, mainly from the area of Bicknell Bottoms, resulted in a major increase in water discharge and a major decrease in dissolved-solids concentration of the stream.

Bjorklund (1969) made a detailed study of Bicknell Bottoms as part of his ground-water investigation in the upper Fremont River valley. In November 1966, he found that the overall ground-water accretion to the Fremont River between sites 94 and 84, as defined in this report, was about 72 ft^3/s (2.04 m^3/s) and that about 86 percent of this accretion was between sites 87 and 84. He states (p. 18) that, "A large source of recharge to the valley fill is

Table 1.—Water discharge and dissolved-solids concentrations at selected sites in the Fremont River basin, August 25-29, 1975, and May 24-31, 1976

Site No. (see pl. 1)	Site name	August 25-29, 1975 Discharge (ft^3/s)	August 25-29, 1975 Dissolved solids (mg/L)	May 24-31, 1976 Discharge (ft^3/s)	May 24-31, 1976 Dissolved solids (mg/L)
10	Fremont River 1 mi above mouth, near Hanksville	10	1,330	20	1,060
57	Fremont River below Neilson Wash at State Highway 24, near Hanksville	2.5	866	38	888
62	Fremont River at Caineville	25	799	25	750
70	Fremont River at State Highway 24 above Sandy Creek, near Caineville	31	530	37	614
71	Fremont River near Caineville	35	519	31	637
76	Fremont River below Sulphur Creek, near Fruita	35	487	40	585
77	Fremont River above Sulphur Creek, at Fruita	33	434	36	437
82	Fremont River at State Highway 24, 1.5 mi west of Torrey	45	407	45	419
84	Fremont River at (D-29-4)7bac, near Bicknell	70	321	95	365
85	Pine Creek at (D-29-3)11dd near mouth, near Bicknell	30	148	60	155
87	Fremont River below Big Hollow, near Bicknell	9.5	448	15	566
89	Fremont River below Blackburn Ditch terminus, near Bicknell	3.0	892	12	760
91	Fremont River at State Highway 24 at Loa	1.5	708	3.0	920
94	Fremont River near Fremont	115	115	140	132

subsurface inflow from volcanic rocks of Tertiary age that dip gently toward the valley and conduct water toward it from the Awapa and Aquarius Plateaus. Springs discharge from the volcanic rocks along the western, southwestern, and southern edges of the valley. Near the springs, the volcanic rocks plunge beneath the valley fill and water also discharges into the fill. This water constitutes most of the discharge from the many springs in the wet meadows in Bicknell Bottoms."

Data obtained at Pine Creek at (D-29-3)11dd near mouth, near Bicknell (site 85), where nearly all the flow results from ground-water inflow to the streams, indicate that the ground-water contribution to the Fremont River as it crosses Bicknell Bottoms generally has dissolved-solids concentrations of less than about 200 mg/L (table 5). This ground-water contribution is the main source of sustained streamflow in the Fremont River downstream from site 84, and it is responsible for the maintenance of both an irrigation water supply and a relatively low dissolved-solids concentration in the Fremont River to its mouth.

Downstream from site 84, the Fremont River and its tributaries receive drainage from areas in which rocks of Triassic, Jurassic, and Cretaceous age are predominant. Several additional diversions between sites 84 and 10 commonly result in a major decrease in water discharge. Relatively small amounts of water having relatively high dissolved-solids concentrations enter the stream from tributaries and from irrigated valley areas. The net result is a progressive decrease in streamflow between sites 84 and 10 and a

progressive increase in dissolved-solids concentrations. Although calcium remains the predominant cation throughout the length of the Fremont River, bicarbonate is generally the predominant anion downstream from this site.

In summary, the chemical characteristics of surface water in the Fremont River drainage are the result of the following factors:

1. Most of the runoff originates from snowmelt in mountainous areas upstream from any area of significant use by man. Most of this snowmelt results in surface runoff that flows directly into streams and reservoirs upstream from Fremont.

2. Nearly all this runoff, which has dissolved-solids concentrations of less than 200 mg/L, is diverted near Fremont for irrigation in the upper Fremont River valley.

3. Major flow accretion to the Fremont River, mainly from ground-water inflow between sites 87 and 84, results in adequate water for additional downstream diversions. This accretion also maintains the relatively low dissolved-solids concentrations in the Fremont River despite the inflow of tributaries having relatively high dissolved-solids concentrations.

Dirty Devil River

The Dirty Devil River is formed by the confluence of Muddy Creek and the Fremont River about 2 mi (3.2 km) northeast of Hanksville. No perennial tributaries enter the Dirty Devil River and, except during infrequent short periods of thunderstorm runoff in tributaries, the flow is simply a composite of flow from Muddy Creek and the Fremont River. The Dirty Devil River flows through uninhabited country. No diversions or other consumptive uses by man affect the flow, but evaporation, transpiration, and seepage losses from the channel may result in flow depletion.

Muddy Creek at its mouth infrequently has little or no flow, and the Dirty Devil River then is simply an extension of the Fremont River. For example, on June 9, 1976, Muddy Creek at mouth, near Hanksville (site 11) had a discharge of only 0.03 ft^3/s (0.0008 m^3/s) and a dissolved-solids concentration of 8,100 mg/L, Fremont River 1 mi above mouth, near Hanksville (site 10) had a discharge of 7 ft^3/s (0.20 m^3/s) and a dissolved-solids concentration of 1,420 mg/L, and Dirty Devil River above Poison Spring Wash, near Hanksville (site 2) had a discharge of 7 ft^3/s (0.20 m^3/s) and a dissolved-solids concentration of 1,640 mg/L--slightly higher than that at site 10.

During July and August, when maximum daytime temperatures commonly range from 100° to $110^\circ F$ (37.5° to $43.5^\circ C$) at Hanksville, water from the Fremont River is sometimes totally depleted after it enters the Dirty Devil River. The depletion is due to evaporation from the water surface and transpiration by phreatophytes that are common along the 55-mi (88-km) reach of the stream between sites 9 and 2. For example, on August 10, 1976, the water discharge at site 10 was about 12 ft^3/s (0.34 m^3/s), which entered the Dirty Devil River. However, none of this flow reached site 2 on the Dirty Devil River above Poison Spring Wash.

When the flow of the Dirty Devil River is thus depleted, salts are deposited in the channel. These salts may later be redissolved during periods of continuous flow between sites 10 and 2. For example, gaging-station records obtained at site 2 indicate that the water discharge was about 11 ft^3/s (0.31 m^3/s) throughout the period August 21-September 6, 1976. On August 29, the Fremont River was contributing about 10 ft^3/s (0.28 m^3/s) of water with a dissolved-solids concentration of 1,330 mg/L to the Dirty Devil River; Muddy Creek at site 11 was dry. On August 26, the discharge at site 2 was 11 ft^3/s (0.31 m^3/s), and the dissolved-solids concentration was 3,460 mg/L. If these data are regarded as representative of the entire period August 21-September 6, then the dissolved-solids concentration increased about 2.5 times between sites 10 and 2. In the absence of any known inflow between these sites, re-solution of deposited salts is the most probable explanation.

Trace elements

Trace elements were determined for selected samples at a few sites in the Dirty Devil River basin. The results are shown in table 5. Except for high concentrations of strontium, no unusually high concentrations of 13 other trace elements were found. The maximum observed concentrations, in micrograms per liter, are given below:

Aluminum	170	(site 45)
Arsenic	8	(site 49)
Barium	400	(site 10)
Boron	1,600	(site 38)
Cobalt	13	(site 46)
Iron	830	(site 101)
Lead	17	(site 72)
Lithium	590	(site 43)
Manganese	760	(site 46)
Mercury	1.2	(site 10)
Molybdenum	8	(site 59)
Selenium	44	(site 42)
Strontium	11,000	(site 79)
Zinc	270	(site 13)

Maximum observed concentrations of strontium at many sites are shown in figure 4. Analyses of samples from 75 major rivers of the United States showed that the strontium concentration ranged from 7 to 13,700 µg/L (Skougstad and Horr, 1963, p. 55). The greatest concentrations were in the high-salinity streams of the Southwest. Although strontium concentrations in the Dirty Devil River basin are fairly high (except in headwaters areas), they are not unusual for high-salinity streams in the Southwestern United States.

Strontium-90, which is an isotope resulting from nuclear fission, was determined for several samples. Hem (1970, p. 323) states that if the concentration of strontium-90 does not exceed 10 pc/L (picocuries per liter) the supplies are considered satisfactory by the U.S. Public Health Service standards, without considering the total exposure of consumers to radiation. The maximum observed strontium-90 concentration in the Dirty Devil River basin was 1.2 pc/L at site 11.

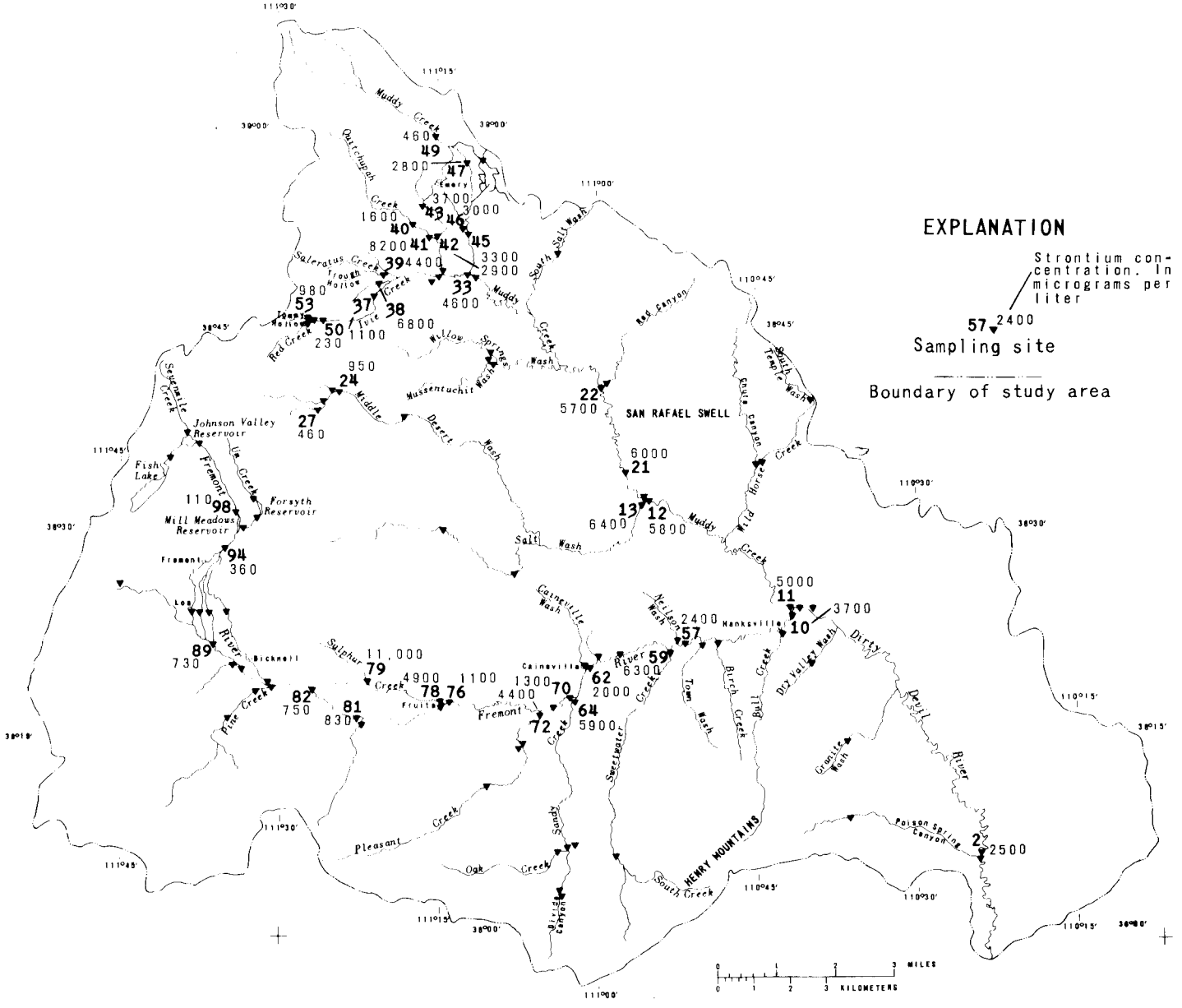


Figure 4.—Map showing maximum observed concentrations of dissolved strontium at selected sites in the Dirty Devil River basin.

Other characteristics of the water

"Coliform organisms have long been used as indicators of sewage pollution, although the group includes bacteria from diverse natural sources.* * * However, if a water sample contains an appreciable coliform count, the source of the sample is considered to have a disease-producing potential. * * * Fecal coliforms are that fraction of the coliform group that is present in the gut or the feces of warmblooded animals. * * * The presence of fecal coliform organisms may indicate recent and possibly dangerous contamination. * * * Fecal streptococcal data verify fecal pollution and may provide additional information concerning the recency and probable origin of pollution" (Slack and others, 1973, p. 35, 45, 50). The U.S. Environmental Protection Agency (1973, p. 58) recommends that the geometric means of fecal coliform and total coliform densities in raw surface-water sources not exceed 2,000/100 and 20,000/100 mL (milliliters), respectively. The few data presented in table 2 were obtained only as a possible indicator of problem areas for future detailed investigation in the basin. The data suggest a general absence of major biologic pollution in the basin. Except for Fremont River 1 mi above mouth, near Hanksville (site 10) on September 7, 1976, and Pleasant Creek near Caineville (site 72) on September 9, 1976, the number of colonies per 100 mL was very low for all three determinations shown in table 2.

Oxygen dissolved in water is derived from the air and from the oxygen given off in the process of photosynthesis by aquatic plants. The solubility of oxygen in water is mainly dependent on three factors:

1. Temperature: As the water temperature increases, the ability of water to hold dissolved oxygen decreases.

2. Atmospheric pressure: As atmospheric pressure increases, the solubility of oxygen in water increases.

3. Dissolved solids: As the dissolved-solids concentration of a water increases, its ability to hold oxygen decreases.

Because the oxygen content of a stream changes seasonally and may change very rapidly on a diurnal basis, a measurement of dissolved oxygen is representative only of a specific place and time of measurement. The few dissolved-oxygen data presented in table 3 are representative of neither annual nor diurnal conditions, and were obtained only in an effort to locate possible problem areas for future studies. The concentration of dissolved oxygen required to support fish varies with the species and age of the fish, with temperature, and with concentration of other substances in the water. Ellis (1937) believes that under average stream conditions, if the dissolved oxygen is 3.0 mg/L or less, the situation should be regarded as hazardous or lethal to fish. The data suggest that dissolved-oxygen concentrations are not especially low, even when water temperatures and dissolved-solids concentrations are high, such as at site 13 when water temperature was 30°C and dissolved-solids concentration was 5,650 mg/L.

FLUVIAL SEDIMENT

Most of the sediment discharge by streams in arid and semiarid regions is transported during short periods of time. The highest suspended-sediment

Table 2.—Bacteriological data for selected sites in the Dirty Devil River basin

Site No.	Site name	Date	Time	Discharge (ft^3/s)	Total coliform (colonies per 100 mL)	Fecal coliform (colonies per 100 mL)	Fecal strepto-cocci (colonies per 100 mL)
10	Fremont River 1 mi above mouth, near Hanksville	2- 4-76	1500	100	40[1]	2	34
		5-27-76	1600	20	180	112	600
		9- 7-76	1850	48	6,700[1]	3,000	1,400
11	Muddy Creek at mouth, near Hanksville	2- 4-76	1400	14	15[1]	14	13
		5-27-76	1700	8.0	40[1]	10[1]	140[1]
13	Salt Wash at mouth, at Muddy Creek	9- 8-76	1500	2.5	100[1]	2	25
33	Ivie Creek at mouth, at Interstate Highway 70	9-21-76	1445	.75	16[1]	8[1]	170
37	Ivie Creek at State Highway 10, near Emery	9-22-76	0935	.1	60[1]	2[1]	640
49	Muddy Creek near Emery	9-22-76	1415	10	<1	6[1]	88
57	Fremont River below Neilson Wash, at State Highway 24, near Hanksville	9- 8-76	0740	25	780	360	620
62	Fremont River at Caineville	9- 8-76	1730	36	620	96	460
70	Fremont River at State Highway 24, above Sandy Creek, near Caineville	9- 9-76	0930	22	340	89	220
72	Pleasant Creek near Caineville	9- 9-76	1105	3.0	820	600	2,300
77	Fremont River above Sulphur Creek, at Fruita	9- 9-76	1320	33	420	130	140
82	Fremont River at State Highway 24, 1.5 mi west of Torrey	9- 9-76	1510	31	80	80	200
91	Fremont River at State Highway 24, at Loa	9-10-76	1005	.6	200	92	170
94	Fremont River near Fremont	9-10-76	1210	22	60[1]	1	24

[1] Non-ideal count

concentrations and discharges are characteristic of high-intensity runoff and usually occur as a result of thunderstorms. Sediment concentration and discharge during snowmelt runoff may increase significantly from concentrations and discharges during base flow but are low relative to those during high-intensity runoff from thunderstorms.

In general, suspended-sediment concentrations increase with increasing discharge of a stream, but dissolved-solids concentrations decrease with increasing water discharge. Thus, the quality of water, relative to its sediment content, generally is best during periods of low flow; and the quality of water, relative to its chemical content, generally is best during periods of high flow. Furthermore, the range in sediment concentations generally is much greater than the range in dissolved-solids concentrations. Sediment concentrations may range from a few hundred to more than 100,000 mg/L during a period of a few hours.

Table 3.—Dissolved-oxygen concentrations at selected sites in the Dirty Devil River basin

Site No.	Site name	Date	Time	Discharge (ft^3/s)	Water temperature (°C)	Dissolved oxygen (mg/L)
10	Fremont River 1 mi above mouth, near Hanksville	2- 4-76	1500	100	0.0	12.3
		9- 7-76	1850	48	29.0	4.2
11	Muddy Creek at mouth, near Hanksville	2- 4-76	1400	14	1.5	11.7
13	Salt Wash at mouth, at Muddy Creek	9- 8-76	1500	2.5	30.0	6.0
33	Ivie Creek at mouth, at Interstate Highway 70	9-21-76	1445	.75	17.0	7.9
34	Quitchupah Creek at mouth, near Interstate Highway 70	9-21-76	1640	.5	17.0	8.7
37	Ivie Creek at State Highway 10, near Emery	9-22-76	0935	.1	9.0	8.2
38	Oak Spring Creek at State Highway 10, near Emery	9-22-76	1015	.2	10.5	8.1
39	Saleratus Creek at State Highway 10, near Emery	9-22-76	1145	.7	15.5	7.7
40	Quitchupah Creek at State Highway 10, near Emery	9-22-76	1225	.1	19.0	6.1
41	Quitchupah Creek above Christinasen Wash, at (D-22-6)33bcd	9-22-76	1310	2.0	15.5	7.6
43	Christiansen Wash at State Highway 10, near Emery	9-22-76	1645	.04	17.5	9.4
49	Muddy Creek near Emery	9-22-76	1415	10	16.0	7.6
57	Fremont River below Neilson Wash, at State Highway 24, near Hanksville	9- 8-76	0740	25	16.0	7.7
59	Sweetwater Creek at mouth, near Caineville	9- 8-76	0950	.04	27.0	6.7
62	Fremont River at Caineville	9- 8-76	1720	36	26.0	6.2
70	Fremont River at State Highway 24, above Sandy Creek, near Caineville	9- 9-76	0930	22	16.5	7.9
72	Pleasant Creek near Caineville	9- 9-76	1105	3.0	19.0	7.8
77	Fremont River above Sulphur Creek, at Fruita	9- 9-76	1320	33	16.5	8.7
78	Sulphur Creek at mouth, at Fruita	9- 9-76	1415	1.0	23.0	7.6
82	Fremont River at State Highway 24, 1.5 mi west of Torrey	9- 9-76	1510	31	16.0	8.4
85	Pine Creek at (D-29-3)11dd, near mouth, near Bicknell	9- 9-76	1630	22	12.0	9.4
91	Fremont River at State Highway 24, at Loa	9-10-76	1005	.6	12.0	8.1
94	Fremont River near Fremont	9-10-76	1210	22	14.5	7.6

The reconnaissance of the quality of surface water in the Dirty Devil River basin was designed primarily to define the chemical quality at selected times during the year. The scope of the investigation did not include special efforts to obtain water-quality data--either chemical quality or sediment--during thunderstorm runoff. In fact, thunderstorm runoff was not desirable during any given period of sampling of a single stream system once the data collection had started because such runoff would destroy comparability of data throughout the system.

Suspended-sediment samples were obtained at 15 sites during the period July 23-25, 1975. Suspended-sediment concentrations ranged from 4 to 2,740 mg/L. Samples were obtained at 10 sites during the period November 17-19, 1975. Concentrations ranged from 10 to 6,140 mg/L. The samples were obtained under stable flow conditions during scheduled water-quality sampling trips; thus, the data are not representative of flow conditions that result in nearly all the sediment transport in the Dirty Devil River basin.

Daily sediment records were obtained from March 1967 to May 1972 at Fremont River near Caineville (site 71) and from April 1969 to May 1972 at Pleasant Creek near Caineville (site 72)--a tributary of the Fremont River. The published records (U.S. Geological Survey, 1967-72) indicate the extreme variations in sediment concentrations and loads during short periods of time. At Fremont River near Caineville during the approximately 5-year period, about 65 percent of the sediment discharge occurred during only 1 percent of the time. At Pleasant Creek near Caineville during the approximately 3-year period, about 83 percent of the sediment discharge occurred during only 0.6 percent of the time. Mean daily sediment concentrations ranged from 11 to 129,000 mg/L at site 71 and from 0 to 55,600 mg/L at site 72. Total suspended-sediment discharge at site 71, including that from site 72, was about 915,000 tons (830,000 t) during the period March 1967 to May 1972. An annual summary of water discharge and sediment discharge at sites 71 and 72 is given in table 4.

Table 4.—Summary of water-discharge and sediment-discharge data obtained at Pleasant Creek near Caineville and Fremont River near Caineville, March 1967 to May 1972

Water year	Pleasant Creek near Caineville (site 72) (drainage area: 115 square miles)		Fremont River near Caineville (site 71) (drainage area: 1,190 square miles)	
	Water discharge (cfs-days)	Sediment discharge (tons)	Water discharge (cfs-days)	Sediment discharge (tons)
March—September 1967	—	—	10,760	142,741
1968	—	—	24,699	101,105
1969	1,498[1]	125,906[1]	23,484[2 3]	414,519[2 4]
1970	1,521	7,429	24,209	60,461
1971	1,180	5,364	27,359	171,441
September 1971—May 1972	534	3,541	18,469	24,661

[1]April—September.
[2]Entire 1969 water year.
[3]April—September total 9,350 cfs-days.
[4]April—September total 392,978 tons.

A map showing "Present Sediment Yield Rates" in the Western United States (U.S. Soil Conservation Service, 1975) indicates that sediment yield from the upper Fremont River basin upstream from site 71 is relatively low compared with the remaining part of the Dirty Devil River basin.

On May 7, 1976, a major flood having a maximum water discharge of 8,320 ft^3/s) was observed by G. A. Birdwell (U.S. Geological Survey, oral commun., 1976) at the gaging station at Muddy Creek at mouth near Hanksville (site 11). The suspended-sediment sample that he obtained at noon on May 7 had a concentration of 223,000 mg/L at a water discharge of 3,810 ft^3/s (107.9 m^3/s); thus, suspended-sediment discharge was at the rate of 2,290,000 tons (2,080,000 t) per day. If it is assumed that the sediment discharge at noon on May 7 was fairly representative of that day, then the quantity of sediment transported by Muddy Creek on May 7 was about 2.5 times greater than that transported by the Fremont River near Caineville during the 5-year period

March 1967-May 1972. Assuming a specific weight of 100 pounds per cubic foot, the sediment discharge on May 7 would be the equivalent of a block of sediment about 10 acres (4.0 hm^2) in area and 100 ft (30.5 m) thick.

Data obtained during 1948-54 were used by Iorns, Hembree, Phoenix, and Oakland (1964, p. 799-801) to compute monthly and annual sediment discharge of the Dirty Devil River near Hite, a site that is now inundated by Lake Powell (site 1 on pl. 1). The average annual suspended-sediment discharge for the 6-year period (July 1948-June 1954) was about 5,600,000 tons (5,080,000 t). The detailed computations of daily sediment discharges used to obtain monthly and annual sediment discharges are not available. Daily water-discharge records for the period indicate that about 75 percent of the suspended-sediment discharge during the 6-year period occurred on a total of only 26 days, or about 1 percent of the time. About 20 percent of the sediment discharge during the 6-year period probably occurred during a single 3-day flood in August 1951.

During the past 25 years, no new reservoirs or other water developments have changed the sediment-discharge characteristics of streams in the Dirty Devil River basin. Sediment-discharge measurements made during 1948-54 were used to establish a relationship of sediment discharge to water discharge. This relationship was used to make a rough estimate of sediment discharge of the Dirty Devil River 1 mi (1.6 km) upstream from Poison Spring Wash (site 2) during the 1975 and 1976 water years. Gaging-station records for these years were used with this relationship. Estimated suspended-sediment discharge during the 1975 water year was about 1,500,000 tons (1,360,000 t) and during the 1976 water was 2,700,000 tons (2,450,000 t). Probably about half of the sediment discharge during the 2-year period occurred on May 7-8, 1976.

The following conclusions on sediment discharge in the Dirty Devil River basin are based on the geology of the basin, on field observations of the terrain, and on available suspended-sediment data:

1. Sediment discharge from the upper 1,000 mi^2 (2,590 km^2) of the Fremont River basin and from the upper 400 mi^2 (1,040 km^2) of the Muddy Creek basin is a very small part of the sediment discharge of the Dirty Devil River at site 2.

2. Less than half of the remaining 2,900 mi^2 (7,510 km^2) of drainage area of the Dirty Devil River probably contributes most of the sediment that is discharged by the streams during a very small part of the time each year.

CONCLUSIONS

Conclusions resulting from the water-quality reconnaissance of the Dirty Devil River basin are:

1. Most of the runoff in the drainage area of Muddy Creek originates from snowmelt in mountainous areas, has dissolved-solids concentations of less than 300 mg/L, and is diverted for irrigation in the Emery area. The water that enters the creek downstream from the points of diversion has much higher dissolved-solids concentrations than does the diverted water. Significant inflow does not enter Muddy Creek downstream from the Emery area; therefore, the chemical quality of the water does not improve between the Emery area and the mouth of Muddy Creek.

2. Most of the runoff in the drainage area of the Fremont River originates from snowmelt in mountainous areas, has dissolved-solids concentrations of less than 200 mg/L, and is diverted for irrigation in the upper Fremont River valley. Major flow accretion to the Fremont River, mainly from ground-water inflow in the Bicknell Bottoms area, results in adequate water for downstream diversions. This accretion also maintains the relatively low dissolved-solids concentrations in the Fremont River despite the inflow of tributaries having relatively high dissolved-solids concentrations.

3. The Dirty Devil River is formed by the confluence of Muddy Creek and the Fremont River. No perennial tributaries enter the Dirty Devil River, and the flow is generally a composite of flow from Muddy Creek and the Fremont River. During some periods of low flow, salts may be deposited in the channel of the Dirty Devil River. Re-solution of these salts as water moves downstream from the confluence of Muddy Creek and the Fremont River may result in a significant increase in dissolved-solids concentration at the mouth of the Dirty Devil River.

4. A small amount of data available suggests a general absence of major biological pollution in the basin.

5. Sediment discharge from the upper 1,000 mi^2 (2,590 km^2) of the Fremont River basin and from the upper 400 mi^2 (1,040 km^2) of Muddy Creek basin is a very small part of the sediment discharge of the Dirty Devil River at its mouth. Less than half of the remaining 2,900 mi^2 (7,510 km^2) of drainage area probably contributes most of the sediment that is discharged by the Dirty Devil River.

REFERENCES CITED

Bjorklund, L. J., 1969, Reconnaissance of the ground-water resources of the upper Fremont River valley, Wayne County, Utah: Utah Department of Natural Resources Technical Publication 22.

Durfor, C. N., and Becker, Edith, 1964, Public water supplies of the 100 largest cities in the United States, 1962: U.S. Geological Survey Water-Supply Paper 1812.

Ellis, M. M., 1937, Detection and measurement of stream pollution: U.S. Bureau of Fisheries Bulletin 22.

Goode, H. D., and Olson, Eric, 1977, Reconnaissance appraisal of the water resources of the Henry Mountains coal field, Wayne and Garfield Counties, Utah, 1975-1977: University of Utah duplicated report.

Hem, J. D., 1970, Study and interpretation of the chemical characteristics of natural water [2d ed.]: U.S. Geological Survey Water-Supply Paper 1473.

Hood, J. W., and Danielson, T. W., 1979, Water in bedrock in the lower Dirty Devil River basin area, Utah, with emphasis on the Navajo Sandstone: Salt Lake City, U.S. Geological Survey manuscript in preparation.

Iorns, W. V., Hembree, C. H., and Oakland, G. L., 1965, Water resources of the Upper Colorado River Basin--Technical report: U.S. Geological Survey Professional Paper 441.

Iorns, W. V., Hembree, C. H., Phoenix, D. A., and Oakland, G. L., 1964, Water resources of the Upper Colorado River Basin--Basic data: U.S. Geological Survey Professional Paper 442.

Skougstad, M. W., and Horr, C. A., 1963, Occurrence and distribution of strontium in natural water: U.S. Geological Survey Water-Supply Paper 1496-D.

Slack, K. V., Averett, R. C., Greeson, P. E., and Lipscomb, R. G., 1973, Methods for collection and analysis of aquatic biological and microbiological samples: U.S. Geological Survey Techniques Water-Resources Investigation, Book 5, Chapter A4.

Stokes, W. L., ed., 1964, Geologic map of Utah: University of Utah.

Swenson, J. L., Jr., Erickson, D. T., Donaldson, K. M., and Shiozaki, J. J., 1970, Soil survey of Carbon-Emery area, Utah: U.S. Soil Conservation Service.

U.S. Environmental Protection Agency, 1973, Ecological Research Series, Water Quality Criteria - 1972: EPA-R3-73-033, 594 p.

U.S. Geological Survey, 1967-72, Water resources data for Utah, Part 2, Water-quality records: Water Resources Division.

U.S. Public Health Service, 1962, Drinking water standards: U.S. Public Health Service Publication 956.

U.S. Salinity Laboratory Staff, 1954, Diagnosis and improvement of saline and alkali soils: U.S. Department of Agriculture Handbook 60.

U.S. Soil Conservation Service, 1975, Erosion, sediment and related salt problems and treatment opportunities: Special Projects Division, Golden, Colorado.

U.S. Weather Bureau, (no date), Normal annual and May-September precipitation (1931-60) for the State of Utah: Map of Utah, scale 1:500,000.

_____(no date), Normal October-April precipitation (1931-60) for the State of Utah: Map of Utah, scale 1:500,000.

Waddell, K. M., Contratto, P. K., Sumsion, C. T., and Butler, J. R., 1979, Hydrologic reconnaissance of the Wasatch Plateau-Book Cliffs coal-fields area, Utah: Salt Lake City, U.S. Geological Survey manuscript in preparation.

Waddell, K. M., Vickers, H. L., Upton, R. T., and Contratto, P. K., 1978, Selected hydrologic data, 1931-77, Wasatch Plateau-Book Cliffs coal-fields area, Utah: U.S. Geological Survey Open-File Report 78-121 (also duplicated as Utah Basic-Data Release 31).

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76
[Sites are shown on plate 1]

Specific conductance: Micromhos per centimeter at 25°C.

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SiO_2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO_3) (MG/L)	CARBONATE (CO_3) (MG/L)
Site 2 Dirty Devil River above Poison Spring Wash, near Hanksville										
JUL , 1975										
28...	1300	29.0	13	18	370	78	320	14	133	0
AUG										
26...	1330	26.5	11	16	550	87	440	20	147	0
SEP										
30...	1130	15.5	35	20	220	41	120	8.7	152	0
OCT										
28...	1255	12.5	106	17	220	36	120	8.7	172	0
NOV										
18...	1410	6.0	90	21	180	37	110	6.0	194	0
DEC										
04...	1215	.0	137	24	150	34	110	6.6	194	0
JAN , 1976										
06...	1220	.0	62	29	190	47	120	6.9	234	0
FEB										
02...	1330	3.0	172	20	160	36	110	5.8	175	0
MAR										
10...	1445	10.0	151	23	150	37	120	6.6	190	0
APR										
07...	1150	13.5	91	23	140	41	120	7.2	166	0
MAY										
28...	1840	23.5	27	18	320	62	290	13	129	0
AUG										
04...	1245	23.0	28	14	380	65	240	16	172	0
Site 6 Dry Valley Wash near Hanksville										
MAY , 1976										
30...	1400	30.0	3.0	10	58	8.1	11	2.0	143	0
Site 7 Bull Creek at mouth, at Hanksville										
AUG , 1975										
29...	1415	25.0	.05	26	140	37	78	8.1	157	0
MAY , 1976										
26...	--	15.0	.20	20	160	40	57	7.4	169	0
Site 9 Dirty Devil River near Hanksville										
JUL , 1975										
25...	1720	30.5	22	19	290	79	290	11	159	0
MAY , 1976										
26...	--	23.5	28	18	270	72	310	11	167	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 2 Dirty Devil River above Poison Spring Wash, near Hanksville--Continued										
JUL , 1975										
28...	1500	240	.36	--	--	--	.00	.5	2610	3000
AUG										
26...	1900	370	1.2	--	--	--	.03	.5	3460	4000
SEP										
30...	720	92	.09	--	--	--	.00	.4	1300	1800
OCT										
28...	630	110	.30	--	--	--	.00	.4	1230	1600
NOV										
18...	530	100	.50	--	--	--	.03	.3	1090	1500
DEC										
04...	420	120	.53	--	--	--	.00	.3	963	1400
JAN , 1976										
06...	570	120	.97	--	--	--	.09	.3	1200	1600
FEB										
02...	480	120	.69	--	--	--	.03	.2	1020	1520
MAR										
10...	460	110	1.5	--	--	--	.21	.3	1010	1500
APR										
07...	470	110	.09	--	--	--	.00	.3	994	1200
MAY										
28...	1200	230	.42	--	--	--	.06	.5	2200	3050
AUG										
04...	1300	160	.59	--	--	--	.06	.5	2260	2500
Site 6 Dry Valley Wash near Hanksville--Continued										
MAY , 1976										
30...	83	3.6	.04	--	--	--	.03	.3	247	399
Site 7 Bull Creek at mouth, at Hanksville--Continued										
AUG , 1975										
29...	460	59	.03	--	--	--	.28	.3	889	1270
MAY , 1976										
26...	500	30	.17	--	--	--	.06	.3	899	1290
Site 9 Dirty Devil River near Hanksville--Continued										
JUL , 1975										
25...	1200	240	.25	--	--	--	.03	.4	2210	2950
MAY , 1976										
26...	1200	260	.64	--	--	--	.06	.5	2230	3000

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	PH (UNITS)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)
Site 2 Dirty Devil River above Poison Spring Wash, near Hanksville--Continued									
JUL , 1975									
28...	1200	1100	3.9	8.0	280	--	--	--	--
AUG									
26...	1700	1600	4.6	7.8	360	--	--	--	--
SEP									
30...	720	590	1.9	8.0	190	--	--	--	--
OCT									
28...	700	560	2.0	8.1	160	--	--	--	--
NOV									
18...	600	450	2.0	8.4	110	20	20	20	1
DEC									
04...	510	360	2.1	7.8	190	--	--	--	--
JAN , 1976									
06...	670	480	2.0	8.0	130	--	--	--	--
FEB									
02...	550	400	2.0	7.7	110	--	--	--	--
MAR									
10...	530	370	2.3	8.2	100	--	--	--	--
APR									
07...	520	380	2.3	8.2	120	--	--	--	--
MAY									
28...	1100	950	3.9	7.9	220	30	20	--	--
AUG									
04...	1200	1100	3.0	6.5	290	--	--	--	--
Site 6 Dry Valley Wash near Hanksville--Continued									
MAY , 1976									
30...	180	61	.4	8.1	40	80	10	--	--
Site 7 Bull Creek at mouth, at Hanksville--Continued									
AUG , 1975									
29...	510	380	1.5	7.9	140	--	--	--	--
MAY , 1976									
26...	560	430	1.0	8.0	120	60	10	--	--
Site 9 Dirty Devil River near Hanksville--Continued									
JUL , 1975									
25...	1100	920	3.9	7.8	240	--	--	--	--
MAY , 1976									
26...	970	830	4.3	7.7	210	40	10	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 2 Dirty Devil River above Poison Spring Wash, near Hanksville--Continued									
JUL , 1975									
28...	--	--	--	--	--	--	--	--	--
AUG									
26...	--	--	--	--	--	--	--	--	--
SEP									
30...	--	--	--	--	--	--	--	--	--
OCT									
28...	--	--	--	--	--	--	--	--	--
NOV									
18...	2	.4	2500	10	0	0	5	4	40
DEC									
04...	--	--	--	--	--	--	--	--	--
JAN , 1976									
06...	--	--	--	--	--	--	--	--	--
FEB									
02...	--	--	--	--	--	--	--	--	--
MAR									
10...	--	--	--	--	--	--	--	--	--
APR									
07...	--	--	--	--	--	--	--	--	--
MAY									
28...	--	--	--	--	--	--	--	--	--
AUG									
04...	--	--	--	--	--	--	--	--	--
Site 6 Dry Valley Wash near Hanksville--Continued									
MAY , 1976									
30...	--	--	--	--	--	--	--	--	--
Site 7 Bull Creek at mouth, at Hanksville--Continued									
AUG , 1975									
29...	--	--	2600	--	--	--	--	--	--
MAY , 1976									
26...	--	--	--	--	--	--	--	--	--
Site 9 Dirty Devil River near Hanksville--Continued									
JUL , 1975									
25...	--	--	--	--	--	--	--	--	--
MAY , 1976									
26...	--	--	--	--	--	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
Site 10 Fremont River 1 mi above mouth, near Hanksville										
JUL , 1975										
25...	1630	30.0	10	26	180	46	76	9.0	180	0
AUG										
29...	1430	29.0	10	25	220	50	120	9.4	184	0
OCT										
28...	--	14.0	104	22	150	36	130	7.7	191	0
NOV										
18...	1010	4.0	110	26	110	27	36	4.9	199	0
FEB , 1976										
02...	1730	--	100	25	93	24	32	4.5	173	0
MAR										
10...	1130	8.5	138	28	110	26	44	4.9	182	0
31...	1310	16.5	75	25	85	27	34	4.9	170	0
APR										
07...	--	21.0	40	26	98	30	48	6.3	167	0
MAY										
07...	--	15.0	40	21	160	49	120	7.6	184	0
26...	--	20.5	20	20	190	46	74	8.2	179	0
JUN										
09...	1200	26.0	7.0	22	230	47	140	9.4	192	0
JUL										
09...	--	26.0	1.0	22	340	67	270	11	231	0
AUG										
10...	1830	26.0	12	23	220	41	96	11	183	0
SEP										
07...	1850	29.0	48	19	150	27	160	10	187	0
08...	1400	--	45	22	180	37	95	8.9	186	--
Site 11 Muddy Creek at mouth, near Hanksville										
JUL , 1975										
25...	1635	32.0	12	12	400	100	490	12	145	0
OCT										
28...	1450	14.0	1.9	8.9	500	130	1200	15	155	0
NOV										
18...	1030	4.0	11	8.9	420	140	850	9.6	212	0
DEC										
05...	1200	.0	3.6	11	470	140	970	11	235	0
JAN , 1976										
06...	1430	.0	3.9	12	450	150	1000	12	296	0
FEB										
02...	1700	.0	13	8.0	390	90	590	8.0	188	0
MAR										
10...	1115	8.5	12	11	350	120	600	8.8	204	0
31...	1235	16.5	15	9.8	340	140	740	14	192	0
APR										
07...	1415	22.0	14	11	360	140	810	11	167	0
MAY										
07...	1330	15.0	3810	8.3	500	84	700	16	191	0
26...	1140	21.5	8.0	11	490	150	950	15	143	0
JUN										
09...	1230	26.0	.03	16	620	230	1800	25	211	0
AUG										
04...	1600	27.0	.01	13	670	130	940	26	133	0
Site 12 Muddy Creek below Salt Wash										
JUL , 1975										
25...	1425	30.5	12	12	230	100	500	11	180	0
AUG										
28...	1000	17.0	2.7	13	350	81	1400	13	157	0
NOV										
18...	0830	2.0	16	8.4	260	120	610	7.5	253	0
MAY , 1976										
27...	--	17.5	8.0	10	300	150	930	12	185	0
AUG										
11...	1100	23.5	3.0	12	380	95	1400	14	148	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 10 Fremont River 1 mi above mouth, near Hanksville--Continued										
JUL , 1975										
25...	580	39	.08	--	--	--	.03	.4	1050	1400
AUG										
29...	750	65	.05	--	--	--	.12	.3	1330	1710
OCT										
28...	470	120	.21	--	--	--	.00	.3	1030	1440
NOV										
18...	270	23	.47	--	--	--	.00	.3	599	845
FEB , 1976										
02...	240	21	.65	--	--	--	.03	.2	528	789
MAR										
10...	290	23	.58	--	--	--	.03	.2	619	901
31...	220	22	.44	--	--	--	.03	.2	504	810
APR										
07...	310	25	.03	--	--	--	.00	.3	626	901
MAY										
07...	600	39	.12	--	--	--	.03	.3	1090	1440
26...	600	32	.16	--	--	--	.03	.3	1060	1440
JUN										
09...	830	49	.01	--	--	--	.12	.3	1420	1750
JUL										
09...	1500	70	.01	--	--	--	.09	.3	2410	2940
AUG										
10...	680	42	.70	--	--	--	.03	.4	1210	2270
SEP										
07...	630	34	.89	--	--	--	.03	.6	1130	1460
08...	580	41	.15	--	--	--	.03	.4	1000	1450
Site 11 Muddy Creek at mouth, near Hanksville--Continued										
JUL , 1975										
25...	1700	410	.34	--	--	--	.09	.5	3200	4050
OCT										
28...	2200	1400	.29	--	--	--	.00	.4	5530	7590
NOV										
18...	2200	780	2.2	--	--	--	.00	.4	4530	5700
DEC										
05...	2300	980	1.3	--	--	--	.00	.4	5000	6680
JAN , 1976										
06...	2000	1100	1.2	--	--	--	.12	.4	4880	7180
FEB										
02...	1500	670	.91	--	--	--	.03	.3	3350	4650
MAR										
10...	1700	520	1.4	--	--	--	.03	.4	3420	4470
31...	1600	790	1.1	--	--	--	.15	.3	3730	5450
APR										
07...	1700	870	.96	--	--	--	.00	.4	3990	5590
MAY										
07...	2300	540	2.0	--	--	--	.03	.4	4250	5500
26...	2500	920	1.7	--	--	--	.06	.4	5110	6760
JUN										
09...	3400	1900	.00	--	--	--	.09	.4	8100	10800
AUG										
04...	2700	910	1.1	--	--	--	.09	.6	5460	6770
Site 12 Muddy Creek below Salt Wash--Continued										
JUL , 1975										
25...	1200	470	.39	--	--	--	.03	.4	2610	3500
AUG										
28...	1300	2100	.05	--	--	--	.03	.5	5340	8530
NOV										
18...	1500	560	1.8	--	--	--	.00	.4	3200	4400
MAY , 1976										
27...	1800	940	.97	--	--	--	.03	.4	4240	6400
AUG										
11...	1300	2200	.07	--	--	--	.03	.5	5480	8590

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PH (UNITS)	DISSOLVED BORON (B) (UG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)
Site 10 Fremont River 1 mi above mouth, near Hanksville--Continued									
JUL , 1975									
25...	640	490	1.3	8.0	150	--	--	--	--
AUG									
29...	760	610	1.9	7.9	200	--	--	--	0
OCT									
28...	520	370	2.5	8.1	120	--	--	--	--
NOV									
18...	390	220	.8	8.3	90	30	5	20	0
FEB , 1976									
02...	330	190	.8	7.4	90	--	--	--	--
MAR									
10...	380	230	1.0	7.3	80	--	--	--	--
31...	320	180	.8	8.1	90	--	--	--	--
APR									
07...	370	230	1.1	8.2	100	--	--	--	--
MAY									
07...	600	450	2.1	7.9	130	--	--	--	--
26...	660	520	1.3	7.9	140	30	0	--	--
JUN									
09...	770	610	2.2	7.6	190	20	40	--	--
JUL									
09...	1200	1000	3.4	7.6	340	--	--	--	--
AUG									
10...	720	570	1.6	7.6	190	20	10	40	2
SEP									
07...	490	340	3.2	8.0	230	30	10	250	2
08...	600	450	1.7	--	190	--	--	--	--
Site 11 Muddy Creek at mouth, near Hanksville--Continued									
JUL , 1975									
25...	1400	1300	5.7	7.9	290	--	--	--	--
OCT									
28...	1800	1700	12	8.1	370	--	--	--	--
NOV									
18...	1600	1500	9.2	8.3	340	60	20	20	5
DEC									
05...	1800	1600	10	7.9	350	--	--	--	--
JAN , 1976									
06...	1700	1500	10	--	320	--	--	--	--
FEB									
02...	1300	1200	7.0	--	220	--	--	--	--
MAR									
10...	1400	1200	7.1	7.4	270	--	--	--	--
31...	1400	1300	8.5	7.9	300	--	--	--	--
APR									
07...	1500	1300	9.2	8.1	340	--	--	--	--
MAY									
07...	1600	1400	7.6	7.1	280	--	--	--	--
26...	1800	1700	9.6	7.7	380	20	10	--	--
JUN									
09...	2500	2300	16	8.1	680	--	--	--	--
AUG									
04...	2200	2100	8.7	7.9	450	--	--	--	--
Site 12 Muddy Creek below Salt Wash--Continued									
JUL , 1975									
25...	990	840	6.9	8.0	260	--	--	--	2
AUG									
26...	1200	1100	18	7.8	340	--	--	--	0
NOV									
18...	1100	940	7.9	8.3	270	60	20	30	5
MAY , 1976									
27...	1400	1200	11	7.9	350	30	30	--	--
AUG									
11...	1300	1200	17	7.4	330	20	60	10	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 10 Fremont River 1 mi above mouth, near Hanksville--Continued									
JUL , 1975									
25...	--	--	--	--	--	--	--	--	--
AUG									
29...	--	--	3700	--	--	--	--	--	--
OCT									
28...	--	--	--	--	--	--	--	--	--
NOV									
18...	3	.0	1400	30	100	0	3	1	30
FEB , 1976									
02...	--	--	--	--	--	--	--	--	--
MAR									
10...	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--
APR									
07...	--	--	--	--	--	--	--	--	--
MAY									
07...	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--
JUN									
09...	--	--	--	--	--	--	--	--	--
JUL									
09...	--	--	--	--	--	--	--	--	--
AUG									
10...	2	1.2	3100	20	100	0	2	3	30
SEP									
07...	2	.0	2700	0	400	0	0	3	30
08...	--	--	--	--	--	--	--	--	--
Site 11 Muddy Creek at mouth, near Hanksville--Continued									
JUL , 1975									
25...	--	--	--	--	--	--	--	--	--
OCT									
28...	--	--	--	--	--	--	--	--	--
NOV									
18...	1	.1	5000	20	0	0	2	2	150
DEC									
05...	--	--	--	--	--	--	--	--	--
JAN , 1976									
06...	--	--	--	--	--	--	--	--	--
FEB									
02...	--	--	--	--	--	--	--	--	--
MAR									
10...	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	--
APR									
07...	--	--	--	--	--	--	--	--	--
MAY									
07...	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--
JUN									
09...	--	--	--	--	--	--	--	--	--
AUG									
04...	--	--	--	--	--	--	--	--	--
Site 12 Muddy Creek below Salt Wash--Continued									
JUL , 1975									
25...	--	--	--	--	--	--	--	--	--
AUG									
28...	--	--	5800	--	--	--	--	--	--
NOV									
18...	1	.0	3200	20	0	0	2	2	120
MAY , 1976									
27...	--	--	--	--	--	--	--	--	--
AUG									
11...	1	.0	5800	20	0	0	2	5	50

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SiO_2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO_3) (MG/L)	CARBONATE (CO_3) (MG/L)
Site 13 Salt Wash at mouth, at Muddy Creek										
JUL , 1975										
25...	1400	34.0	2.0	13	360	86	1500	13	137	0
AUG										
28...	0940	15.0	2.2	12	330	83	1500	12	147	0
NOV										
18...	0800	2.0	2.5	10	370	80	1500	9.5	193	0
MAY , 1976										
27...	--	19.0	2.5	11	370	86	1500	12	132	0
AUG										
11...	1125	25.0	2.6	12	390	85	1600	13	131	0
SEP										
08...	1500	--	<2.5	--	--	--	--	--	--	--
Site 16 Muddy Creek 0.5 mi above Salt Wash										
JUL , 1975										
25...	1405	29.5	10	11	200	100	340	9.9	186	0
AUG										
28...	0930	16.0	.50	12	230	120	690	14	241	0
NOV										
18...	0805	2.0	14	8.0	230	130	480	7.2	268	0
MAY , 1976										
27...	--	17.5	5.5	9.3	290	160	730	12	202	0
AUG										
11...	1120	26.0	.30	10	200	110	710	14	218	0
Site 21 Muddy Creek at Delta Mine, near Hanksville										
AUG , 1975										
26...	1150	17.5	.05	11	420	150	580	15	193	0
SEP										
24...	1800	18.0	.02	11	480	140	670	14	151	--
OCT										
01...	1035	11.5	.04	11	480	150	670	14	250	0
29...	1100	4.0	5.0	7.0	320	170	720	11	221	0
FEB , 1976										
03...	1300	.0	157	8.6	210	100	400	5.2	273	0
26...	1230	5.0	9.9	8.4	190	110	370	6.3	266	0
APR										
08...	0920	8.5	8.6	10	180	120	460	7.7	221	0
MAY										
06...	1130	15.0	1.0	8.5	310	160	810	12	172	0
27...	--	28.0	4.5	93	300	190	720	12	187	0
JUN										
10...	1030	23.0	.04	10	450	180	810	16	207	0
Site 22 Muddy Creek below Reds Canyon, at Tomsich Butte										
AUG , 1975										
26...	1330	29.0	.50	12	370	140	620	5.7	190	0
MAY , 1976										
27...	1545	29.0	5.0	9.8	320	170	780	13	227	0
Site 24 Last Chance Creek at (D-25-5)6bbb, below Round Spring Draw										
JUL , 1975										
24...	1340	21.0	.20	22	74	41	26	3.6	309	0
AUG										
25...	1745	18.0	.04	23	70	49	37	3.5	335	0
MAY , 1976										
30...	--	14.0	.45	19	64	37	21	2.3	289	0
Site 26 North Last Chance Creek at mouth, at (D-25-4)11aaa										
JUL , 1975										
24...	1045	14.0	.01	19	67	31	20	2.9	344	0
MAY , 1976										
30...	--	10.0	.10	16	67	26	12	2.0	308	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 13 Salt Wash at mouth, at Muddy Creek--Continued										
JUL , 1975										
25...	1300	2300	.02	--	--	--	.03	.5	5640	8500
AUG										
28...	1200	2200	.01	--	--	--	.09	.5	5420	8520
NOV										
18...	1300	2200	.08	--	--	--	.03	.5	5570	>8000
MAY , 1976										
27...	1400	2200	.07	--	--	--	.55	.5	5650	9160
AUG										
11...	1400	2300	.09	--	--	--	.00	.5	5870	9400
SEP										
08...	--	--	--	--	--	--	.06	--	5650	8920
Site 16 Muddy Creek 0.5 mi above Salt Wash--Continued										
JUL , 1975										
25...	1200	210	.44	--	--	--	.03	.4	2170	2900
AUG										
28...	720	1100	.01	--	--	--	.21	.3	3010	5030
NOV										
18...	1500	270	2.1	--	--	--	.03	.4	2770	3600
MAY , 1976										
27...	2100	440	1.4	--	--	--	.25	.4	3850	5070
AUG										
11...	630	1200	.02	--	--	--	.00	.4	2980	4990
Site 21 Muddy Creek at Delta Mine, near Hanksville--Continued										
AUG , 1975										
26...	2100	420	.26	--	--	--	.03	.4	3800	4800
SEP										
24...	2500	450	--	--	--	--	.00	.3	4340	5410
OCT										
01...	2400	520	.06	--	--	--	.03	.3	4370	5230
29...	1900	580	1.8	--	--	--	.03	.4	3830	5210
FEB , 1976										
03...	1200	260	1.5	--	--	--	.00	.4	2330	3050
26...	1200	180	2.0	--	--	--	.03	.4	2210	3050
APR										
08...	1300	280	1.4	--	--	--	.00	.4	2470	3430
MAY										
06...	2200	630	1.7	--	--	--	.03	.4	4240	5650
27...	2400	360	1.4	--	--	--	.00	.4	4090	5190
JUN										
10...	2600	590	.10	--	--	--	.03	.4	4760	5690
Site 22 Muddy Creek below Reds Canyon, at Tomsich Butte--Continued										
AUG , 1975										
26...	1900	440	.15	--	--	--	.03	.4	3590	4720
MAY , 1976										
27...	2300	460	.78	--	--	--	.00	.4	4170	5350
Site 24 Last Chance Creek at (D-25-5)6bbb, below Round Spring Draw--Continued										
JUL , 1975										
24...	110	22	.00	--	--	--	.09	.3	451	710
AUG										
25...	130	29	.11	--	--	--	.09	.3	509	850
MAY , 1976										
30...	83	19	.00	--	--	--	.03	.2	388	592
Site 26 North Last Chance Creek at mouth, at (D-25-4)11aaa--Continued										
JUL , 1975										
24...	32	14	.53	--	--	--	.25	.2	358	615
MAY , 1976										
30...	32	12	1.6	--	--	--	.03	.3	326	580

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PH (UNITS)	DISSOLVED BORON (B) (UG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)
Site 13 Salt Wash at mouth, at Muddy Creek--Continued									
JUL , 1975									
25...	1300	1100	18	7.9	340	--	--	--	0
AUG									
28...	1200	1100	19	7.8	350	--	--	--	0
NOV									
18...	1300	1100	18	7.8	320	90	40	20	0
MAY , 1976									
27...	1300	1200	18	7.7	330	110	10	--	--
AUG									
11...	1300	1200	19	7.5	350	20	20	20	0
SEP									
08...	1300	1200	18	--	--	--	--	--	--
Site 16 Muddy Creek 0.5 mi above Salt Wash--Continued									
JUL , 1975									
25...	910	760	4.9	8.0	250	--	--	--	3
AUG									
28...	1100	880	9.2	7.9	180	--	--	--	0
NOV									
18...	1100	890	6.3	8.1	260	30	20	20	3
MAY , 1976									
27...	1400	1200	8.5	8.0	350	30	30	--	--
AUG									
11...	950	770	10	7.6	170	40	120	--	--
Site 21 Muddy Creek at Delta Mine, near Hanksville--Continued									
AUG , 1975									
26...	1700	1500	6.2	8.0	370	--	--	--	--
SEP									
24...	1800	1700	6.9	--	380	70	310	--	--
OCT									
01...	1800	1600	6.8	8.0	330	50	160	--	--
29...	1500	1300	8.1	8.1	380	--	--	--	--
FEB , 1976									
03...	940	710	5.7	--	230	--	--	--	--
26...	930	710	5.3	8.2	230	--	--	--	--
APR									
08...	940	760	6.5	--	250	--	--	--	--
MAY									
06...	1500	1400	9.1	8.2	410	--	--	--	--
27...	1500	1400	8.0	8.0	430	40	10	--	--
JUN									
10...	1900	1700	8.2	7.1	410	--	--	--	--
Site 22 Muddy Creek below Reds Canyon, at Tomsich Butte--Continued									
AUG , 1975									
26...	1500	1400	7.0	8.0	400	--	--	--	--
MAY , 1976									
27...	1500	1300	8.8	7.9	440	80	20	--	--
Site 24 Last Chance Creek at (D-25-5)6bbb, below Round Spring Draw--Continued									
JUL , 1975									
24...	350	100	.6	8.1	50	--	--	--	0
AUG									
25...	380	100	.8	8.0	90	--	--	--	--
MAY , 1976									
30...	310	75	.5	8.1	60	80	10	--	--
Site 26 North Last Chance Creek at mouth, at (D-25-4)11aaa--Continued									
JUL , 1975									
24...	300	13	.5	8.1	30	--	--	--	0
MAY , 1976									
30...	270	22	.3	8.1	50	20	0	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 13 Salt Wash at mouth, at Muddy Creek--Continued									
JUL , 1975									
25...	--	--	--	--	--	--	--	--	--
AUG									
28...	--	--	5600	--	--	--	--	--	--
NOV									
18...	0	.1	5800	20	0	0	5	1	40
MAY , 1976									
27...	--	--	--	--	--	--	--	--	--
AUG									
11...	0	.0	6400	10	0	0	3	3	50
SEP									
08...	--	--	5800	0	200	0	0	2	50
Site 16 Muddy Creek 0.5 mi above Salt Wash--Continued									
JUL , 1975									
25...	--	--	--	--	--	--	--	--	--
AUG									
28...	--	--	3800	--	--	--	--	--	--
NOV									
18...	1	.0	2900	20	0	0	5	1	130
MAY , 1976									
27...	--	--	--	--	--	--	--	--	--
AUG									
11...	--	--	--	--	--	--	--	--	--
Site 21 Muddy Creek at Delta Mine, near Hanksville--Continued									
AUG , 1975									
26...	--	--	6000	--	--	--	--	--	--
SEP									
24...	--	--	--	--	--	--	--	--	--
OCT									
01...	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
FEB , 1976									
03...	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--
APR									
08...	--	--	--	--	--	--	--	--	--
MAY									
06...	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--
JUN									
10...	--	--	--	--	--	--	--	--	--
Site 22 Muddy Creek below Reds Canyon, at Tomsich Butte--Continued									
AUG , 1975									
26...	--	--	5700	--	--	--	--	--	--
MAY , 1976									
27...	--	--	--	--	--	--	--	--	--
Site 24 Last Chance Creek at (D-25-5)6bbb, below Round Spring Draw--Continued									
JUL , 1975									
24...	--	--	--	--	--	--	--	--	--
AUG									
25...	--	--	950	--	--	--	--	--	--
MAY , 1976									
30...	--	--	--	--	--	--	--	--	--
Site 26 North Last Chance Creek at mouth, at (D-25-4)11aaa--Continued									
JUL , 1975									
24...	--	--	--	--	--	--	--	--	--
MAY , 1976									
30...	--	--	--	--	--	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SiO_2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO_3) (MG/L)	CARBONATE (CO_3) (MG/L)
Site 27 South Last Chance Creek at (D-25-4)11ca										
JUL , 1975										
24...	1100	--	.05	26	56	25	11	1.9	286	0
AUG										
25...	1810	16.5	.04	24	54	25	7.7	1.7	269	0
MAY , 1976										
30...	1815	11.5	.10	23	58	21	8.7	1.4	278	0
Site 32 Muddy Creek below Interstate Highway 70, near Emery										
JUL , 1975										
23...	1800	25.0	14	9.4	120	83	210	6.3	312	0
AUG										
25...	1940	20.0	4.5	12	200	190	420	10	299	0
SEP										
10...	--	--	4.0	11	220	200	610	10	325	0
NOV										
19...	1040	.0	10	8.3	170	150	370	5.4	369	0
DEC										
29...	--	.0	11	9.9	250	130	500	7.9	306	0
APR , 1976										
01...	--	10.0	5.0	10	130	110	230	5.6	267	0
MAY										
31...	1130	17.5	9.0	6.0	180	140	570	10	383	0
AUG										
11...	--	25.0	.10	8.7	260	120	940	13	259	0
Site 33 Ivie Creek at mouth, at Interstate Highway 70										
JUL , 1975										
23...	1905	22.5	13	9.8	120	80	160	5.6	295	0
AUG										
25...	1930	20.0	3.0	12	200	170	390	9.5	310	0
NOV										
19...	1105	.0	5.0	8.6	150	120	290	4.9	367	0
APR , 1976										
01...	1800	10.0	3.0	10	120	100	200	5.3	260	0
MAY										
31...	1145	19.0	4.6	7.6	180	180	510	10	352	0
AUG										
11...	1750	25.0	.10	8.8	290	160	850	13	272	0
SEP										
21...	1445	17.0	.75	9.8	210	210	820	11	307	0
Site 34 Quitchupah Creed at mouth, near Interstate Highway 70										
JUL , 1975										
23...	1845	22.5	12	9.8	100	78	150	5.0	317	0
NOV										
19...	1205	.0	6.0	7.8	120	100	220	3.7	351	0
MAY , 1976										
31...	1305	19.5	6.0	5.5	150	160	440	8.2	373	0
AUG										
11...	1900	22.0	.60	7.3	190	210	700	11	300	0
SEP										
21...	1640	17.0	.50	9.8	190	180	570	9.8	304	0
Site 35 Ivie Creek below Dog Valley Wash, at Interstate Highway 70										
JUL , 1975										
23...	1825	25.5	1.0	15	290	230	330	12	238	0
NOV										
19...	--	.0	1.0	--	--	--	--	--	--	--
APR , 1976										
01...	1740	10.0	2.5	14	130	120	150	6.6	232	0
MAY										
31...	1330	26.0	1.2	12	240	290	450	11	261	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (P04) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 27 South Last Chance Creek at (D-25-4)11ca--Continued										
JUL , 1975										
24...	15	11	.02	--	--	--	.09	.3	287	495
AUG										
25...	17	11	.02	--	--	--	.12	.3	274	435
MAY , 1976										
30...	17	8.6	.07	--	--	--	.12	.3	276	470
Site 32 Muddy Creek below Interstate Highway 70, near Emery--Continued										
JUL , 1975										
23...	790	33	.93	--	--	--	.03	.4	1410	1950
AUG										
25...	1700	71	5.9	--	--	--	.09	.5	2780	--
SEP										
10...	2100	120	3.5	--	--	--	.00	.6	3450	4000
NOV										
19...	1400	63	3.7	--	--	--	.00	.4	2370	2900
DEC										
29...	1500	350	1.8	--	--	--	.03	.4	2910	3880
APR , 1976										
01...	950	59	2.3	--	--	--	.00	.3	1640	2230
MAY										
31...	1700	78	1.7	--	--	--	.03	.4	2880	3800
AUG										
11...	2800	170	3.0	--	--	--	.00	.6	4460	5540
Site 33 Ivie Creek at mouth, at Interstate Highway 70--Continued										
JUL , 1975										
23...	670	32	1.3	--	--	--	.09	.4	1230	1700
AUG										
25...	1600	64	5.7	--	--	--	.12	.5	2630	3390
NOV										
19...	1100	56	3.9	--	--	--	.00	.4	1930	2500
APR , 1976										
01...	800	56	2.4	--	--	--	.00	.3	1430	2200
MAY										
31...	1800	100	4.5	--	--	--	.03	.5	2980	3750
AUG										
11...	2800	140	2.1	--	--	--	.00	.6	4410	5600
SEP										
21...	2600	140	2.4	--	--	--	.00	.6	4170	4950
Site 34 Quitchupah Creek at mouth, near Interstate Highway 70--Continued										
JUL , 1975										
23...	540	24	1.6	--	--	--	.03	.4	1070	1550
NOV										
19...	800	34	4.3	--	--	--	.00	.4	1480	2120
MAY , 1976										
31...	1500	62	6.2	--	--	--	.00	.5	2540	3260
AUG										
11...	2300	96	10	--	--	--	.00	.6	3710	4600
SEP										
21...	2000	75	9.7	--	--	--	.00	.6	3230	3860
Site 35 Ivie Creek below Dog Valley Wash, at Interstate Highway 70--Continued										
JUL , 1975										
23...	1900	140	.01	--	--	--	.18	.4	3040	3700
NOV										
19...	--	--	--	--	--	--	--	--	2400	3150
APR , 1976										
01...	800	79	.13	--	--	--	.00	.3	1420	2030
MAY										
31...	2300	150	.00	--	--	--	.03	.4	3580	4190

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PH (UNITS)	DISSOLVED BORON (B) (UG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)
Site 27 South Last Chance Creek at (D-25-4)11ca--Continued									
JUL , 1975									
24...	240	8	.3	8.1	30	--	--	--	0
AUG									
25...	240	18	.2	8.0	40	--	--	--	--
MAY , 1976									
30...	230	3	.2	8.2	30	70	0	--	--
Site 32 Muddy Creek below Interstate Highway 70, near Emery--Continued									
JUL , 1975									
23...	640	390	3.6	8.2	160	--	--	--	--
AUG									
25...	1300	1000	5.1	8.1	470	--	--	--	13
SEP									
10...	1400	1100	7.2	--	550	100	--	0	8
NOV									
19...	1000	740	5.0	8.4	250	130	30	10	7
DEC									
29...	1200	910	6.4	8.0	300	--	--	--	--
APR , 1976									
01...	780	560	3.6	8.0	230	--	--	--	--
MAY									
31...	1000	710	7.7	8.1	350	60	10	--	--
AUG									
11...	1100	940	12	8.1	620	20	20	0	8
Site 33 Ivie Creek at mouth, at Interstate Highway 70--Continued									
JUL , 1975									
23...	630	390	2.8	8.1	190	--	--	--	--
AUG									
25...	1200	950	4.9	8.0	440	--	--	--	18
NOV									
19...	870	570	4.3	8.5	230	60	10	20	6
APR , 1976									
01...	710	500	3.3	8.1	230	0	10	--	--
MAY									
31...	1200	900	6.4	8.1	430	40	10	--	--
AUG									
11...	1400	1200	9.9	8.0	590	20	50	10	7
SEP									
21...	1400	1100	9.6	8.5	660	10	30	10	6
Site 34 Quitchupah Creek at mouth, near Interstate Highway 70--Continued									
JUL , 1975									
23...	570	310	2.7	8.2	160	--	--	--	--
NOV									
19...	710	430	3.6	8.5	150	30	5	10	9
MAY , 1976									
31...	1000	730	6.0	8.1	320	80	10	--	--
AUG									
11...	1300	1100	8.3	8.0	570	20	10	10	27
SEP									
21...	1200	970	7.1	8.5	500	30	10	8	21
Site 35 Ivie Creek below Dog Valley Wash, at Interstate Highway 70--Continued									
JUL , 1975									
23...	1700	1500	3.5	8.1	560	--	--	--	--
NOV									
19...	--	--	--	--	--	--	--	--	--
APR , 1976									
01...	820	630	2.3	8.2	270	--	--	--	--
MAY									
31...	1800	1600	4.6	8.1	670	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 27 South Last Chance Creek at (D-25-4)11ca--Continued									
JUL • 1975									
24...	--	--	--	--	--	--	--	--	--
AUG									
25...	--	--	460	--	--	--	--	--	--
MAY • 1976									
30...	--	--	--	--	--	--	--	--	--
Site 32 Muddy Creek below Interstate Highway 70, near Emery--Continued									
JUL • 1975									
23...	--	--	--	--	--	--	--	--	--
AUG									
25...	--	--	2500	--	--	--	--	--	--
SEP									
10...	1	--	--	--	--	--	7	--	440
NOV									
19...	2	.0	1900	30	0	1	6	1	180
DEC									
29...	--	--	--	--	--	--	--	--	--
APR • 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
31...	--	--	--	--	--	--	--	--	--
AUG									
11...	0	.0	4100	20	0	2	2	2	300
Site 33 Ivie Creek at mouth, at Interstate Highway 70--Continued									
JUL • 1975									
23...	--	--	--	--	--	--	--	--	--
AUG									
25...	--	--	2500	--	--	--	--	--	--
NOV									
19...	1	.0	1600	30	0	0	3	1	160
APR • 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
31...	--	--	--	--	--	--	--	--	--
AUG									
11...	0	.0	4200	30	100	0	11	1	280
SEP									
21...	0	.0	4600	0	100	1	0	2	280
Site 34 Quitchupah Creek at mouth, near Interstate Highway 70--Continued									
JUL • 1975									
23...	--	--	--	--	--	--	--	--	--
NOV									
19...	1	.0	1300	20	100	1	2	4	140
MAY • 1976									
31...	--	--	--	--	--	--	--	--	--
AUG									
11...	0	.0	3700	30	0	0	5	1	340
SEP									
21...	0	.0	3200	20	100	0	0	2	340
Site 35 Ivie Creek below Dog Valley Wash, at Interstate Highway 70--Continued									
JUL • 1975									
23...	--	--	--	--	--	--	--	--	--
NOV									
19...	--	--	--	--	--	--	--	--	--
APR • 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
31...	--	--	--	--	--	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SiO_2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO_3) (MG/L)	CARBONATE (CO_3) (MG/L)
Site 37 Ivie Creek at State Highway 10, near Emery										
JUL 1975										
23...	1740	28.0	.01	19	210	81	64	7.4	193	0
AUG										
26...	2040	17.0	.04	13	160	100	63	5.5	172	0
NOV										
19...	--	.0	.40	--	--	--	--	--	--	--
APR 1976										
01...	1530	13.5	2.0	14	77	39	30	4.1	253	0
MAY										
31...	1540	20.5	.30	13	99	70	54	4.2	174	0
SEP										
22...	--	9.0	.10	13	120	86	64	4.7	185	0
Site 38 Oak Spring Creek at State Highway 10, near Emery										
JUL 1975										
23...	1725	25.0	.50	18	180	170	160	9.7	243	0
AUG										
26...	2025	17.0	.15	15	420	610	550	21	368	0
NOV										
19...	--	.0	.50	--	--	--	--	--	--	--
APR 1976										
01...	--	12.0	.50	14	410	630	580	24	469	0
MAY										
31...	1550	21.0	.50	14	270	380	370	15	320	0
AUG										
12...	1000	14.0	.20	14	450	640	650	13	431	0
SEP										
22...	1015	10.5	.20	15	470	740	710	25	501	0
Site 38.2 Oak Spring Creek at (D-23-5)21ccc										
AUG 1976										
12...	1100	14.0	.15	15	440	530	480	19	468	0
Site 39 Saleratus Creek at State Highway 10, near Emery										
JUL 1975										
23...	1710	25.5	.20	8.7	380	400	490	13	292	0
AUG										
26...	2015	17.5	.20	7.9	410	460	550	13	299	0
NOV										
19...	1340	.5	.40	9.8	390	370	490	8.7	459	0
APR 1976										
01...	--	13.0	.50	8.9	290	250	450	9.4	348	0
MAY										
31...	--	20.0	.35	9.3	300	350	530	9.6	333	0
AUG										
13...	1000	19.0	.30	8.4	360	350	520	10	332	0
SEP										
22...	1145	15.5	.70	9.5	260	250	450	9.5	354	0
Site 39.05 Saleratus Creek above Trough Hollow, near Emery										
AUG 1976										
13...	1015	22.0	.10	8.8	14	19	290	2.9	392	18
Site 39.1 Ivie Creek above Coal Wash, near Emery										
AUG 1976										
13...	1100	22.5	.30	10	410	530	730	17	269	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 37 Ivie Creek at State Highway 10, near Emery--Continued										
JUL , 1975										
23...	720	51	.04	--	--	--	.00	.4	1250	1700
AUG										
26...	710	59	.05	--	--	--	.03	.3	1200	1610
NOV										
19...	--	--	--	--	--	--	--	--	760	1120
APR , 1976										
01...	170	34	.07	--	--	--	.00	.3	494	832
MAY										
31...	430	47	.06	--	--	--	.00	.3	804	1190
SEP										
22...	540	57	.40	--	--	--	.00	.3	973	1370
Site 38 Oak Spring Creek at State Highway 10, near Emery--Continued										
JUL , 1975										
23...	1100	99	.02	--	--	--	.00	.3	1860	2400
AUG										
26...	3900	290	.01	--	--	--	.03	.3	6000	--
NOV										
19...	3800	--	--	--	--	--	--	--	--	5780
APR , 1976										
01...	3800	350	.95	--	--	--	.00	.3	6050	6570
MAY										
31...	2400	190	.00	--	--	--	.03	.3	3800	4600
AUG										
12...	4100	380	.70	--	--	--	.03	.3	6470	6900
SEP										
22...	4700	370	1.1	--	--	--	.03	.4	7290	7570
Site 38.2 Oak Spring Creek at (D-23-5)21ccc--Continued										
AUG , 1976										
12...	3600	300	.04	--	--	--	.03	.4	5620	6210
Site 39 Saleratus Creek at State Highway 10, near Emery--Continued										
JUL , 1975										
23...	3100	170	.07	--	--	--	.00	.3	4710	5200
AUG										
26...	3500	190	.02	--	--	--	.06	.3	5280	--
NOV										
19...	2800	160	.30	--	--	--	.00	.3	4460	5290
APR , 1976										
01...	2100	140	.35	--	--	--	.00	.3	3420	4220
MAY										
31...	2700	180	.00	--	--	--	.30	.3	4240	4950
AUG										
13...	2800	170	.31	--	--	--	.00	.3	4390	4870
SEP										
22...	2200	130	.08	--	--	--	.03	.3	3490	3950
Site 39.05 Saleratus Creek above Trough Hollow, near Emery--Continued										
AUG , 1976										
13...	320	41	.06	--	--	--	.00	.5	900	1450
Site 39.1 Ivie Creek above Coal Wash, near Emery--Continued										
AUG , 1976										
13...	4000	330	.18	--	--	--	.03	.3	6160	6960

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARD-NESS (CA+MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	PH (UNITS)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)
Site 37 Ivie Creek at State Highway 10, near Emery--Continued									
JUL , 1975									
23...	860	700	1.0	8.0	120	--	--	--	--
AUG									
26...	810	670	1.0	8.1	150	--	--	--	--
NOV									
19...	--	--	--	--	--	--	--	--	--
APR , 1976									
01...	350	150	.7	7.9	110	--	--	--	--
MAY									
31...	540	390	1.0	8.2	120	30	0	--	--
SEP									
22...	650	500	1.1	8.3	140	10	10	10	1
Site 38 Oak Spring Creek at State Highway 10, near Emery--Continued									
JUL , 1975									
23...	1200	950	2.1	8.3	360	--	--	--	--
AUG									
26...	3600	3300	4.0	7.9	1300	--	--	--	--
NOV									
19...	--	--	--	--	--	--	--	--	--
APR , 1976									
01...	3600	3200	4.2	7.9	1200	--	--	--	--
MAY									
31...	2200	2000	3.4	8.0	820	80	30	--	--
AUG									
12...	3800	3400	4.6	7.7	1300	70	30	20	2
SEP									
22...	4200	3800	4.8	8.3	1600	30	100	20	0
Site 38.2 Oak Spring Creek at (D-23-5)21ccc--Continued									
AUG , 1976									
12...	3300	2900	3.6	7.8	1100	40	80	--	--
Site 39 Saleratus Creek at state Highway 10, near Emery--Continued									
JUL , 1975									
23...	2600	2400	4.2	8.0	890	--	--	--	--
AUG									
26...	2900	2700	4.4	7.9	970	--	--	--	--
NOV									
19...	2500	2100	4.3	8.3	830	0	100	30	0
APR , 1976									
01...	1800	1500	4.7	7.9	600	--	--	--	--
MAY									
31...	2200	1900	4.9	7.9	830	--	--	--	--
AUG									
13...	2300	2100	4.7	7.8	780	70	20	10	1
SEP									
22...	1700	1400	4.8	8.5	660	10	60	8	1
Site 39.05 Saleratus Creek above Trough Hollow, near Emery--Continued									
AUG , 1976									
13...	110	0	12	8.7	330	10	0	--	--
Site 39.1 Ivie Creek above Coal Wash, near Emery--Continued									
AUG , 1976									
13...	3200	3000	5.6	8.1	1200	30	40	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 37 Ivie Creek at State Highway 10, near Emery--Continued									
JUL , 1975									
23...	--	--	--	--	--	--	--	--	--
AUG									
26...	--	--	1100	--	--	--	--	--	--
NOV									
19...	--	--	--	--	--	--	--	--	--
APR , 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
31...	--	--	--	--	--	--	--	--	--
SEP									
22...	1	.0	910	20	100	1	0	2	60
Site 38 Oak Spring Creek at State Highway 10, near Emery--Continued									
JUL , 1975									
23...	--	--	--	--	--	--	--	--	--
AUG									
26...	--	--	6800	--	--	--	--	--	--
NOV									
19...	--	--	4900	--	--	--	--	--	--
APR , 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
31...	--	--	--	--	--	--	--	--	--
AUG									
12...	0	.0	4900	60	0	0	3	1	370
SEP									
22...	0	.0	4300	0	100	2	1	1	480
Site 38.2 Oak Spring Creek at (D-23-5)21ccc--Continued									
AUG , 1976									
12...	--	--	--	--	--	--	--	--	--
Site 39 Saleratus Creek at State Highway 10, near Emery--Continued									
JUL , 1975									
23...	--	--	--	--	--	--	--	--	--
AUG									
26...	--	--	4200	30	0	1	2	1	260
NOV									
19...	0	.0	4200	30	0	1	2	1	260
APR , 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
31...	--	--	--	--	--	--	--	--	--
AUG									
13...	0	.0	3900	40	0	0	5	1	270
SEP									
22...	1	.0	3000	10	100	1	0	0	210
Site 39.05 Saleratus Creek above Trough Hollow, near Emery--Continued									
AUG , 1976									
13...	--	--	--	--	--	--	--	--	--
Site 39.1 Ivie Creek above Coal Wash, near Emery--Continued									
AUG , 1976									
13...	--	--	--	--	--	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SiO_2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO_3) (MG/L)	CARBONATE (CO_3) (MG/L)
Site 40 Quitchupah Creek at State Highway 10, near Emery										
JUL , 1975										
23...	1630	23.0	2.0	7.5	55	35	40	2.0	254	0
AUG										
26...	2000	14.5	.40	13	200	77	110	5.5	452	0
NOV										
19...	--	1.5	1.2	--	--	--	--	--	--	--
APR , 1976										
01...	1600	13.5	2.0	11	81	58	160	4.5	370	0
MAY										
31...	--	22.0	.25	7.7	59	47	110	4.6	258	0
AUG										
12...	1950	19.0	.01	12	120	64	120	4.8	346	0
SEP										
22...	--	19.0	.10	13	190	76	130	5.7	421	0
Site 40.2 Unnamed tributary to Quitchupah Creek at (D-22-6)29bb										
AUG , 1976										
12...	1935	18.5	.05	4.7	320	190	480	13	310	0
Site 40.25 Unnamed tributary to Quitchupah Creek at (D-22-6)29ac										
AUG , 1976										
12...	1830	21.0	.04	12	110	100	100	4.7	370	0
Site 40.3 Unnamed tributary at mouth, at (D-22-6)32aa										
AUG , 1976										
12...	1850	21.0	.03	7.3	130	180	1100	11	396	0
Site 40.35 Quitchupah Creek at (D-22-6)32ab, near Emery										
AUG , 1976										
12...	1840	21.0	.80	9.4	200	110	290	7.2	351	0
Site 41 Quitchupah Creek above Christiansen Wash, at (D-22-6)33bcd										
JUL , 1975										
23...	1640	25.0	5.0	7.8	78	41	84	2.6	273	0
AUG										
26...	1940	21.5	1.2	13	180	110	280	7.9	329	0
APR , 1976										
01...	1612	13.5	1.0	9.1	130	72	230	5.9	277	0
MAY										
31...	1635	23.0	2.5	5.0	120	100	390	9.2	332	0
AUG										
12...	1905	22.0	.80	10	180	140	700	9.1	300	0
SEP										
22...	1310	15.5	2.0	12	190	180	1000	11	424	0
Site 42 Christiansen Wash at mouth, at (D-22-6)33bdc										
JUL , 1975										
23...	1645	23.5	5.0	14	120	130	260	8.0	425	0
AUG										
26...	1950	18.0	1.5	13	260	300	660	10	405	0
NOV										
19...	1420	1.0	5.0	6.8	120	98	200	3.0	336	0
APR , 1976										
01...	1608	13.5	1.0	9.2	130	78	230	6.0	376	0
MAY										
31...	1640	19.5	2.0	7.7	160	190	410	8.3	340	0
AUG										
12...	1915	19.0	.50	10	240	300	840	11	375	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 40 Quitchupah Creek at State Highway 10, near Emery--Continued										
JUL , 1975										
23...	120	14	.23	--	--	--	.00	.4	400	640
AUG										
26...	580	33	.69	--	--	--	.06	.4	1250	1720
NOV										
19...	--	--	--	--	--	--	--	--	870	1280
APR , 1976										
01...	390	52	.17	--	--	--	.00	.3	940	1450
MAY										
31...	320	37	.00	--	--	--	.00	.3	897	1040
AUG										
12...	400	42	1.0	--	--	--	.00	.4	925	1550
SEP										
22...	620	49	.25	--	--	--	.03	.4	1290	1740
Site 40.2 Unnamed tributary to Quitchupah Creek at (D-22-6)29bb--Continued										
AUG , 1976										
12...	2200	38	5.3	--	--	--	.00	.5	3420	3980
Site 40.25 Unnamed tributary to Quitchupah Creek at (D-22-6)29ac--Continued										
AUG , 1976										
12...	560	12	.06	--	--	--	.00	.7	1080	1520
Site 40.3 Unnamed tributary at mouth, at (D-22-6)32aa--Continued										
AUG , 1976										
12...	2700	160	.10	--	--	--	.03	1.2	4490	6100
Site 40.35 Quitchupah Creek at (D-22-6)32ab, near Emery--Continued										
AUG , 1976										
12...	1100	44	2.3	--	--	--	.00	.4	1940	2580
Site 41 Quitchupah Creek above Christiansen Wash, at (D-22-6)33bcd--Continued										
JUL , 1975										
23...	280	15	.73	--	--	--	.00	.4	647	990
AUG										
26...	1100	39	2.2	--	--	--	.03	.4	1910	2280
APR , 1976										
01...	750	42	2.1	--	--	--	.00	.4	1390	2100
MAY										
31...	1100	62	2.5	--	--	--	.00	.4	1960	2600
AUG										
12...	2000	97	3.6	--	--	--	.03	.7	3280	4400
SEP										
22...	2700	140	1.3	--	--	--	.03	.7	4460	5410
Site 42 Christiansen Wash at mouth, at (D-22-6)33bdc--Continued										
JUL , 1975										
23...	950	39	3.1	--	--	--	.03	.5	1750	2400
AUG										
26...	2700	90	20	--	--	--	.03	.6	4330	--
NOV										
19...	780	29	5.0	--	--	--	.00	.4	1430	1920
APR , 1976										
01...	710	41	2.1	--	--	--	.00	.4	1400	2100
MAY										
31...	1600	60	7.8	--	--	--	.03	.5	2640	3280
AUG										
12...	2400	95	24	--	--	--	.12	.6	4100	5640

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PH (UNITS)	DISSOLVED BORON (B) (UG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)
Site 40 Quitchupah Creek at State Highway 10, near Emery--Continued									
JUL , 1975									
23...	280	73	1.0	8.1	80	--	--	--	--
AUG									
26...	820	450	1.7	8.0	230	--	--	--	--
NOV									
19...	--	--	--	--	--	--	--	--	--
APR , 1976									
01...	440	140	3.3	8.9	250	--	--	--	--
MAY									
31...	680	470	3.2	8.2	180	--	--	--	--
AUG									
12...	560	280	2.2	7.7	240	20	10	10	1
SEP									
22...	790	440	2.0	7.6	240	0	100	6	1
Site 40.2 Unnamed tributary to Quitchupah Creek at (D-22-6)29bb--Continued									
AUG , 1976									
12...	1600	1300	5.3	7.8	730	430	20	--	--
Site 40.25 Unnamed tributary to Quitchupah Creek at (D-22-6)29ac--Continued									
AUG , 1976									
12...	690	380	1.7	7.7	390	60	20	--	--
Site 40.3 Unnamed tributary at mouth, at (D-22-6)32aa--Continued									
AUG , 1976									
12...	1100	740	15	8.3	850	20	10	--	--
Site 40.35 Quitchupah Creek at (D-22-6)32ab, near Emery--Continued									
AUG , 1976									
12...	950	660	4.1	7.6	350	70	20	--	--
Site 41 Quitchupah Creek above Christiansen Wash, at (D-22-6)33bcd--Continued									
JUL , 1975									
23...	360	140	1.9	8.0	100	--	--	--	3
AUG									
26...	910	640	4.1	7.8	390	--	--	--	--
APR , 1976									
01...	620	390	4.0	7.9	250	--	--	--	--
MAY									
31...	710	440	6.4	8.2	310	60	10	--	--
AUG									
12...	1000	790	9.5	8.0	520	60	0	10	6
SEP									
22...	1200	880	12	8.3	710	10	20	10	2
Site 42 Christiansen Wash at mouth, at (D-22-6)33bdc--Continued									
JUL , 1975									
23...	840	490	3.9	8.3	290	--	--	--	9
AUG									
26...	1900	1600	6.6	8.1	570	--	--	--	39
NOV									
19...	700	430	3.3	8.2	150	60	30	20	6
APR , 1976									
01...	650	340	3.9	7.8	250	--	--	--	--
MAY									
31...	1200	900	5.2	8.1	340	40	30	--	--
AUG									
12...	1800	1500	8.5	8.0	590	90	0	0	44

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 40 Quitchupah Creek at State Highway 10, near Emery--Continued									
JUL • 1975									
23...	--	--	--	--	--	--	--	--	--
AUG									
26...	--	--	--	--	--	--	--	--	--
NOV									
19...	--	--	--	--	--	--	--	--	--
APR • 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
31...	--	--	--	--	--	--	--	--	--
AUG									
12...	0	.0	1300	30	0	0	1	1	70
SEP									
22...	1	.1	1600	30	0	0	0	1	90
Site 40.2 Unnamed tributary to Quitchupah Creek at (D-22-6)29bb--Continued									
AUG • 1976									
12...	--	--	--	--	--	--	--	--	--
Site 40.25 Unnamed tributary to Quitchupah Creek at (D-22-6)29ac--Continued									
AUG • 1976									
12...	--	--	--	--	--	--	--	--	--
Site 40.3 Unnamed tributary at mouth, at (D-22-6)32aa--Continued									
AUG • 1976									
12...	--	--	--	--	--	--	--	--	--
Site 40.35 Quitchupah Creek at (D-22-6)32ab, near Emery--Continued									
AUG • 1976									
12...	--	--	--	--	--	--	--	--	--
Site 41 Quitchupah Creek above Christiansen Wash, at (D-22-6)33bcd--Continued									
JUL • 1975									
23...	--	--	--	--	--	--	--	--	--
AUG									
26...	--	--	2300	--	--	--	--	--	--
APR • 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
31...	--	--	--	--	--	--	--	--	--
AUG									
12...	0	.1	4500	50	0	0	4	2	250
SEP									
22...	1	.0	5200	10	0	0	1	1	270
Site 42 Christiansen Wash at mouth, at (D-22-6)33bdc--Continued									
JUL • 1975									
23...	--	--	--	--	--	--	--	--	--
AUG									
26...	--	--	2900	--	--	--	--	--	--
NOV									
19...	0	.0	1200	20	100	1	4	1	110
APR • 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
31...	--	--	--	--	--	--	--	--	--
AUG									
12...	0	.0	2700	0	0	0	5	2	500

Tabel 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SiO_2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO_3) (MG/L)	CARBONATE (CO_3) (MG/L)
Site 43 Christiansen Wash at State Highway 10, near Emery										
JUL • 1975										
23...	1620	24.5	.01	11	460	370	990	11	483	0
AUG										
25...	1725	18.0	.02	13	390	270	760	4.2	482	0
NOV										
19...	1445	.0	3.5	5.5	50	29	17	.8	282	0
APR • 1976										
01...	1630	10.0	1.0	5.3	55	33	39	1.5	271	0
MAY										
31...	1710	20.0	.15	5.3	130	74	180	2.5	287	0
AUG										
12...	1145	21.0	.02	7.3	500	456	1400	12	501	0
SEP										
22...	1645	17.5	.04	7.7	460	370	1200	12	513	0
Site 43.2 Christiansen Wash at (D-22-6)16ccc										
AUG • 1976										
12...	1820	19.0	.10	11	510	370	380	9.5	527	0
Site 43.4 Christiansen Wash at (D-22-6)27bcb										
AUG • 1976										
12...	1810	21.5	.20	6.3	450	490	1700	20	470	0
Site 44.1 Canal terminus at (D-22-6)17cca, at State Highway 10										
AUG • 1975										
13...	1120	18.0	5.0	4.3	31	26	6.7	.6	210	0
Site 44.15 Canal at (D-22-6)9bcb, at State Highway 10										
AUG • 1975										
26...	1910	18.5	15	6.3	42	24	7.2	.6	231	0
APR • 1976										
01...	1640	11.0	2.5	5.3	40	27	20	1.2	265	0
MAY										
31...	--	15.0	32	4.5	44	2.2	5.0	.6	226	0
AUG										
12...	1705	22.0	9.0	4.4	32	25	7.1	.7	219	0
Site 44.18 Canal at (D-22-6)9bbd, at State Highway 10										
AUG • 1976										
12...	1700	22.0	2.0	4.5	35	25	6.9	.7	219	0
Site 44.2 Canal at (D-22-6)9dda										
AUG • 1976										
12...	1720	23.0	.10	3.3	38	33	61	1.6	201	3
Site 44.25 Canal at (D-22-6)14bcb										
AUG • 1976										
12...	1725	24.0	.50	1.3	32	31	59	1.6	179	5
Site 44.3 Canal at (D-22-6)15dca										
AUG • 1976										
12...	1735	24.0	.50	.3	35	33	59	1.6	174	6

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 43 Christiansen Wash at State Highway 10, near Emery--Continued										
JUL , 1975										
23...	4300	77	2.5	--	--	--	.00	.8	6470	7100
AUG										
26...	3200	54	2.2	--	--	--	.03	.7	4950	5820
NOV										
19...	49	3.8	.55	--	--	--	.00	.3	298	580
APR , 1976										
01...	120	7.4	.51	--	--	--	.00	.3	397	690
MAY										
31...	730	14	.85	--	--	--	.00	.4	1280	1750
AUG										
12...	4700	84	4.1	--	--	--	.03	.8	7410	8510
SEP										
22...	4700	73	3.4	--	--	--	.03	.8	7100	7610
Site 43.2 Christiansen Wash at (D-22-6)16ccc--Continued										
AUG , 1976										
12...	2900	57	4.2	--	--	--	.03	.5	4520	4950
Site 43.4 Christiansen Wash at (D-22-6)27bcb--Continued										
AUG , 1976										
12...	5600	220	49	--	--	--	.03	.4	8940	9900
Site 44.1 Canal terminus at (D-22-6)17cca, at State Highway 10--Continued										
AUG , 1976										
13...	14	2.1	.37	--	--	--	.00	.3	190	327
Site 44.15 Canal at (D-22-6)9bcb, at State Highway 10--Continued										
AUG , 1975										
26...	14	2.2	.39	--	--	--	.09	.3	213	380
APR , 1976										
01...	32	5.9	.42	--	--	--	.00	.3	264	475
MAY										
31...	13	2.4	.56	--	--	--	.00	.3	206	360
AUG										
12...	17	2.2	.38	--	--	--	.00	.3	198	389
Site 44.18 Canal at (D-22-6)9bbd, at State Highway 10--Continued										
AUG , 1976										
12...	14	2.1	.35	--	--	--	.00	.3	198	366
Site 44.2 Canal at (D-22-6)9dda--Continued										
AUG , 1976										
12...	170	7.0	.39	--	--	--	.00	.3	418	679
Site 44.25 Canal at (D-22-6)14bcb--Continued										
AUG , 1976										
12...	170	6.6	.27	--	--	--	.00	.3	396	643
Site 44.3 Canal at (D-22-6)15dca--Continued										
AUG , 1976										
12...	180	6.8	.18	--	--	--	.00	.3	409	642

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARDNESS (CA+MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PH (UNITS)	DISSOLVED BORON (B) (UG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)
Site 43 Christiansen Wash at State Highway 10, near Emery--Continued									
JUL 1975									
23...	2700	2300	8.3	7.8	860	--	--	--	--
AUG									
26...	2100	1700	7.2	7.8	680	--	--	--	--
NOV									
19...	250	14	.5	8.2	30	100	10	10	0
APR 1976									
01...	270	51	1.0	8.1	60	--	--	--	--
MAY									
31...	630	390	3.1	8.0	170	40	120	--	--
AUG									
12...	3100	2700	11	7.9	1000	300	100	20	20
SEP									
22...	2700	2300	10	8.0	930	240	260	20	10
Site 43.2 Christiansen Wash at (D-22-6)16ccc--Continued									
AUG 1976									
12...	2800	2400	3.1	7.8	870	170	580	--	--
Site 43.4 Christiansen Wash at (D-22-6)27bcb--Continued									
AUG 1976									
12...	3100	2800	13	8.0	990	60	70	--	--
Site 44.1 Canal terminus at (D-22-6)17cca, at State Highway 10--Continued									
AUG 1976									
13...	180	12	.2	8.1	10	10	0	--	--
Site 44.15 Canal at (D-22-6)9bcb, at State Highway 10--Continued									
AUG 1975									
26...	200	15	.2	8.3	20	--	--	--	--
APR 1976									
01...	210	0	.6	8.2	30	--	--	--	--
MAY									
31...	200	15	.2	8.2	30	20	10	--	--
AUG									
12...	180	3	.2	8.0	20	--	0	10	0
Site 44.18 Canal at (D-22-6)9bbd, at State Highway 10--Continued									
AUG 1976									
12...	190	11	.2	8.2	10	20	0	--	--
Site 44.2 Canal at (D-22-6)9dda--Continued									
AUG 1976									
12...	230	61	1.7	8.4	40	80	0	--	--
Site 44.25 Canal at (D-22-6)14bcb--Continued									
AUG 1976									
12...	210	52	1.8	8.5	40	20	0	--	--
Site 44.3 Canal at (D-22-6)15dca--Continued									
AUG 1976									
12...	220	71	1.7	8.7	30	30	0	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 43 Christiansen Wash at State Highway 10, near Emery--Continued									
JUL , 1975									
23...	--	--	--	--	--	--	--	--	--
AUG									
26...	--	--	3200	--	--	--	--	--	--
NOV									
19...	1	.0	490	40	200	1	4	0	30
APR , 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
31...	--	--	--	--	--	--	--	--	--
AUG									
12...	0	.0	3700	50	0	0	2	6	590
SEP									
22...	0	.0	3500	10	100	0	0	4	520
Site 43.2 Christiansen Wash at (D-22-6)16ccc--Continued									
AUG , 1976									
12...	--	--	--	--	--	--	--	--	--
Site 43.4 Christiansen Wash at (D-22-6)27bcb--Continued									
AUG , 1976									
12...	--	--	--	--	--	--	--	--	--
Site 44.1 Canal terminus at (D-22-6)17cca, at State Highway 10--Continued									
AUG , 1976									
13...	--	--	--	--	--	--	--	--	--
Site 44.15 Canal at (D-22-6)9bcb, at State Highway 10--Continued									
AUG , 1975									
26...	--	--	420	--	--	--	--	--	--
APR , 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
31...	--	--	--	--	--	--	--	--	--
AUG									
12...	0	.0	--	--	--	--	0	--	20
Site 44.18 Canal at (D-22-6)9bbd, at State Highway 10--Continued									
AUG , 1976									
12...	--	--	--	--	--	--	--	--	--
Site 44.2 Canal at (D-22-6)9dda--Continued									
AUG , 1976									
12...	--	--	--	--	--	--	--	--	--
Site 44.25 Canal at (D-22-6)14bcb--Continued									
AUG , 1976									
12...	--	--	--	--	--	--	--	--	--
Site 44.3 Canal at (D-22-6)15dca--Continued									
AUG , 1976									
12...	--	--	--	--	--	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SiO_2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO_3) (MG/L)	CARBONATE (CO_3) (MG/L)
Site 44.5 Canal at (D-22-6)2cdc										
AUG , 1976										
12...	1540	20.5	1.5	4.5	35	25	7.1	.7	216	0
Site 44.6 Canal at (D-22-6)3acd, at State Highway 10										
AUG , 1976										
12...	1610	20.5	1.5	4.5	38	25	6.6	.7	220	0
Site 44.65 Canal at(D-22-6)4cca										
AUG , 1976										
12...	1655	22.0	11	4.6	39	25	6.4	.7	222	0
Site 44.9 Canal at (D-21-6)22ddd										
AUG , 1976										
12...	1545	20.5	13	4.6	37	24	6.3	.7	221	0
Site 44.95 Canal at (D-21-6)22bcd, near diversion from Muddy Creek										
AUG , 1976										
12...	1355	20.0	3.0	4.7	40	25	6.7	.5	227	0
Site 44.99 Canal at (D-21-7)30ccd, at State Highway 10										
JUL , 1975										
23...	1420	18.0	.20	5.0	43	23	7.3	.7	230	0
Site 45 Muddy Creek below Miller Canyon, near Emery										
JUL , 1975										
23...	1930	23.0	6.0	9.2	120	69	300	7.9	339	7
AUG										
26...	1610	25.0	.50	4.7	320	170	360	8.6	291	0
NOV										
19...	1115	1.0	2.5	7.4	320	220	740	7.8	422	0
MAY , 1976										
31...	1205	16.0	5.0	7.3	110	95	310	8.8	390	0
Site 46 Miller Canyon at mouth, near Emery										
JUL , 1975										
23...	1920	21.5	.10	3.3	400	160	130	9.0	215	0
AUG										
26...	1620	21.0	.03	6.4	490	200	140	7.4	179	0
NOV										
19...	1130	.0	.25	6.9	470	200	170	6.7	198	0
MAY , 1976										
31...	1220	19.0	1.0	6.9	180	84	79	6.8	243	0
Site 47 Muddy Creek at (D-21-6)36bbb, at State Highway 10, near Emery										
JUL , 1975										
23...	1415	28.0	.50	10	180	100	180	5.1	309	0
AUG										
26...	1645	25.5	.06	8.8	270	140	240	5.2	271	0
NOV										
19...	1510	3.0	.60	8.3	240	110	170	3.5	350	0
APR , 1976										
01...	1650	10.0	1.0	6.8	160	85	120	3.5	301	0
MAY										
31...	1735	22.0	.25	8.8	170	94	150	4.0	270	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 44.5 Canal at (D-22-6)2cdc--Continued										
AUG , 1976										
12...	18	2.2	.33	--	--	--	.00	.3	202	358
Site 44.6 Canal at (D-22-6)3acd, at State Highway 10--Continued										
AUG , 1976										
12...	15	2.0	.38	--	--	--	.00	.3	202	360
Site 44.65 Canal at (D-22-6)4cca--Continued										
AUG , 1976										
12...	15	2.1	.35	--	--	--	.00	.3	204	362
Site 44.9 Canal at (D-21-6)22ddd--Continued										
AUG , 1976										
12...	13	2.1	.42	--	--	--	.00	.3	199	358
Site 44.95 Canal at (D-21-6)22bcd, near diversion from Muddy Creek--Continued										
AUG , 1976										
12...	16	2.1	.58	--	--	--	.00	.3	210	355
Site 44.99 Canal at (D-21-7)30ccd, at State Highway 10--Continued										
JUL , 1975										
23...	15	1.7	.44	--	--	--	.00	.3	212	345
Site 45 Muddy Creek below Miller Canyon, near Emery--Continued										
JUL , 1975										
23...	940	30	.01	--	--	--	.00	.4	1670	2250
AUG										
26...	1900	37	.30	--	--	--	.06	.4	2950	3640
NOV										
19...	2800	67	3.4	--	--	--	.00	.4	4330	5190
MAY , 1976										
31...	970	37	.03	--	--	--	.00	.4	1730	2340
Site 46 Miller Canyon at mouth, near Emery--Continued										
JUL , 1975										
23...	1600	22	.03	--	--	--	.00	.4	2430	2800
AUG										
26...	2000	25	.39	--	--	--	.00	.4	2950	3300
NOV										
19...	2000	29	1.5	--	--	--	.00	.4	2990	3470
MAY , 1976										
31...	760	16	.13	--	--	--	.00	.4	1250	1610
Site 47 Muddy Creek at (D-21-6)36bbb, at State Highway 10, near Emery--Continued										
JUL , 1975										
23...	940	24	.08	--	--	--	.00	.4	1590	2100
AUG										
26...	1400	29	.02	--	--	--	.03	.3	2230	2860
NOV										
19...	1000	20	.02	--	--	--	.03	.3	1730	2240
APR , 1976										
01...	690	17	.01	--	--	--	.03	.3	1230	1720
MAY										
31...	830	20	.04	--	--	--	.00	.3	1410	1740

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PH (UNITS)	DISSOLVED BORON (B) (UG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)
Site 44.5 Canal at (D-22-6)2cdc--Continued									
AUG , 1976									
12...	190	16	.2	8.2	20	20	10	--	--
Site 44.6 Canal at (D-22-6)3acd, at State Highway 10--Continued									
AUG , 1976									
12...	200	17	.2	7.7	20	30	0	--	--
Site 44.65 Canal at (D-22-6)4cca--Continued									
AUG , 1976									
12...	200	18	.2	8.1	10	10	10	--	--
Site 44.9 Canal at (D-21-6)22ddd--Continued									
AUG , 1976									
12...	190	10	.2	8.0	10	70	0	--	--
Site 44.95 Canal at (D-21-6)22bcd, near diversion from Muddy Creek--Continued									
AUG , 1976									
12...	200	17	.2	8.0	10	20	0	--	--
Site 44.99 Canal at (D-21-7)30ccd, at State Highway 10--Continued									
JUL , 1975									
23...	200	13	.2	8.2	6	--	--	--	--
Site 45 Muddy Creek below Miller Canyon, near Emery--Continued									
JUL , 1975									
23...	670	380	5.1	8.5	220	--	--	--	2
AUG									
26...	1500	1300	4.0	8.0	570	--	--	--	2
NOV									
19...	1700	1400	7.8	8.1	470	0	150	10	11
MAY , 1976									
31...	670	350	5.2	8.3	250	80	30	--	--
Site 46 Miller Canyon at mouth, near Emery--Continued									
JUL , 1975									
23...	1700	1500	1.4	8.0	660	--	--	--	1
AUG									
26...	2100	1900	1.3	7.9	840	--	--	--	2
NOV									
19...	2000	1800	1.7	8.1	800	0	760	20	3
MAY , 1976									
31...	800	600	1.2	8.1	360	60	140	--	--
Site 47 Muddy Creek at (D-21-6)36bbb, at State Highway 10, near Emery--Continued									
JUL , 1975									
23...	860	610	2.7	7.8	190	--	--	--	--
AUG									
26...	1300	1000	3.0	7.9	290	--	--	--	0
NOV									
19...	1100	770	2.3	8.2	170	100	50	20	0
APR , 1976									
01...	750	500	1.9	7.7	130	--	--	--	--
MAY									
31...	810	590	2.3	7.9	180	70	10	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 44.5 Canal at (D-22-6)2cdc--Continued									
AUG , 1976									
12...	--	--	--	--	--	--	--	--	--
Site 44.6 Canal at (D-22-6)3acd, at State Highway 10--Continued									
AUG , 1976									
12...	--	--	--	--	--	--	--	--	--
Site 44.65 Canal at (D-22-6)4cca--Continued									
AUG , 1976									
12...	--	--	--	--	--	--	--	--	--
Site 44.9 Canal at (D-21-6)22ddd--Continued									
AUG , 1976									
12...	--	--	--	--	--	--	--	--	--
Site 44.95 Canal at (d-21-6)22bcd, near diversion from Muddy Creek--Continued									
AUG , 1976									
12...	--	--	--	--	--	--	--	--	--
Site 44.99 Canal at (D-21-7)30ccd, at State Highway 10--Continued									
JUL , 1975									
23...	--	--	--	--	--	--	--	--	--
Site 45 Muddy Creek below Miller Canyon, near Emery--Continued									
JUL , 1975									
23...	--	--	--	--	--	--	--	--	--
AUG									
26...	--	--	2800	--	--	--	--	--	--
NOV									
19...	1	.0	3300	170	0	2	2	4	350
MAY , 1976									
31...	--	--	--	--	--	--	--	--	--
Site 46 Miller Canyon at mouth, near Emery--Continued									
JUL , 1975									
23...	--	--	--	--	--	--	--	--	--
AUG									
26...	--	--	3000	--	--	--	--	--	--
NOV									
19...	0	.0	2700	160	0	13	1	1	160
MAY , 1976									
31...	--	--	--	--	--	--	--	--	--
Site 47 Muddy Creek at (D-21-6)36bbb, at State Highway 10, near Emery--Continued									
JUL , 1975									
23...	--	--	--	--	--	--	--	--	--
AUG									
26...	--	--	2800	--	--	--	--	--	--
NOV									
19...	0	.0	2100	20	0	0	10	0	110
APR , 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
31...	--	--	--	--	--	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SiO_2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO_3) (MG/L)	CARBONATE (CO_3) (MG/L)
Site 47.2 Unnamed tributary to Muddy Creek at (D-22-6)1ccd										
AUG , 1976										
12...	1630	22.0	.05	1.0	360	250	830	10	130	0
Site 47.8 Muddy Creek at (D-21-6)22bc, immediately below total diversion										
AUG , 1976										
12...	1400	22.0	.03	9.0	70	39	25	1.7	298	0
Site 49 Muddy Creek near Emery										
JUL , 1975										
23...	1440	16.5	75	5.5	42	23	5.5	.6	223	0
AUG										
26...	1705	18.0	50	5.3	39	24	6.4	.7	223	0
NOV										
19...	--	.5	10	5.4	47	26	10	.6	241	14
JAN , 1976										
14...	1230	.0	8.5	--	--	--	--	--	--	--
MAR										
18...	1040	4.0	6.0	--	--	--	--	--	--	--
MAY										
31...	1755	14.0	63	4.5	41	23	5.0	.6	227	0
AUG										
12...	1100	10.5	15	--	--	--	--	--	--	--
SEP										
22...	--	--	--	--	--	--	--	--	--	--
Site 50 Ivie Creek above diversions, near Emery										
AUG , 1975										
25...	1715	19.0	4.8	17	39	14	9.2	2.1	160	4
MAY , 1976										
31...	1405	13.0	7.0	16	50	19	12	2.2	212	0
Site 51 Ivie Creek below Red Creek, at State Highway 10										
AUG , 1975										
25...	--	19.0	4.6	17	36	14	7.4	2.1	160	4
MAY , 1976										
31...	1520	13.5	4.5	16	42	16	11	2.2	181	0
Site 52 Red Creek at mouth, near Interstate Highway 70										
AUG , 1975										
25...	1705	16.0	4.5	18	33	10	9.0	2.1	145	0
MAY , 1976										
31...	1500	13.5	4.2	17	39	11	7.6	2.1	168	0
Site 53 Tommy Hollow at mouth, at Interstate Highway 70										
AUG , 1975										
25...	1700	16.0	.10	15	96	120	74	4.1	341	0
MAY , 1976										
31...	1510	17.0	.30	15	90	85	68	4.4	340	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 47.2 Unnamed tributary to Muddy Creek at (D-22-6)1ccd--Continued										
AUG , 1976										
12...	3400	49	.04	--	--	--	.00	.3	4970	5750
Site 47.8 Muddy Creek at (D-21-6)22bc, immediately below total diversion--Continued										
AUG , 1976										
12...	110	6.2	.07	--	--	--	.00	.4	409	651
Site 49 Muddy Creek near Emery--Continued										
JUL , 1975										
23...	12	1.8	.50	--	--	--	.00	.3	203	365
AUG										
26...	13	2.5	.37	--	--	--	.06	.0	203	415
NOV										
19...	21	3.5	.53	--	--	--	.03	.3	250	410
JAN , 1976										
14...	--	--	.61	2.7	.00	.05	.03	--	--	440
MAR										
18...	--	--	.47	2.1	.00	.06	.00	--	--	420
MAY										
31...	15	2.4	.48	--	--	--	.00	.3	206	378
AUG										
12...	--	--	--	--	--	--	--	--	175	286
SEP										
22...	--	--	--	--	--	--	--	--	--	--
Site 50 Ivie Creek above diversions, near Emery--Continued										
AUG , 1975										
25...	19	11	.07	--	--	--	.09	.2	195	340
MAY , 1976										
31...	33	18	.00	--	--	--	.03	.2	255	446
Site 51 Ivie Creek below Red Creek, at State Highway 10--Continued										
AUG , 1975										
25...	14	8.2	.07	--	--	--	.09	.2	173	290
MAY , 1976										
31...	26	15	.00	--	--	--	.03	.2	218	370
Site 52 Red Creek at mouth, near Interstate Highway 70--Continued										
AUG , 1975										
25...	7.3	6.5	.19	--	--	--	.09	.1	159	270
MAY , 1976										
31...	15	11	.00	--	--	--	.09	.2	186	290
Site 53 Tommy Hollow at mouth, at Interstate Highway 70--Continued										
AUG , 1975										
25...	400	120	.01	--	--	--	.06	.3	999	1500
MAY , 1976										
31...	290	96	.00	--	--	--	.00	.4	817	1290

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PH (UNITS)	DISSOLVED BORON (B) (UG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)
Site 47.2 Unnamed tributary to Muddy Creek at (D-22-6)1ccd--Continued									
AUG , 1976									
12...	1900	1800	8.2	8.4	710	30	10	--	--
Site 47.8 Muddy Creek at (D-21-6)22bc, immediately below total diversion--Continued									
AUG , 1976									
12...	340	91	.6	7.7	60	100	50	--	--
Site 49 Muddy Creek near Emery--Continued									
JUL , 1975									
23...	200	17	.2	8.2	0	--	--	--	--
AUG									
26...	200	14	.2	8.3	20	--	--	--	--
NOV									
19...	230	4	.3	8.5	30	20	5	0	1
JAN , 1976									
14...	--	--	--	8.5	--	--	--	--	--
MAR									
18...	--	--	--	8.4	--	--	--	--	--
MAY									
31...	200	11	.2	8.2	20	30	0	--	--
AUG									
12...	--	--	--	--	--	--	--	--	--
SEP									
22...	--	--	--	--	--	--	--	--	--
Site 50 Ivie Creek above diversions, near Emery--Continued									
AUG , 1975									
25...	160	17	.3	8.7	50	--	--	--	--
MAY , 1976									
31...	200	29	.4	8.2	40	20	0	--	--
Site 51 Ivie Creek below Red Creek, at State Highway 10--Continued									
AUG , 1975									
25...	160	17	.3	8.7	50	--	--	--	--
MAY , 1976									
31...	170	22	.4	8.3	40	20	0	--	--
Site 52 Red Creek at mouth, near Interstate Highway 70--Continued									
AUG , 1975									
25...	120	4	.4	8.3	30	--	--	--	--
MAY , 1976									
31...	140	5	.3	8.4	30	20	0	--	--
Site 53 Tommy Hollow at mouth, at Interstate Highway 70--Continued									
AUG , 1975									
25...	740	460	1.2	8.2	130	--	--	--	--
MAY , 1976									
31...	570	300	1.2	8.1	120	30	10	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 47.2 Unnamed tributary to Muddy Creek at (D-22-6)1ccd--Continued									
AUG , 1976									
12...	--	--	--	--	--	--	--	--	--
Site 47.8 Muddy Creek at (D-21-6)22bc, immediately below total diversion--Continued									
AUG , 1976									
12...	--	--	--	--	--	--	--	--	--
Site 49 Muddy Creek near Emery--Continued									
JUL , 1975									
23...	--	--	--	--	--	--	--	--	--
AUG									
26...	--	--	--	--	--	--	--	--	--
NOV									
19...	1	.0	460	10	200	1	3	1	20
JAN , 1976									
14...	--	--	--	--	--	--	--	--	--
MAR									
18...	--	--	--	--	--	--	--	--	--
MAY									
31...	--	--	--	--	--	--	--	--	--
AUG									
12...	--	--	--	--	--	--	--	--	--
SEP									
22...	--	--	440	10	200	0	1	1	20
Site 50 Ivie Creek above diversions, near Emery--Continued									
AUG , 1975									
25...	--	--	--	--	--	--	--	--	--
MAY , 1976									
31...	--	--	--	--	--	--	--	--	--
Site 51 Ivie Creek below Red Creek, at State Highway 10--Continued									
AUG , 1975									
25...	--	--	210	--	--	--	--	--	--
MAY , 1976									
31...	--	--	--	--	--	--	--	--	--
Site 52 Red Creek at mouth, near Interstate Highway 70--Continued									
AUG , 1975									
25...	--	--	190	--	--	--	--	--	--
MAY , 1976									
31...	--	--	--	--	--	--	--	--	--
Site 53 Tommy Hollow at mouth, at Interstate Highway 70--Continued									
AUG , 1975									
25...	--	--	980	--	--	--	--	--	--
MAY , 1976									
31...	--	--	--	--	--	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SiO_2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO_3) (MG/L)	CARBONATE (CO_3) (MG/L)
Site 57 Fremont River below Neilson Wash, at State Highway 24, near Hanksville										
AUG , 1975										
28...	1105	19.5	25	26	150	37	72	7.1	181	0
NOV										
17...	1755	7.0	105	28	97	28	29	5.1	202	0
APR , 1976										
01...	0920	9.0	70	24	81	26	28	4.6	177	0
MAY										
31...	--	26.0	38	21	150	42	54	7.3	171	0
AUG										
10...	1800	26.0	16	25	140	31	57	7.3	183	0
SEP										
08...	0740	16.0	25	25	140	31	44	6.4	177	0
Site 59 Sweetwater Creek at mouth, near Caineville										
AUG , 1975										
28...	1240	24.0	.35	14	270	70	220	6.0	117	0
NOV										
17...	1705	8.5	.15	5.7	500	140	380	8.8	203	0
MAY , 1976										
26...	1610	26.5	6.0	11	120	43	79	2.9	163	0
AUG										
10...	1720	26.0	.80	12	520	78	430	22	138	0
SEP										
08...	--	27.0	.04	5.8	550	160	400	14	140	0
Site 60 Sweetwater Creek at (D-31-8)25aaa, near Caineville										
JUL , 1975										
25...	0920	17.5	1.5	15	120	46	56	2.6	201	0
AUG										
29...	0830	9.5	1.2	13	250	130	160	5.5	252	0
MAY , 1976										
25...	--	13.0	.80	11	130	53	70	2.2	174	0
Site 61 Unnamed wash at mouth at (D-28-8)25dcc, near Caineville										
AUG , 1976										
10...	1640	25.0	1.0	13	560	23	97	16	253	0
Site 61.2 Fremont River above Sweetwater Creek, near Caineville										
APR , 1976										
01...	--	8.0	70	24	88	29	30	4.9	181	0
MAY										
26...	1850	24.5	30	22	140	40	51	7.6	177	0
Site 62 Fremont River at Caineville										
AUG , 1975										
25...	1350	24.0	25	27	130	34	75	7.0	184	0
APR , 1976										
01...	--	9.0	70	25	89	28	26	5.2	175	0
MAY										
26...	--	26.0	25	22	140	40	33	7.3	173	0
AUG										
10...	1630	25.0	18	25	110	29	31	6.2	189	0
SEP										
08...	--	26.0	36	26	110	31	32	6.5	164	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 57 Fremont River below Neilson Wash, at State Highway 24, near Hanksville--Continued										
AUG , 1975										
24...	430	52	.04	--	--	--	.03	.3	866	1260
NOV										
17...	220	20	.48	--	--	--	.03	.3	531	750
APR , 1976										
01...	200	20	.19	--	--	--	.03	.2	472	739
MAY										
31...	500	28	.15	--	--	--	.00	.3	888	1210
AUG										
10...	400	37	.17	--	--	--	.03	.3	791	1170
SEP										
08...	350	29	.06	--	--	--	.03	.3	716	1030
Site 59 Sweetwater Creek at mouth, near Caineville--Continued										
AUG , 1975										
28...	1200	41	2.0	--	--	--	.00	.5	1890	2450
NOV										
17...	2300	49	.42	--	--	--	.03	.4	3490	4000
MAY , 1976										
26...	500	15	.20	--	--	--	.00	.3	853	1120
AUG										
10...	2300	56	11	--	--	--	.03	.5	3540	3940
SEP										
08...	2700	50	.04	--	--	--	.00	.5	3980	4230
Site 60 Sweetwater Creek at (D-31-8)25aaa, near Caineville--Continued										
JUL , 1975										
25...	410	12	.53	--	--	--	.03	.3	763	1030
AUG										
29...	1200	29	.18	--	--	--	.03	.3	1920	2420
MAY , 1976										
25...	510	17	.12	--	--	--	.06	.3	880	1210
Site 61 Unnamed wash at mouth at (D-28-8)25dcc, near Caineville--Continued										
AUG , 1976										
10...	1500	17	1.4	--	--	--	.00	.3	2360	2680
Site 61.2 Fremont River above Sweetwater Creek, near Caineville--Continued										
APR , 1976										
01...	220	21	.21	--	--	--	.06	.2	507	783
MAY										
26...	460	30	.07	--	--	--	.09	.3	839	1200
Site 62 Fremont River at Caineville--Continued										
AUG , 1975										
25...	370	63	.03	--	--	--	.12	.3	799	1310
APR , 1976										
01...	210	21	.27	--	--	--	.06	.2	492	766
MAY										
26...	400	21	.10	--	--	--	.06	.3	750	1040
AUG										
10...	250	26	.04	--	--	--	.03	.3	572	841
SEP										
08...	300	23	.01	--	--	--	.03	.3	612	862

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PH (UNITS)	DISSOLVED BORON (B) (UG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)
Site 57 Fremont River below Neilson Wash, at State Highway 24, near Hanksville--Continued									
AUG. 1975									
28...	530	380	1.4	7.9	140	--	--	--	--
NOV.									
17...	360	190	.7	7.6	80	0	5	30	0
APR. 1976									
01...	310	160	.7	8.1	80	--	--	--	--
MAY									
31...	550	410	1.0	8.1	130	80	10	--	--
AUG.									
10...	480	330	1.1	7.8	130	20	10	10	1
SEP.									
08...	480	330	.9	8.3	130	20	0	60	1
Site 59 Sweetwater Creek at mouth, near Caineville--Continued									
AUG. 1975									
28...	970	870	3.1	8.2	190	--	--	--	--
NOV.									
17...	1800	1700	3.9	8.1	250	40	320	0	11
MAY. 1976									
26...	480	340	1.6	8.1	90	40	10	--	--
AUG.									
10...	1600	1500	4.7	7.8	300	20	50	10	31
SEP.									
08...	2	1900	3.9	8.0	320	20	230	20	5
Site 60 Sweetwater Creek at (D-31-8)25aaa, near Caineville--Continued									
JUL. 1975									
25...	490	320	1.1	7.9	90	--	--	--	7
AUG.									
29...	1200	900	2.0	7.8	260	--	--	--	--
MAY. 1976									
25...	540	400	1.3	8.1	130	80	0	--	--
Site 61 Unnamed wash at mouth at (D-28-8)25dcc, near Caineville--Continued									
AUG. 1976									
10...	1500	1300	1.1	7.0	200	730	240	--	--
Site 61.2 Fremont River above Sweetwater Creek, near Caineville--Continued									
APR. 1976									
01...	340	190	.7	8.1	80	--	--	--	--
MAY									
26...	510	370	1.0	8.0	120	80	0	--	--
Site 62 Fremont River at Caineville--Continued									
AUG. 1975									
25...	470	320	1.5	8.0	140	--	--	--	0
APR. 1976									
01...	340	190	.6	8.2	80	--	--	--	--
MAY									
25...	510	370	.6	8.0	120	80	0	--	--
AUG.									
10...	480	240	.7	8.0	90	10	10	0	1
SEP.									
08...	490	270	.7	8.2	110	20	20	360	1

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 57 Fremont River below Neilson Wash, at State Highway 24, near Hanksville--Continued									
AUG , 1975									
28...	--	--	2400	--	--	--	--	--	--
NOV									
17...	4	.1	1100	40	100	0	2	0	20
APR , 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
31...	--	--	--	--	--	--	--	--	--
AUG									
10...	3	.0	2300	20	0	0	2	1	30
SEP									
08...	6	.0	2200	0	0	0	0	0	30
Site 59 Sweetwater Creek at mouth, near Caineville--Continued									
AUG , 1975									
28...	--	--	3100	--	--	--	--	--	--
NOV									
17...	0	.0	5500	20	0	0	5	6	90
MAY , 1976									
26...	--	--	--	--	--	--	--	--	--
AUG									
10...	0	3.9	4100	20	0	0	1	8	70
SEP									
08...	1	.0	6300	10	0	0	0	7	100
Site 60 Sweetwater Creek at (D-31-8)25aaa, near Caineville--Continued									
JUL , 1975									
25...	--	--	--	--	--	--	--	--	--
AUG									
29...	--	--	2700	--	--	--	--	--	--
MAY , 1976									
25...	--	--	--	--	--	--	--	--	--
Site 61 Unnamed wash at mouth at (D-28-8)25dcc, near Caineville--Continued									
AUG , 1976									
10...	--	--	--	--	--	--	--	--	--
Site 61.2 Fremont River above Sweetwater Creek, near Caineville--Continued									
APR , 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
26...	--	--	--	--	--	--	--	--	--
Site 62 Fremont River at Caineville--Continued									
AUG , 1975									
25...	--	--	2000	--	--	--	--	--	--
APR , 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
26...	--	--	--	--	--	--	--	--	--
AUG									
10...	3	.0	1400	20	0	2	0	1	20
SEP									
08...	2	.0	1600	10	100	0	0	0	20

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SiO_2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO_3) (MG/L)	CARBONATE (CO_3) (MG/L)
Site 63 Caineville Wash at mouth, at State Highway 24, at Caineville										
AUG . 1975										
28...	1335	26.0	.50	16	460	45	920	8.0	196	0
APR . 1976										
01...	--	--	.30	13	550	96	770	18	135	0
MAY										
30...	1500	14.5	.05	14	560	84	800	15	141	0
Site 64 Sandy Creek at mouth, near Caineville										
NOV . 1975										
17...	1600	8.5	.30	11	470	82	160	9.6	210	0
APR . 1976										
01...	1100	14.5	3.0	14	350	79	110	9.8	134	0
MAY										
26...	1810	24.5	2.0	21	310	56	78	9.1	136	0
Site 66 Sandy Creek at (D-31-8)17ca, near Caineville										
JUL . 1975										
25...	0850	17.0	.03	14	550	180	300	11	266	0
AUG										
28...	2035	17.0	1.3	23	110	20	11	3.5	152	0
MAY . 1976										
25...	2010	16.5	4.5	22	140	33	30	4.2	204	0
Site 67 Oak Creek at mouth, at (D-31-8)19aa, near Caineville										
JUL . 1975										
25...	0955	23.5	.01	25	320	58	32	7.5	238	0
AUG										
28...	1950	18.5	1.0	23	100	19	9.8	3.1	144	0
MAY . 1976										
25...	2000	17.0	2.5	23	100	24	12	3.4	199	0
Site 70 Fremont River at State Highway 24, above Sandy Creek, near Caineville										
JUL . 1975										
24...	1745	28.0	25	28	98	34	24	6.9	156	0
AUG										
28...	1440	23.0	31	28	91	33	25	6.1	175	0
NOV										
17...	1530	8.0	115	29	81	24	20	4.4	193	0
APR . 1976										
01...	1110	10.0	55	27	75	24	17	4.8	170	0
MAY										
26...	1750	25.0	37	23	110	36	24	7.0	168	0
AUG										
10...	1545	24.0	32	25	80	28	23	5.6	169	0
SEP										
09...	--	16.5	22	26	89	27	23	5.4	169	0
Site 71 Fremont River near Caineville										
AUG . 1975										
28...	1515	23.5	35	28	90	33	24	6.1	176	0
MAY . 1976										
25...	--	19.0	31	23	110	38	25	7.4	168	0
SEP										
09...	--	--	--	--	--	--	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 63 Caineville Wash at mouth, at State Highway 24, at Caineville--Continued										
AUG , 1975										
28...	1800	1000	.01	--	--	--	.00	.8	4350	--
APR , 1976										
01...	2200	790	.19	--	--	--	.03	.3	4510	6070
MAY										
30...	2200	800	.26	--	--	--	.09	.4	4540	6070
Site 64 Sandy Creek at mouth, near Caineville--Continued										
NOV , 1975										
17...	1600	24	.09	--	--	--	.03	.3	2470	2880
APR , 1976										
01...	1300	21	.01	--	--	--	.03	.3	1950	2300
MAY										
26...	990	17	.12	--	--	--	.09	.3	1550	1980
Site 66 Sandy Creek at (D-31-8)17ca, near Caineville--Continued										
JUL , 1975										
25...	2300	76	.08	--	--	--	.03	.4	3560	4000
AUG										
28...	250	3.5	.02	--	--	--	.03	.2	497	710
MAY , 1976										
25...	340	9.5	.14	--	--	--	.03	.2	680	980
Site 67 Oak Creek at mouth, at (D-31-8)19aa, near Caineville--Continued										
JUL , 1975										
25...	830	15	.77	--	--	--	.03	.2	1410	1750
AUG										
28...	230	2.6	.04	--	--	--	.03	.2	460	680
MAY , 1976										
25...	210	5.4	.00	--	--	--	.09	.2	476	705
Site 70 Fremont River at State Highway 24, above Sandy Creek, near Caineville--Continued										
JUL , 1975										
24...	270	19	.02	--	--	--	.03	.3	557	820
AUG										
28...	240	19	.00	--	--	--	.00	.3	530	780
NOV										
17...	170	17	.49	--	--	--	.03	.2	444	670
APR , 1976										
01...	170	16	.30	--	--	--	.06	.2	419	649
MAY										
26...	310	20	.06	--	--	--	.09	.3	614	872
AUG										
10...	210	20	.03	--	--	--	.03	.3	477	737
SEP										
09...	230	17	.02	--	--	--	.03	.3	503	736
Site 71 Fremont River near Caineville--Continued										
AUG , 1975										
28...	230	19	.01	--	--	--	.03	.3	519	790
MAY , 1976										
25...	330	20	.06	--	--	--	.12	.3	637	870
SEP										
09...	--	--	--	--	--	--	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PH (UNITS)	DISSOLVED BORON (B) (UG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)
Site 63 Caineville Wash at mouth, at State Highway 24, at Caineville--Continued									
AUG , 1975									
26...	1300	1200	11	7.6	690	--	--	--	--
APR , 1976									
01...	1800	1700	8.0	7.7	510	--	--	--	--
MAY									
30...	1700	1600	8.3	7.7	500	30	30	--	--
Site 64 Sandy Creek at mouth, near Caineville--Continued									
NOV , 1975									
17...	1500	1300	1.8	8.2	180	600	80	0	3
APR , 1976									
01...	1200	1100	1.4	7.8	180	10	20	--	--
MAY									
26...	1000	890	1.1	7.9	160	60	20	--	--
Site 66 Sandy Creek at (D-31-8)17ca, near Caineville--Continued									
JUL , 1975									
25...	2100	1900	2.8	7.6	400	--	--	--	9
AUG									
26...	360	230	.3	8.2	80	--	--	--	0
MAY , 1976									
25...	490	320	.6	8.1	100	80	30	--	--
Site 67 Oak Creek at mouth, at (D-31-8)19aa, near Caineville--Continued									
JUL , 1975									
25...	1000	840	.4	7.7	180	--	--	--	4
AUG									
26...	330	210	.2	8.1	80	--	--	--	--
MAY , 1976									
25...	350	190	.3	8.1	70	40	10	--	--
Site 70 Fremont River at State Highway 24, above Sandy Creek, near Caineville--Continued									
JUL , 1975									
24...	380	260	.5	8.2	100	--	--	--	--
AUG									
28...	360	220	.6	8.1	110	--	--	--	0
NOV									
17...	300	140	.5	8.5	70	130	5	10	0
APR , 1976									
01...	290	150	.4	8.1	80	--	--	--	--
MAY									
26...	420	290	.5	8.1	100	100	10	--	--
AUG									
10...	320	180	.6	8.0	90	20	0	0	0
SEP									
09...	330	200	.5	8.4	90	20	10	200	1
Site 71 Fremont River near Caineville--Continued									
AUG , 1975									
26...	360	220	.6	8.0	90	--	--	--	--
MAY , 1976									
25...	430	290	.5	8.1	110	110	20	--	--
SEP									
09...	--	--	--	--	--	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 63 Caineville Wash at mouth, at State Highway 24, at Caineville--Continued									
AUG 1975									
28...	--	--	4700	--	--	--	--	--	--
APR 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
30...	--	--	--	--	--	--	--	--	--
Site 64 Sandy Creek at mouth, near Caineville--Continued									
NOV 1975									
17...	1	.0	5900	20	0	0	3	0	60
APR 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
28...	--	--	--	--	--	--	--	--	--
Site 66 Sandy Creek at (D-31-8)17ca, near Caineville--Continued									
JUL 1975									
25...	--	--	--	--	--	--	--	--	--
AUG									
28...	--	--	990	--	--	--	--	--	--
MAY 1976									
25...	--	--	--	--	--	--	--	--	--
Site 67 Oak Creek at mouth, at (D-31-8)19aa, near Caineville--Continued									
JUL 1975									
25...	--	--	--	--	--	--	--	--	--
AUG									
28...	--	--	870	--	--	--	--	--	--
MAY 1976									
25...	--	--	--	--	--	--	--	--	--
Site 70 Fremont River at State Highway 24, above Sandy Creek, near Caineville--Continued									
JUL 1975									
24...	--	--	--	--	--	--	--	--	--
AUG									
28...	--	--	1300	--	--	--	--	--	--
NOV									
17...	5	.0	820	30	100	0	6	0	30
APR 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
28...	--	--	--	--	--	--	--	--	--
AUG									
10...	4	.0	1200	20	0	0	1	0	20
SEP									
09...	2	.0	1200	10	100	0	0	0	20
Site 71 Fremont River near Caineville--Continued									
AUG 1975									
28...	--	--	1400	--	--	--	--	--	--
MAY 1976									
25...	--	--	--	--	--	--	--	--	--
SEP									
09...	--	--	1200	10	100	0	0	0	20

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SiO_2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
Site 72 Pleasant Creek near Caineville										
AUG , 1975										
28...	1530	25.0	1.5	28	200	52	33	5.6	184	0
NOV										
17...	1520	9.0	3.0	25	220	54	61	4.3	235	0
MAY , 1976										
25...	1800	20.0	4.0	26	130	32	20	3.3	185	0
AUG										
10...	1515	24.0	1.8	26	180	41	34	4.8	171	0
SEP										
09...	--	19.0	3.0	22	180	41	34	5.4	203	0
Site 73 Pleasant Creek at State Highway 24, at Notom										
JUL , 1975										
25...	0730	14.0	3.0	28	130	31	16	2.9	222	0
AUG										
28...	1910	18.5	.60	29	200	44	24	5.2	259	0
APR , 1976										
01...	1140	15.0	3.0	21	94	30	14	3.4	196	0
MAY										
25...	1900	16.0	3.0	27	130	31	17	300	222	0
Site 75 Pleasant Creek at (D-30-7)29a										
JUL , 1975										
24...	1905	19.5	5.0	24	25	7.9	3.5	1.7	105	0
AUG										
27...	2125	16.0	5.0	25	24	9.8	4.2	1.8	109	0
MAY , 1976										
25...	1600	16.0	10	20	28	13	4.5	1.8	123	0
Site 76 Fremont River below Sulphur Creek, near Fruita										
JUL , 1975										
24...	1815	20.5	25	31	98	32	23	6.7	185	0
AUG										
28...	1550	19.5	35	28	88	31	22	6.0	185	0
NOV										
17...	1450	6.0	115	29	81	27	20	4.8	195	0
MAY , 1976										
25...	1735	16.0	40	24	100	37	24	7.3	166	0
Site 77 Fremont River at State Highway 24, above Sulphur Creek, at Fruita										
AUG , 1975										
28...	1635	19.0	33	28	77	28	21	5.0	175	0
MAY , 1976										
25...	1645	16.0	36	24	74	28	21	4.9	173	0
AUG										
10...	1350	16.5	32	26	74	26	19	4.7	187	0
SEP										
09...	1320	16.5	33	28	81	26	20	5.1	167	6
Site 78 Sulphur Creek at mouth, at Fruita										
AUG , 1975										
28...	1605	22.0	1.8	26	250	84	41	19	238	0
NOV										
17...	1440	7.5	5.0	25	220	79	34	16	235	0
MAY , 1976										
25...	1715	17.5	3.5	21	330	77	43	22	180	0
AUG										
10...	1420	19.0	1.2	24	190	66	36	15	222	0
SEP										
09...	1415	23.0	1.0	24	290	98	48	25	200	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

Date	Dis-solved sulfate (SO4) (MG/L)	Dis-solved chlo-ride (CL) (MG/L)	Dis-solved nitrite plus nitrate (N) (MG/L)	Dis-solved nitrate (NO3) (MG/L)	Dis-solved nitrite (NO2) (MG/L)	Dis-solved ammonia (NH4) (MG/L)	Dis-solved ortho phos-phate (PO4) (MG/L)	Dis-solved fluo-ride (F) (MG/L)	Dis-solved solids (sum of constit-uents) (MG/L)	Spe-cific con-duct-ance (micro-mhos)
Site 72 Pleasant Creek near Caineville--Continued										
AUG + 1975										
28...	590	7.4	.00	--	--	--	.00	.3	1010	1340
NOV										
17...	670	9.3	.03	--	--	--	.00	.4	1160	1470
MAY + 1976										
25...	340	6.6	.00	--	--	--	.12	.3	650	870
AUG										
10...	520	7.8	.33	--	--	--	.03	.3	903	1170
SEP										
09...	500	7.3	.25	--	--	--	.13	.3	895	1140
Site 73 Pleasant Creek at State Highway 24, at Notom--Continued										
JUL + 1975										
25...	280	4.7	.08	--	--	--	.03	.3	603	850
AUG										
28...	480	6.5	.01	--	--	--	.00	.4	921	1240
APR + 1976										
01...	190	7.3	.01	--	--	--	.03	.2	457	687
MAY										
25...	290	6.3	.10	--	--	--	.06	.4	615	869
Site 75 Pleasant Creek at (D-30-7)29a--Continued										
JUL + 1975										
24...	19	1.1	.02	--	--	--	.06	.1	134	205
AUG										
27...	18	1.7	.00	--	--	--	.09	.1	139	216
MAY + 1976										
25...	31	3.0	.02	--	--	--	.06	.1	162	251
Site 76 Fremont River below Sulphur Creek, near Fruita--Continued										
JUL + 1975										
24...	240	20	.04	--	--	--	.03	.3	543	780
AUG										
28...	200	19	.01	--	--	--	.03	.3	487	740
NOV										
17...	180	16	.50	--	--	--	.12	.3	458	653
MAY + 1976										
25...	290	20	.14	--	--	--	.03	.2	585	862
Site 77 Fremont River at State Highway 24, above Sulphur Creek, at Fruita--Continued										
AUG + 1975										
28...	170	17	.02	--	--	--	.00	.3	434	670
MAY + 1976										
25...	180	19	.16	--	--	--	.03	.2	437	672
AUG										
10...	150	18	.04	--	--	--	.03	.3	411	662
SEP										
09...	170	17	.03	--	--	--	.06	.3	437	646
Site 78 Sulphur Creek at mouth, at Fruita--Continued										
AUG + 1975										
28...	810	31	.13	--	--	--	.06	.4	1360	1740
NOV										
17...	690	30	.31	--	--	--	.03	.4	1220	1550
MAY + 1976										
25...	1000	38	.57	--	--	--	3.4	.5	1630	1930
AUG										
10...	600	28	.47	--	--	--	.00	.4	1070	1470
SEP										
09...	970	34	.24	--	--	--	.09	.5	1590	2030

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PH (UNITS)	DISSOLVED BORON (B) (UG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)
Site 72 Pleasant Creek near Caineville--Continued									
AUG. 1975									
28...	720	570	.5	7.9	140	--	--	--	0
NOV.									
17...	780	560	1.0	8.3	140	190	60	0	1
MAY 1976									
25...	460	300	.4	8.1	80	90	20	--	--
AUG.									
10...	620	480	.5	7.9	130	10	30	0	1
SEP.									
09...	620	460	.6	8.4	120	20	30	10	1
Site 73 Pleasant Creek at State Highway 24, at Notom--Continued									
JUL. 1975									
25...	450	270	.3	8.1	70	--	--	--	0
AUG.									
28...	590	470	.4	8.1	120	--	--	--	--
APR. 1976									
01...	360	200	.3	8.0	60	--	--	--	--
MAY									
25...	450	2	.3	8.1	80	70	40	--	--
Site 75 Pleasant Creek at (D-30-7)29a--Continued									
JUL. 1975									
24...	95	9	.2	8.3	10	--	--	--	0
AUG.									
27...	100	11	.2	8.1	20	--	--	--	--
MAY 1976									
25...	120	23	.2	8.4	30	40	10	--	--
Site 76 Fremont River below Sulphur Creek, near Fruita--Continued									
JUL. 1975									
24...	380	220	.5	8.3	120	--	--	--	--
AUG.									
26...	350	200	.5	8.0	90	--	--	--	0
NOV.									
17...	310	150	.5	8.4	70	100	20	10	0
MAY 1976									
25...	400	270	.5	8.1	100	80	20	--	--
Site 77 Fremont River at State Highway 24, above Sulphur Creek, at Fruita--Continued									
AUG. 1975									
28...	310	170	.5	8.2	70	--	--	--	--
MAY 1976									
25...	300	150	.5	8.1	50	40	10	--	--
AUG.									
10...	290	140	.5	8.1	70	10	0	0	0
SEP.									
09...	310	160	.5	8.7	70	30	10	10	1
Site 78 Sulphur Creek at mouth, at Fruita--Continued									
AUG. 1975									
28...	970	780	.6	7.4	260	--	--	--	--
NOV.									
17...	880	670	.5	8.1	190	60	30	10	1
MAY 1976									
25...	1100	930	.6	7.8	260	50	40	--	--
AUG.									
10...	750	570	.6	7.8	200	30	10	0	1
SEP.									
09...	1100	970	.6	8.0	330	20	40	10	1

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED BERYL-LIUM (BE) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
			Site 72 Pleasant Creek near Caineville--Continued						
AUG , 1975									
28...	--	--	4400	--	--	--	--	--	--
NOV									
17...	3	.1	3900	30	0	0	17	1	30
MAY , 1976									
25...	--	--	--	--	--	--	--	--	--
AUG									
10...	1	.0	3400	10	100	0	1	1	30
SEP									
09...	2	.1	3600	0	0	0	0	0	30
			Site 73 Pleasant Creek at State Highway 24, at Notom--Continued						
JUL , 1975									
25...	--	--	--	--	--	--	--	--	--
AUG									
28...	--	--	4000	--	--	--	--	--	--
APR , 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
25...	--	--	--	--	--	--	--	--	--
			Site 75 Pleasant Creek at (D-30-7)29a--Continued						
JUL , 1975									
24...	--	--	--	--	--	--	--	--	--
AUG									
27...	--	--	210	--	--	--	--	--	--
MAY , 1976									
25...	--	--	--	--	--	--	--	--	--
			Site 76 Fremont River below Sulphur Creek, near Fruita--Continued						
JUL , 1975									
24...	--	--	--	--	--	--	--	--	--
AUG									
28...	--	--	1100	--	--	--	--	--	--
NOV									
17...	5	.0	800	30	100	0	6	1	20
MAY , 1976									
25...	--	--	--	--	--	--	--	--	--
			Site 77 Fremont River at State Highway 24, above Sulphur Creek, at Fruita--Continued						
AUG , 1975									
28...	--	--	870	--	--	--	--	--	--
MAY , 1976									
25...	--	--	--	--	--	--	--	--	--
AUG									
10...	3	.0	880	10	0	0	1	1	10
SEP									
09...	4	.0	--	--	--	--	--	--	--
			Site 78 Sulphur Creek at mouth, at Fruita--Continued						
AUG , 1975									
28...	--	--	3900	--	--	--	--	--	--
NOV									
17...	4	.1	3100	20	0	0	2	1	60
MAY , 1976									
25...	--	--	--	--	--	--	--	--	--
AUG									
10...	0	.0	3100	10	0	0	3	1	50
SEP									
09...	2	.0	--	--	--	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DIS-CHARGE (FT^3/S)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
Site 79 Sulphur Creek below Sand Creek, at State Highway 24, near Torrey										
AUG , 1975										
28...	1745	19.0	.08	20	550	290	110	73	190	0
NOV										
17...	1430	6.0	.50	21	490	140	59	32	254	0
APR , 1976										
01...	1245	11.0	3.0	26	420	49	24	15	166	0
MAY										
25...	1510	19.5	1.8	22	230	73	46	19	220	0
AUG										
10...	1335	22.0	1.2	24	270	86	33	19	194	0
Site 81 Fremont River above Fish Creek, near Torrey										
AUG , 1975										
28...	1655	19.0	36	29	80	25	21	4.8	197	2
MAY , 1976										
25...	--	16.0	35	24	74	27	21	4.9	184	0
Site 82 Fremont River at State Highway 24, 1.5 mi west of Torrey										
AUG , 1975										
27...	2025	17.5	45	29	77	24	18	4.5	196	0
NOV										
17...	--	5.0	90	--	--	--	--	--	--	--
APR , 1976										
01...	1305	7.5	30	28	61	19	15	4.1	172	0
MAY										
25...	1330	12.5	45	28	73	26	19	4.7	182	0
AUG										
10...	1310	16.0	55	25	69	23	17	4.4	180	0
SEP										
09...	1510	16.0	31	29	76	22	18	4.7	187	0
Site 84 Fremont River at (D-29-4)7bac, near Bicknell										
AUG , 1975										
27...	--	--	70	27	59	20	16	3.8	165	0
MAY , 1976										
25...	--	14.0	95	28	61	24	17	4.0	169	0
AUG										
10...	1215	14.0	80	25	56	20	15	3.7	166	0
Site 85 Pine Creek at (D-29-3)11dd, near mouth, near Bicknell										
AUG , 1975										
27...	1955	9.0	30	29	25	9.2	7.0	2.3	118	0
MAY , 1976										
25...	1245	11.0	60	29	24	9.1	7.0	2.2	116	0
AUG										
10...	--	11.0	45	28	26	8.1	6.8	2.2	117	0
SEP										
09...	1630	12.0	22	30	25	9.4	7.4	2.3	118	0
Site 87 Fremont River below Big Hollow, 1 mi southwest of Bicknell										
AUG , 1975										
27...	1900	15.0	9.5	35	78	25	22	5.5	160	0
MAY , 1976										
25...	1200	14.0	15	31	100	35	25	6.0	217	0
AUG										
10...	1130	14.5	10	35	98	26	22	5.6	181	0
Site 88 Big Hollow at mouth, near Bicknell										
MAY , 1976										
25...	1215	12.5	.01	35	82	22	18	3.8	162	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 79 Sulphur Creek below Sand Creek, at State Highway 24, near Torrey--Continued										
AUG , 1975										
28...	2500	59	.03	--	--	--	.00	.6	3720	4000
NOV										
17...	1700	36	1.3	--	--	--	.03	.6	2620	2930
APR , 1976										
01...	1100	18	.58	--	--	--	.09	.3	1750	2270
MAY										
25...	770	38	.49	--	--	--	3.0	.4	1310	--
AUG										
10...	810	23	.34	--	--	--	.03	.4	1350	1770
Site 81 Fremont River above Fish Creek, near Torrey--Continued										
AUG , 1975										
28...	150	18	.11	--	--	--	.03	.3	429	680
MAY , 1976										
25...	170	19	.21	--	--	--	.03	.3	432	670
Site 82 Fremont River at State Highway 24, 1.5 mi west of Torrey--Continued										
AUG , 1975										
27...	140	16	.13	--	--	--	.15	.2	407	640
NOV										
17...	--	--	--	--	--	--	--	--	360	580
APR , 1976										
01...	110	14	.59	--	--	--	.09	.2	339	544
MAY										
25...	160	16	.45	--	--	--	.06	.2	419	624
AUG										
10...	130	15	.14	--	--	--	.03	.2	374	556
SEP										
09...	160	16	.33	--	--	--	.09	.2	421	621
Site 84 Fremont River at (D-29-4)7bac, near Bicknell--Continued										
AUG , 1975										
27...	100	12	.20	--	--	--	.15	.2	321	520
MAY , 1976										
25...	130	15	.56	--	--	--	.09	.2	365	558
AUG										
10...	100	14	.16	--	--	--	.03	.2	317	508
Site 85 Pine Creek at (D-29-3)11dd, near mouth, near Bicknell--Continued										
AUG , 1975										
27...	10	4.5	.50	--	--	--	.18	.1	148	240
MAY , 1976										
25...	19	4.9	.55	--	--	--	.28	.2	155	224
AUG										
10...	11	4.9	.56	--	--	--	.25	.1	148	228
SEP										
09...	11	4.6	2.5	--	--	--	.28	.1	160	232
Site 87 Fremont River below Big Hollow, 1 mi southwest of Bicknell--Continued										
AUG , 1975										
27...	180	20	.68	--	--	--	.18	.2	448	700
MAY , 1976										
25...	240	19	.47	--	--	--	.09	.3	566	826
AUG										
10...	200	23	.76	--	--	--	.03	.2	503	738
Site 88 Big Hollow at mouth, near Bicknell--Continued										
MAY , 1976										
25...	170	18	1.2	--	--	--	.09	.2	434	643

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SODIUM AD-SORP-TION RATIO	PH (UNITS)	DIS-SOLVED BORON (B) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)
Site 79 Sulphur Creek below Sand Creek, at State Highway 24, near Torrey--Continued									
AUG , 1975									
28...	2600	2400	.9	8.2	1000	--	--	--	--
NOV									
17...	1800	1600	.6	8.1	470	70	30	20	2
APR , 1976									
01...	1300	1100	.3	7.8	180	--	--	--	--
MAY									
25...	880	690	.7	7.8	230	70	60	--	--
AUG									
10...	950	790	.5	7.8	240	40	20	0	1
Site 81 Fremont River above Fish Creek, near Torrey--Continued									
AUG , 1975									
28...	300	140	.5	8.4	80	--	--	--	--
MAY , 1976									
25...	300	150	.5	8.1	80	60	10	--	--
Site 82 Fremont River at State Highway 24, 1.5 mi west of Torrey--Continued									
AUG , 1975									
27...	290	130	.5	8.1	70	--	--	--	--
NOV									
17...	--	--	--	--	--	--	--	--	--
APR , 1976									
01...	230	89	.4	8.0	50	--	--	--	--
MAY									
25...	290	140	.5	8.1	70	190	50	--	--
AUG									
10...	270	120	.5	8.0	70	30	20	0	0
SEP									
09...	280	130	.5	8.3	70	30	50	0	1
Site 84 Fremont River at (D-29-4)7bac, near Bicknell--Continued									
AUG , 1975									
27...	230	95	.5	8.2	40	--	--	--	--
MAY , 1976									
25...	250	110	.5	8.1	70	70	10	--	--
AUG									
10...	220	86	.4	7.9	50	10	10	--	--
Site 85 Pine Creek at (D-29-3)11dd, near mouth, near Bicknell--Continued									
AUG , 1975									
27...	100	4	.3	7.6	20	--	--	--	--
MAY , 1976									
25...	190	95	.5	8.1	20	30	10	--	--
AUG									
10...	98	2	.3	8.1	10	10	0	--	--
SEP									
09...	100	5	.3	8.4	20	10	20	0	1
Site 87 Fremont River below Big Hollow, 1 mi southwest of Bicknell--Continued									
AUG , 1975									
27...	300	170	.6	8.2	80	--	--	--	--
MAY , 1976									
25...	390	220	.5	8.1	130	30	20	--	--
AUG									
10...	350	200	.5	8.2	90	20	10	--	--
Site 88 Big Hollow at mouth, near Bicknell--Continued									
MAY , 1976									
25...	300	160	.5	7.8	50	30	0	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 79 Sulphur Creek below Sand Creek, at State Highway 24, near Torrey--Continued									
AUG 1975									
28...	--	--	11000	--	--	--	--	--	--
NOV									
17...	1	.2	9600	40	0	1	10	0	130
APR 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
25...	--	--	--	--	--	--	--	--	--
AUG									
10...	3	.0	3900	30	0	0	10	1	60
Site 81 Fremont River above Fish Creek, near Torrey--Continued									
AUG 1975									
28...	--	--	830	--	--	--	--	--	--
MAY 1976									
25...	--	--	--	--	--	--	--	--	--
Site 82 Fremont River at State Highway 24, 1.5 mi west of Torrey--Continued									
AUG 1975									
27...	--	--	750	--	--	--	--	--	--
NOV									
17...	--	--	--	--	--	--	--	--	--
APR 1976									
01...	--	--	--	--	--	--	--	--	--
MAY									
25...	--	--	--	--	--	--	--	--	--
AUG									
10...	4	.0	670	10	0	0	3	0	10
SEP									
09...	4	.0	730	50	0	0	0	0	10
Site 84 Fremont River at (D-29-4)7bac, near Bicknell--Continued									
AUG 1975									
27...	--	--	--	--	--	--	--	--	--
MAY 1976									
25...	--	--	--	--	--	--	--	--	--
AUG									
10...	--	--	--	--	--	--	--	--	--
Site 85 Pine Creek at (D-29-3)11dd, near mouth, near Bicknell--Continued									
AUG 1975									
27...	--	--	--	--	--	--	--	--	--
MAY 1976									
25...	--	--	--	--	--	--	--	--	--
AUG									
10...	--	--	--	--	--	--	--	--	--
SEP									
09...	4	.0	180	0	0	0	0	0	0
Site 87 Fremont River below Big Hollow, 1 mi southwest of Bicknell--Continued									
AUG 1975									
27...	--	--	--	--	--	--	--	--	--
MAY 1976									
25...	--	--	--	--	--	--	--	--	--
AUG									
10...	--	--	--	--	--	--	--	--	--
Site 88 Big Hollow at mouth, near Bicknell--Continued									
MAY 1976									
25...	--	--	--	--	--	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SiO_2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
Site 89 Fremont River below Blackburn Ditch terminus, near Bicknell										
AUG , 1975										
27...	1725	19.0	3.0	30	160	62	31	11	294	0
NOV										
17...	1330	8.0	20	30	85	29	19	4.5	190	13
MAY , 1976										
25...	1140	14.0	12	31	140	49	30	6.9	312	0
AUG										
09...	2025	20.0	6.0	15	100	46	26	7.3	185	0
Site 90 Spring Creek at State Highway 24, at Loa										
AUG , 1975										
27...	1210	16.0	4.5	31	49	16	15	3.5	151	10
MAY , 1976										
25...	--	14.0	3.5	25	44	14	15	2.7	156	0
AUG										
09...	1955	22.0	8.0	28	36	8.9	13	3.5	100	9
Site 90.1 Loa Town Ditch at State Highway 24, at Loa										
AUG , 1976										
09...	1845	21.5	8.0	25	28	6.9	9.6	2.6	94	15
Site 90.25 Canal at (D-28-2)11ddb, near Loa										
AUG , 1976										
09...	1930	21.0	3.0	39	27	5.7	15	3.3	118	10
Site 90.3 Road Creek at (D-28-2)12bdd, 0.5 mi south of Loa										
AUG , 1976										
09...	1945	20.0	3.0	42	34	7.8	16	5.3	169	0
Site 90.4 Spring Creek at (D-27-2)30cba, near Loa										
AUG , 1976										
09...	1830	19.0	10	32	34	9.4	12	3.0	113	11
Site 91 Fremont River at State Highway 24, at Loa										
AUG , 1975										
27...	1200	14.0	1.5	33	140	39	26	6.1	336	0
NOV										
17...	1255	5.0	4.2	30	190	53	27	6.3	356	0
MAY , 1976										
25...	1125	12.0	3.0	28	190	52	25	6.0	322	0
AUG										
09...	2005	18.0	1.0	28	100	32	26	6.6	289	0
SEP										
10...	--	12.0	.60	33	110	31	22	6.0	340	0
Site 93 High Line Ditch at Lyman										
AUG , 1975										
27...	1140	14.5	21	18	22	6.9	5.1	2.2	102	0
MAY , 1976										
25...	1045	10.0	55	21	25	8.1	6.4	2.2	115	0
Site 93.1 High Line Ditch near Bicknell										
AUG , 1976										
10...	1100	14.0	12	15	25	6.2	5.0	2.3	110	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 89 Fremont River below Blackburn Ditch terminus, near Bicknell--Continued										
AUG . 1975										
27...	430	22	.02	--	--	--	.12	.3	892	1370
NOV										
17...	180	13	.30	--	--	--	.03	.3	470	694
MAY . 1976										
25...	330	18	.09	--	--	--	.12	.3	760	1060
AUG										
09...	310	20	.17	--	--	--	.03	.3	617	942
Site 90 Spring Creek at State Highway 24, at Loa--Continued										
AUG . 1975										
27...	61	11	.05	--	--	--	.40	.2	272	420
MAY . 1976										
25...	53	11	.28	--	--	--	1.1	.2	254	390
AUG										
09...	50	11	.26	--	--	--	.18	.2	210	300
Site 90.1 Loa Town Ditch at State Highway 24, near Loa--Continued										
AUG . 1976										
09...	12	7.5	.29	--	--	--	.15	.2	155	232
362255111235501 - CANAL AT (D-28-2)11DDB NR LOA 90.25 (LAT 38 22 55 LONG 111 23 55.01)										
AUG . 1976										
09...	5.4	4.8	.26	--	--	--	.09	.3	170	235
Site 90.25 Canal at (D-28-2)11ddb, near Loa--Continued										
AUG . 1976										
09...	6.1	7.0	.27	--	--	--	.21	.3	205	297
Site 90.4 Spring Creek at (D-27-2)30cba, near Loa--Continued										
AUG . 1976										
09...	19	10	.41	--	--	--	.21	.3	169	258
Site 91 Fremont River at State Highway 24, at Loa--Continued										
AUG . 1975										
27...	280	12	1.0	--	--	--	.16	.2	708	1030
NOV										
17...	440	12	1.2	--	--	--	.09	.3	941	1280
MAY . 1976										
25...	440	14	1.2	--	--	--	.12	.3	920	1200
AUG										
09...	160	18	1.4	--	--	--	.03	.3	521	799
SEP										
10...	140	16	1.9	--	--	--	.12	.3	535	814
Site 93 High Line Ditch at Lyman--Continued										
AUG . 1975										
27...	5.7	3.4	.10	--	--	--	.12	.1	114	205
MAY . 1976										
25...	11	5.5	.10	--	--	--	.06	.2	137	216
Site 93.1 High Line Ditch near Bicknell--Continued										
AUG . 1976										
10...	6.0	3.7	.21	--	--	--	.03	.2	119	196

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PH (UNITS)	DISSOLVED BORON (B) (UG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)
Site 89 Fremont River below Blackburn Ditch terminus, near Bicknell--Continued									
AUG , 1975									
27...	650	410	.5	8.1	220	--	--	--	--
NOV									
17...	330	160	.5	8.6	100	40	20	0	0
MAY , 1976									
25...	550	300	.6	8.1	190	40	30	--	--
AUG									
09...	440	290	.5	8.2	170	10	0	--	--
Site 90 Spring Creek at State Highway 24, at Loa--Continued									
AUG , 1975									
27...	190	48	.5	8.7	60	--	--	--	--
MAY , 1976									
25...	170	40	.5	8.7	60	30	0	--	--
AUG									
09...	130	30	.5	8.8	50	30	0	--	--
Site 90.1 Loa Town Ditch at State Highway 24, near Loa--Continued									
AUG , 1976									
09...	98	0	.4	8.9	30	10	0	--	--
Site 90.25 Canal at (D-28-2)11ddb, near Loa--Continued									
AUG , 1976									
09...	91	0	.7	8.7	30	20	0	--	--
Site 90.3 Road Creek at (D-28-2)12bdd, 0.5 mi south of Loa--Continued									
AUG , 1975									
09...	120	0	.6	7.7	80	60	10	--	--
Site 90.4 Spring Creek at (D-27-2)30cba, near Loa--Continued									
AUG , 1975									
09...	120	13	.5	8.5	50	40	0	--	--
Site 91 Fremont River at State Highway 24, at Loa--Continued									
AUG , 1975									
27...	510	240	.5	8.0	190	--	--	--	0
NOV									
17...	590	400	.4	8.3	190	90	20	10	0
MAY , 1976									
25...	690	420	.4	8.0	190	60	30	--	--
AUG									
09...	380	150	.6	7.6	190	20	10	0	1
SEP									
10...	400	120	.5	7.8	140	30	20	10	1
Site 93 High Line Ditch at Lyman--Continued									
AUG , 1975									
27...	83	0	.2	8.1	20	--	--	--	--
MAY , 1976									
25...	96	1	.3	8.1	30	40	0	--	--
Site 93.1 High Line Ditch near Bicknell--Continued									
AUG , 1976									
10...	88	0	.2	7.5	40	30	0	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 89 Fremont River below Blackburn Ditch terminus, near Bicknell--Continued									
AUG , 1975									
27...	--	--	--	--	--	--	--	--	--
NOV									
17...	5	.1	730	1	100	0	3	1	20
MAY , 1976									
25...	--	--	--	--	--	--	--	--	--
AUG									
09...	--	--	--	--	--	--	--	--	--
Site 90 Spring Creek at State Highway 24, at Loa--Continued									
AUG , 1975									
27...	--	--	--	--	--	--	--	--	--
MAY , 1976									
25...	--	--	--	--	--	--	--	--	--
AUG									
09...	--	--	--	--	--	--	--	--	--
Site 90.1 Loa Town Ditch at State Highway 24, near Loa--Continued									
AUG , 1976									
09...	--	--	--	--	--	--	--	--	--
Site 90.25 Canal at (D-28-2)11ddb, near Loa--Continued									
AUG , 1976									
09...	--	--	--	--	--	--	--	--	--
Site 90.3 Road Creek at (D-28-2)12bdd, 0.5 mi south of Loa--Continued									
AUG , 1976									
09...	--	--	--	--	--	--	--	--	--
Site 90.4 Spring Creek at (D-27-2)30cba, near Loa--Continued									
AUG , 1976									
09...	--	--	--	--	--	--	--	--	--
Site 91 Fremont River at State Highway 24, at Loa--Continued									
AUG , 1975									
27...	--	--	1200	--	--	--	--	--	--
NOV									
17...	3	.0	1500	10	0	1	7	0	10
MAY , 1976									
25...	--	--	--	--	--	--	--	--	--
AUG									
09...	3	.0	790	10	100	2	3	1	10
SEP									
10...	4	.0	780	0	0	0	0	0	10
Site 93 High Line Ditch at Lyman--Continued									
AUG , 1975									
27...	--	--	--	--	--	--	--	--	--
MAY , 1976									
25...	--	--	--	--	--	--	--	--	--
Site 93.1 High Line Ditch near Bicknell--Continued									
AUG , 1976									
10...	--	--	--	--	--	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SiO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
Site 94 Fremont River near Fremont										
AUG , 1975										
27...	1500	15.0	115	18	24	6.5	5.0	2.3	101	0
NOV										
17...	1220	7.5	1.2	27	50	14	12	2.8	116	16
MAY , 1976										
24...	1635	9.0	140	21	23	8.4	6.3	2.1	112	0
AUG										
09...	1750	15.0	110	16	22	6.6	6.0	2.3	106	0
SEP										
10...	1210	14.5	22	15	23	7.3	5.5	2.4	101	0
Site 94.1 Fremont River at (D-27-3)17daa, near Fremont										
AUG , 1976										
09...	1810	16.5	1.5	15	25	6.4	5.0	2.4	105	0
Site 94.2 Fremont River at (D-27-3)19daa, near Fremont										
AUG , 1976										
09...	1820	17.5	5.0	24	140	38	19	4.8	240	0
Site 95 UM Creek at inflow point to Mill Meadow Reservoir										
AUG , 1975										
27...	1445	14.5	40	24	26	8.0	6.0	1.9	114	0
MAY , 1976										
24...	1820	12.0	50	23	23	8.3	5.8	2.0	116	0
Site 96 UM Creek below Forsyth Reservoir, near Fremont										
AUG , 1975										
27...	1535	15.0	35	24	23	7.0	4.3	1.9	112	0
MAY , 1976										
24...	2020	11.0	45	22	21	8.5	4.0	1.9	107	0
Site 96.2 Short Creek at mouth, at Forsyth Reservoir										
MAY , 1976										
24...	1905	12.0	.50	32	20	6.5	5.0	1.8	93	0
Site 96.4 Forsyth Springs at Forsyth Reservoir										
MAY , 1976										
24...	1955	9.5	5.0	33	23	7.1	5.8	2.1	101	0
Site 97 UM Creek at inflow point to Forsyth Reservoir										
AUG , 1975										
27...	1615	12.5	12	28	24	8.8	4.9	1.8	122	0
MAY , 1976										
24...	1930	11.0	43	17	18	6.7	3.0	1.7	87	0
Site 98 Fremont River at inflow point to Mill Meadow Reservoir										
AUG , 1975										
27...	1430	15.0	56	15	19	5.7	4.2	2.4	88	0
MAY , 1976										
24...	1800	10.5	75	16	19	6.6	3.2	2.0	8	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 94 Fremont River near Fremont--Continued										
AUG , 1975										
27...	5.2	3.5	.11	--	--	--	.12	.1	115	190
NOV										
17...	84	5.7	.03	--	--	--	.06	.2	270	380
MAY , 1976										
24...	4.6	5.7	.14	--	--	--	.09	.2	132	210
AUG										
09...	6.0	3.8	.29	--	--	--	.03	.1	119	190
SEP										
10...	6.5	3.4	.28	--	--	--	.09	.1	115	197
Site 94.1 Fremont River at (D-27-3)17daa, near Fremont--Continued										
AUG , 1975										
09...	6.3	3.8	.25	--	--	--	.09	.1	118	194
Site 94.2 Fremont River at (D-27-3)19daa, near Fremont--Continued										
AUG , 1976										
09...	330	7.8	.93	--	--	--	.03	.2	687	1000
Site 95 UM Creek at inflow point to Mill Meadow Reservoir--Continued										
AUG , 1975										
27...	7.0	4.8	.11	--	--	--	.12	.1	135	220
MAY , 1976										
24...	7.4	5.6	.11	--	--	--	.03	.2	133	205
Site 96 UM Creek below Forsyth Reservoir, near Fremont--Continued										
AUG , 1975										
27...	2.3	2.5	.11	--	--	--	.12	.1	121	190
MAY , 1976										
24...	6.4	3.3	.11	--	--	--	.30	.1	121	183
Site 96.2 Short Creek at mouth, at Forsyth Reservoir--Continued										
MAY , 1976										
24...	2.6	3.5	.09	--	--	--	.18	.1	118	162
Site 96.4 Forsyth Springs at Forsyth Reservoir--Continued										
MAY , 1976										
24...	6.0	4.1	.28	--	--	--	.15	.1	132	175
Site 97 UM Creek at inflow point to Forsyth Reservoir--Continued										
AUG , 1975										
27...	3.9	3.5	.08	--	--	--	.21	.1	136	210
MAY , 1976										
24...	7.4	2.9	.03	--	--	--	.06	.2	100	148
Site 98 Fremont River at inflow point to Mill Meadow Reservoir--Continued										
AUG , 1975										
27...	2.0	2.3	.19	--	--	--	.12	.1	95	160
MAY , 1976										
24...	3.3	2.4	.18	--	--	--	.12	.1	96	146

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PH (UNITS)	DISSOLVED BORON (B) (UG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)
Site 94 Fremont River near Fremont--Continued									
AUG , 1975									
27...	87	4	.2	7.9	20	--	--	--	--
NOV									
17...	180	61	.4	8.6	50	30	0	0	0
MAY , 1976									
24...	92	0	.3	8.1	30	20	0	--	--
AUG									
09...	82	0	.4	7.9	30	10	10	0	0
SEP									
10...	88	5	.3	8.3	30	60	20	0	0
Site 94.1 Fremont River at (D-27-3)17daa, near Fremont--Continued									
AUG , 1976									
09...	89	3	.2	7.7	30	30	0	--	--
Site 94.2 Fremont River at (D-27-3)19daa, near Fremont--Continued									
AUG , 1976									
09...	510	310	.4	7.8	190	40	20	--	--
Site 95 UM Creek at inflow point to Mill Meadow Reservoir--Continued									
AUG , 1975									
27...	98	4	.3	8.3	30	--	--	--	--
MAY , 1976									
24...	92	0	.3	7.6	30	10	0	--	--
Site 96 UM Creek below Forsyth Reservoir, near Fremont--Continued									
AUG , 1975									
27...	86	0	.2	8.5	20	--	--	--	--
MAY , 1976									
24...	87	0	.2	7.6	30	20	0	--	--
Site 96.2 Short Creek at mouth, at Forsyth Reservoir--Continued									
MAY , 1976									
24...	77	0	.2	8.1	20	20	10	--	--
Site 96.4 Forsyth Springs at Forsyth Reservoir--Continued									
MAY , 1976									
24...	87	4	.3	8.1	20	20	0	--	--
Site 97 UM Creek at inflow point to Forsyth Reservoir--Continued									
AUG , 1975									
27...	96	0	.2	8.1	20	--	--	--	--
MAY , 1976									
24...	73	1	.2	7.7	30	80	0	--	--
Site 98 Fremont River at inflow point to Mill Meadow Reservoir--Continued									
AUG , 1975									
27...	71	0	.2	7.6	20	--	--	--	--
MAY , 1976									
24...	75	3	.2	7.7	20	30	10	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 94 Fremont River near Fremont--Continued									
AUG 1975									
27...	--	--	--	--	--	--	--	--	--
NOV									
17...	2	.1	360	20	100	0	5	0	0
MAY 1976									
24...	--	--	--	--	--	--	--	--	--
AUG									
09...	2	.0	140	0	0	0	31	0	0
SEP									
10...	2	.0	160	20	0	0	0	0	0
Site 94.1 Fremont River at (D-27-3)17daa, near Fremont--Continued									
AUG 1976									
09...	--	--	--	--	--	--	--	--	--
Site 94.2 Fremont River at (D-27-3)19daa, near Fremont--Continued									
AUG 1976									
09...	--	--	--	--	--	--	--	--	--
Site 95 UM Creek at inflow point to Mill Meadow Reservoir--Continued									
AUG 1975									
27...	--	--	--	--	--	--	--	--	--
MAY 1976									
24...	--	--	--	--	--	--	--	--	--
Site 96 UM Creek below Forsyth Reservoir, near Fremont--Continued									
AUG 1975									
27...	--	--	--	--	--	--	--	--	--
MAY 1976									
24...	--	--	--	--	--	--	--	--	--
Site 96.2 Short Creek at mouth, at Forsyth Reservoir--Continued									
MAY 1976									
24...	--	--	--	--	--	--	--	--	--
Site 96.4 Forsyth Springs at Forsyth Reservoir--Continued									
MAY 1976									
24...	--	--	--	--	--	--	--	--	--
Site 97 UM Creek at inflow point to Forsyth Reservoir--Continued									
AUG 1975									
27...	--	--	--	--	--	--	--	--	--
MAY 1976									
24...	--	--	--	--	--	--	--	--	--
Site 98 Fremont River at inflow point to Mill Meadow Reservoir--Continued									
AUG 1975									
27...	--	--	110	--	--	--	--	--	--
MAY 1976									
24...	--	--	--	--	--	--	--	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	DISSOLVED SILICA (SiO_2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO_3) (MG/L)	CARBONATE (CO_3) (MG/L)
Site 99 Fremont River below Johnson Valley Reservoir, near Fremont										
AUG , 1975										
27...	1400	16.0	65	13	18	5.1	4.1	2.4	82	0
MAY , 1976										
24...	1725	10.0	75	14	18	6.1	3.0	1.9	84	0
Site 100 Seven Mile Creek near Fish Lake										
AUG , 1975										
27...	1340	10.0	20	23	13	4.9	3.2	1.5	69	0
MAY , 1976										
24...	--	13.0	50	14	12	4.2	2.3	1.3	55	0
Site 101 Lake Creek below Fish Lake										
AUG , 1975										
27...	1320	14.0	10	13	10	3.5	5.1	3.7	60	0
MAY , 1976										
24...	1645	17.5	.10	23	14	6.2	6.0	4.5	81	0
Site 103 Riley Canyon above Road Creek, at (D-27-2)34dcc										
AUG , 1976										
09...	1700	23.0	.10	39	34	7.3	14	6.0	151	0

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED NITRITE (NO2) (MG/L)	DIS-SOLVED AMMONIA (NH4) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
Site 99 Fremont River below Johnson Valley Reservoir, near Fremont--Continued										
AUG , 1975										
27...	3.3	1.9	.37	--	--	--	.15	.1	90	150
MAY , 1976										
24...	2.8	2.3	.18	--	--	--	.06	.1	91	141
Site 100 Seven Mile Creek near Fish Lake--Continued										
AUG , 1975										
27...	4.2	1.6	.06	--	--	--	.12	.1	86	120
MAY , 1976										
24...	4.1	2.4	.37	--	--	--	.03	.1	69	101
Site 101 Lake Creek below Fish Lake--Continued										
AUG , 1975										
27...	1.9	2.5	.02	--	--	--	.09	.2	70	115
MAY , 1976										
24...	5.3	4.0	.15	--	--	--	.09	.2	105	145
Site 103 Riley Canyon above Road Creek, at (D-27-2)34dcc--Continued										
AUG , 1976										
09...	7.8	9.1	.56	--	--	--	.21	.3	195	287

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PH (UNITS)	DISSOLVED BORON (B) (UG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)
Site 99 Fremont River below Johnson Valley Reservoir, near Fremont--Continued									
AUG , 1975									
27...	66	0	.2	7.5	20	--	--	--	--
MAY , 1976									
24...	70	1	.2	7.7	20	20	0	--	--
Site 100 Seven Mile Creek near Fish Lake--Continued									
AUG , 1975									
27...	53	0	.2	8.0	10	--	--	--	--
MAY , 1976									
24...	47	2	.1	7.7	30	130	10	--	--
Site 101 Lake Creek below Fish Lake--Continued									
AUG , 1975									
27...	39	0	.4	8.3	30	--	--	--	--
MAY , 1976									
24...	61	0	.3	7.6	50	830	20	--	--
Site 103 Riley Canyon above Road Creek, at (D-27-2)34dcc--Continued									
AUG , 1976									
09...	120	0	.6	8.0	50	100	10	--	--

Table 5.--Chemical analyses of water samples collected in the Dirty Devil River basin, water years 1975-76--Continued

DATE	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED STRON-TIUM (SR) (UG/L)	DIS-SOLVED ALUM-INUM (AL) (UG/L)	DIS-SOLVED BARIUM (BA) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L)	DIS-SOLVED LITHIUM (LI) (UG/L)
Site 99 Fremont River below Johnson Valley Reservoir, near Fremont--Continued									
AUG , 1975									
27...	--	--	--	--	--	--	--	--	--
MAY , 1976									
24...	--	--	--	--	--	--	--	--	--
Site 100 Seven Mile Creek near Fish Lake--Continued									
AUG , 1975									
27...	--	--	--	--	--	--	--	--	--
MAY , 1976									
24...	--	--	--	--	--	--	--	--	--
Site 101 Lake Creek below Fish Lake--Continued									
AUG , 1975									
27...	--	--	--	--	--	--	--	--	--
MAY , 1976									
24...	--	--	--	--	--	--	--	--	--
Site 103 Riley Canyon above Road Creek, at (D-27-2)34dcc-- Continued									
AUG , 1976									
09...	--	--	--	--	--	--	--	--	--

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76

[Sites are shown on plate 1]

Specific conductance: Micromhos per centimeter at 25°C.

Site 2 Dirty Devil River above Poison Spring Wash, near Hanksville

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
AUG , 1971				
10...	1100	21.0	4.8	5000
SEP				
22...	1530	19.5	22	2000
OCT				
22...	1500	12.5	41	1900
NOV				
11...	1035	7.0	119	2000
DEC				
15...	1210	.0	14	1500
JAN , 1972				
12...	1200	1.0	108	1550
FEB				
09...	1200	.0	202	1450
MAR				
14...	1600	1.5	94	1500
APR				
11...	1230	17.5	20	2200
MAY				
09...	1040	15.0	1.1	3000
SEP				
13...	1130	20.0	5.4	2200
OCT				
12...	1200	15.5	74	3000
NOV				
09...	1330	7.0	118	1850
DEC				
14...	1200	.0	81	1900
JAN , 1973				
11...	1130	.0	89	1700
FEB				
09...	1130	.0	125	1200
MAR				
08...	1200	5.5	165	2200
APR				
24...	1330	14.0	109	1330
MAY				
18...	1300	20.5	190	1700
JUN				
20...	1130	17.0	96	2100
JUL , 1973				
25...	1500	27.5	28	3000
AUG				
22...	1050	22.0	28	3600
SEP				
13...	1035	21.0	58	3600
OCT				
24...	1120	9.0	55	2000
NOV				
15...	1330	6.0	90	1800
DEC				
05...	1335	2.0	127	1500
JAN , 1974				
16...	1130	.0	146	1400
FEB				
27...	1415	12.0	223	1700
APR				
10...	1230	9.0	109	1400
MAY				
16...	1230	20.0	81	2200
JUN				
12...	1345	30.5	4.9	4000
SEP				
24...	1115	20.0	11	2500
OCT				
30...	1240	8.5	317	2200
DEC				
03...	1300	.0	88	1300
JAN , 1975				
13...	1300	.0	35	1300
FEB				
27...	1130	5.0	136	1500
MAR				
12...	1330	10.0	157	1500
APR				
28...	1335	13.0	219	1600
MAY				
29...	1310	15.0	205	2300
JUN				
25...	1300	18.0	86	2200

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 2 Dirty Devil River above Poison Spring Wash, near Hanksville--Continued									
JUL , 1975					FEB , 1976				
28...	1300	29.0	13	3000	02...	1330	3.0	172	1520
AUG					MAR				
26...	1330	26.5	11	4000	10...	1445	10.0	151	1500
SEP					APR				
30...	1130	15.5	35	1800	07...	1150	13.5	91	1200
OCT					MAY				
28...	1255	12.5	106	1600	14...	0820	15.0	57	3200
NOV					28...	1840	23.5	27	3050
18...	1410	6.0	90	1500	JUN				
DEC					09...	1030	17.0	7.2	2250
04...	1215	.0	137	1400	AUG				
JAN , 1976					04...	1245	23.0	28	2500
06...	1220	.0	62	1600	10...	--	--	.00	--
Site 3 Poison Spring Wash at mouth, near Hanksville									
AUG , 1975					MAR , 1976				
26...	--	--	.00	--	31...	--	--	.00	--
SEP					MAY				
30...	--	--	.00	--	28...	--	--	.00	--
NOV					AUG				
18...	--	--	.00	--	10...	--	--	.00	--
Site 4 Poison Spring Wash at State Highway 95, near Hanksville									
JUL , 1975					MAR , 1976				
28...	--	--	.00	--	31...	--	--	.00	--
AUG					MAY				
26...	--	--	.00	--	25...	--	--	.00	--
NOV					AUG				
18...	--	--	.00	--	10...	--	--	.00	--
Site 5 Granite Wash below Pool Spring, near Hanksville									
JUL , 1975					MAR , 1976				
23...	--	--	.00	--	31...	--	--	.00	--
AUG					MAY				
29...	--	--	.00	--	30...	--	--	.00	--
NOV					AUG				
18...	--	--	.00	--	10...	--	--	.00	--

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 6 Dry Valley Wash near Hanksville									
JUL , 1975					MAR , 1976				
25...	--	--	.00	--	31...	--	--	.00	--
AUG					MAY				
29...	--	--	.00	--	30...	1400	30.0	3.0	399
NOV					AUG				
18...	--	--	.00	--	10...	--	--	.00	--
Site 7 Bull Creek at mouth, at Hanksville									
AUG , 1975					MAY , 1976				
29...	1415	25.0	.05	1270	26...	--	15.0	.20	1290
NOV					AUG				
18...	--	--	.00	--	10...	--	--	.00	--
MAR , 1976									
31...	--	--	.00	--					
Site 8 Blackburn Draw at mouth, near Hanksville									
JUL , 1975					MAY , 1976				
25...	--	--	.00	--	26...	--	--	.00	--
AUG									
29...	--	--	.00	--					
Site 9 Dirty Devil River near Hanksville									
JUL , 1975					MAY , 1976				
25...	1720	30.5	22	2950	26...	--	23.5	28	3000
Site 10 Fremont River 1 mi above mouth, near Hanksville									
JUL , 1975					MAY , 1976				
25...	1630	30.0	10	1400	07...	--	15.0	40	1440
AUG					26...	--	20.5	20	1440
29...	1430	29.0	10	1710	JUN				
OCT					09...	1200	26.0	7.0	1750
28...	--	14.0	104	1440	JUL				
NOV					09...	--	26.0	1.0	2940
18...	1010	4.0	110	845	AUG				
FEB , 1976					10...	1830	26.0	12	2270
02...	1730	--	100	789	SEP				
MAR					07...	1850	29.0	48	1460
10...	1130	8.5	138	901	08...	1400	--	45	1450
31...	1310	16.5	75	810					
APR									
07...	--	21.0	40	901					

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 11 Muddy Creek at mouth, near Hanksville									
JUL , 1975					MAR , 1976				
25...	1635	32.0	12	4050	31...	1235	16.5	15	5450
AUG					APR				
29...	--	--	.00	--	07...	1415	22.0	14	5590
OCT					MAY				
28...	1450	14.0	1.9	7590	07...	1330	15.0	3810	5500
NOV					26...	1140	21.5	8.0	6760
18...	1030	4.0	11	5700	JUN				
DEC					09...	1230	26.0	.03	10800
05...	1200	.0	3.6	6680	AUG				
JAN , 1976					04...	1600	27.0	.01	6770
06...	1430	.0	3.9	7180	10...	--	--	.00	--
FEB					SEP				
02...	1700	.0	13	4650	08...	--	--	.00	--
MAR									
10...	1115	8.5	12	4470					
Site 12 Muddy Creek below Salt Wash									
JUL , 1975					MAY , 1976				
25...	1425	30.5	12	3500	27...	--	17.5	8.0	6400
AUG					AUG				
28...	1000	17.0	2.7	8530	11...	1100	23.5	3.0	8590
NOV									
18...	0830	2.0	16	4400					
Site 13 Salt Wash at mouth, at Muddy Creek									
JUL , 1975					MAY , 1976				
25...	1400	34.0	2.0	8500	27...	--	19.0	2.5	9160
AUG					AUG				
28...	0940	15.0	2.2	8520	11...	1125	25.0	2.6	9400
NOV					SEP				
18...	0800	2.0	2.5	>8000	08...	1500	--	<2.5	8920
Site 14 Salt Wash at (D-27-7)23, in Middle Desert									
JUL , 1975					MAY , 1976				
24...	--	--	.00	--	30...	--	--	.00	--
AUG									
27...	--	--	.00	--					
Site 15 Salt Wash at (D-27-6)2b, in Middle Desert									
JUL , 1975					MAY , 1976				
24...	--	--	.00	--	30...	--	--	.00	--
AUG									
27...	--	--	.00	--					

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 16 Muddy Creek 0.5 mi above Salt Wash									
JUL , 1975					MAY , 1976				
25...	1405	29.5	10	2900	27...	--	17.5	5.5	5070
AUG					AUG				
28...	0930	16.0	.50	5030	11...	1120	26.0	.30	4990
NOV									
18...	0805	2.0	14	3600					
Site 17 South Temple Wash at (D-25-11)2d									
JUL , 1975					MAR , 1976				
25...	--	--	.00	--	31...	--	--	.00	--
AUG					MAY				
29...	--	--	.00	--	27...	--	--	.00	--
NOV					AUG				
19...	--	--	.00	--	11...	--	--	.00	--
Site 18 Wild Horse Creek at (D-26-11)5cb, above Chute Canyon									
JUL , 1975					MAY , 1976				
25...	--	--	.00	--	27...	--	--	.00	--
AUG					AUG				
29...	--	--	.00	--	11...	--	--	.00	--
Site 19 Chute Canyon at mouth, at (D-26-11)6da									
JUL , 1975					MAY , 1976				
25...	--	--	.00	--	27...	--	--	.00	--
AUG					AUG				
29...	--	--	.00	--	11...	--	--	.00	--
Site 20 Reds Canyon at mouth									
AUG , 1975					MAY , 1976				
26...	--	--	.00	--	27...	--	--	.00	--
Site 21 Muddy Creek at Delta Mine, near Hanksville									
AUG , 1975					APR , 1976				
26...	1150	17.5	.05	4800	08...	0920	8.5	8.6	3430
SEP					MAY				
24...	1800	18.0	.02	5410	06...	1130	15.0	1.0	5650
OCT					27...	--	28.0	4.5	5190
01...	1035	11.5	.04	5230	JUN				
29...	1100	4.0	5.0	5210	10...	1030	23.0	.04	5690
FEB , 1976					AUG				
03...	1300	.0	157	3050	11...	--	--	.00	--
26...	1230	5.0	9.9	3050					

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 22 Muddy Creek below Reds Canyon, at Tomsich Butte									
AUG , 1975					MAY , 1976				
26...	1330	29.0	.50	4720	27...	1545	29.0	5.0	5350
Site 23 Last Chance Creek at (D-25-5)13c, below Solomon Creek									
JUL , 1975					MAY , 1976				
24...	--	--	.00	--	30...	--	--	.00	--
AUG									
26...	--	--	.00	--					
Site 24 Last Chance Creek at (D-25-5)6bbb, below Round Spring Draw									
JUL , 1975					MAY , 1976				
24...	1340	21.0	.20	710	30...	--	14.0	.45	592
AUG									
25...	1745	18.0	.04	850					
Site 25 Round Spring Draw at mouth, at (D-25-4)1aa									
JUL , 1975					MAY , 1976				
23...	--	--	.00	--	30...	--	--	.00	--
AUG									
25...	--	--	.00	--					
Site 26 North Last Chance Creek at mouth, at (D-25-4)11aaa									
JUL , 1975					MAY , 1976				
24...	1045	14.0	.01	615	30...	--	10.0	.10	580
AUG									
25...	--	--	.00	--					
Site 27 South Last Chance Creek at (D-25-4)11ca									
JUL , 1975					MAY , 1976				
24...	1100	--	.05	495	30...	1815	11.5	.10	470
AUG									
25...	1810	16.5	.04	435					
Site 28 Willow Springs Wash at (D-24-7)17cca									
JUL , 1975					MAY , 1976				
23...	--	--	.00	--	30...	--	--	.00	--
AUG									
25...	--	--	.00	--					
Site 29 Road End Reservoir outflow at (D-24-7)17ccd									
JUL , 1975					MAY , 1976				
23...	--	--	.00	--	30...	--	--	.00	--
AUG									
25...	--	--	.00	--					

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 30 Mussentuchit Wash at (D-24-7)30a				
JUL , 1975				
23...	--	--	.00	--
AUG				
25...	--	--	.00	--
MAY , 1976				
30...	--	--	.00	--
Site 31 South Salt Wash at Interstate Highway 70				
JUL , 1975				
23...	--	--	.00	--
AUG				
26...	--	--	.00	--
NOV				
19...	--	--	.00	--
MAY , 1976				
31...	--	--	.00	--
AUG				
11...	--	--	.00	--
Site 32 Muddy Creek below Interstate Highway 70, near Emery				
AUG , 1973				
05...	1700	21.0	13	3000
21...	1200	22.0	14	3400
SEP				
21...	1230	17.0	4.5	3500
28...	1320	16.0	4.5	3400
OCT				
23...	1250	9.0	4.5	4400
NOV				
13...	1200	6.5	6.8	4500
DEC				
17...	1200	.0	9.9	2600
FEB , 1974				
06...	1330	.0	14	2400
MAR				
28...	1200	5.5	20	1900
MAY				
01...	1930	15.5	22	1630
09...	1400	14.0	166	900
JUN				
06...	1600	22.0	32	2100
JUL				
09...	1020	19.0	8.2	3000
AUG				
15...	1230	22.5	2.2	3400
SEP				
12...	1450	19.0	2.2	3200
OCT				
17...	1300	12.0	3.0	4000
NOV				
26...	1410	4.0	8.0	2000
DEC				
17...	1415	.0	16	2500
JAN , 1975				
27...	1340	.0	18	2400
MAR				
06...	1345	3.0	25	2600
APR				
02...	1700	.0	11	2900
MAY				
06...	1230	7.0	19	1200
JUN				
03...	1130	12.0	114	900
30...	1130	15.0	45	950
JUL				
23...	1800	25.0	14	1950
AUG				
05...	1300	21.0	9.7	3100
25...	1940	20.0	4.5	--
SEP				
09...	1045	16.0	3.1	4000
10...	--	--	4.0	4000
OCT				
07...	1115	15.0	4.1	4000
NOV				
04...	1100	5.5	6.7	3600
19...	1040	.0	10	2900
DEC				
11...	1420	.0	18	3800
29...	--	.0	11	3880
APR , 1976				
01...	--	10.0	5.0	2230
MAY				
31...	1130	17.5	9.0	3800
AUG				
11...	--	25.0	.10	5540

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 33 Ivie Creek at mouth, at Interstate Highway 70									
JUL , 1975					MAY , 1976				
23...	1905	22.5	13	1700	31...	1145	19.0	4.6	3750
AUG					AUG				
25...	1930	20.0	3.0	3390	11...	1750	25.0	.10	5600
NOV					SEP				
19...	1105	.0	5.0	2500	21...	1445	17.0	.75	4950
APR , 1976									
01...	1800	10.0	3.0	2200					
Site 34 Quitchupah Creek at mouth, near Interstate Highway 70									
JUL , 1975					AUG , 1976				
23...	1845	22.5	12	1550	11...	1900	22.0	.60	4600
NOV					SEP				
19...	1205	.0	6.0	2120	21...	1640	17.0	.50	3860
MAY , 1976									
31...	1305	19.5	6.0	3260					
Site 35 Ivie Creek below Dog Valley Wash, at Interstate Highway 70									
JUL , 1975					APR , 1976				
23...	1825	25.5	1.0	3700	01...	1740	10.0	2.5	2030
AUG					MAY				
25...	--	--	.00	--	31...	1330	26.0	1.2	4190
NOV					AUG				
19...	--	.0	1.0	3150	11...	--	--	.00	--
Site 36 Dog Valley Wash at mouth, at Interstate Highway 70									
JUL , 1975					APR , 1976				
23...	--	--	.00	--	01...	1740	--	.00	832
AUG					MAY				
25...	--	--	.00	--	31...	--	--	.00	--
NOV					AUG				
19...	--	--	.00	--	11...	--	--	.00	--
Site 37 Ivie Creek at State Highway 10, near Emery									
JUL , 1975					MAY , 1976				
23...	1740	28.0	.01	1700	31...	1540	20.5	.30	1190
AUG					AUG				
26...	2040	17.0	.04	1610	12...	--	--	.00	--
NOV					SEP				
19...	--	.0	.40	1120	22...	--	9.0	.10	1370
APR , 1976									
01...	1530	13.5	2.0	832					

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 38 Oak Spring Creek at State Highway 10, near Emery									
JUL , 1975					MAY , 1976				
23...	1725	25.0	.50	2400	31...	1550	21.0	.50	4600
AUG					AUG				
26...	2025	17.0	.15	--	12...	1000	14.0	.20	6900
NOV					SEP				
19...	--	.0	.50	5780	22...	1015	10.5	.20	7570
APR , 1976									
01...	--	12.0	.50	6570					
Site 38.2 Oak Spring Creek at (D-23-5)21ccc									
AUG , 1976									
12...	1100	14.0	.15	6210					
Site 39 Saleratus Creek at State Highway 10, near Emery									
JUL , 1975					MAY , 1976				
23...	1710	25.5	.20	5200	31...	--	20.0	.35	4950
AUG					AUG				
26...	2015	17.5	.20	--	13...	1000	19.0	.30	4870
NOV					SEP				
19...	1340	.5	.40	5290	22...	1145	15.5	.70	3950
APR , 1976									
01...	--	13.0	.50	4220					
Site 39.05 Saleratus Creek above Trough Hollow, near Emery									
AUG , 1976									
13...	1015	22.0	.10	1450					
Site 39.1 Ivie Creek above Coal Wash, near Emery									
AUG , 1976									
13...	1100	22.5	.30	6960					
Site 39.2 Coal Wash at mouth, near Emery									
AUG , 1976									
13...	--	--	.00	--					
Site 40 Quitchupah Creek at State Highway 10, near Emery									
JUL , 1975					MAY , 1976				
23...	1630	23.0	2.0	640	31...	--	22.0	.25	1040
AUG					AUG				
26...	2000	14.5	.40	1720	12...	1950	19.0	.01	1550
NOV					SEP				
19...	--	1.5	1.2	1280	22...	--	19.0	.10	1740
APR , 1976									
01...	1600	13.5	2.0	1450					

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 40.1 Link Canyon Wash at mouth, near Emery				
AUG , 1976				
12...	--	--	.00	--
Site 40.15 Quitchupah Creek above Link Canyon Wash, near Emery				
AUG , 1976				
12...	--	--	.00	--
Site 40.2 Unnamed tributary to Quitchupah Creek at (D-22-6)29bb				
AUG , 1976				
12...	1935	18.5	.05	3980
Site 40.25 Unnamed tributary to Quitchupah Creek at (D-22-6)29ac				
AUG , 1976				
12...	1830	21.0	.04	1520
Site 40.3 Unnamed tributary at mouth at (D-22-6)32aa				
AUG , 1976				
12...	1850	21.0	.03	6100
Site 40.35 Quitchupah Creek at (D-22-6)32ab, near Emery				
AUG , 1976				
12...	1840	21.0	.80	2580
Site 40.4 Unnamed tributary to Quitchupah Creek at (D-22-6)32adc				
AUG , 1976				
12...	--	--	.00	--
Site 41 Quitchupah Creek above Christiansen Wash, at (D-22-6)33bcd				
JUL , 1975				
23...	1640	25.0	5.0	990
AUG				
26...	1940	21.5	1.2	2280
NOV				
19...	--	2.0	2.0	3000
APR , 1976				
01...	1612	13.5	1.0	2100
MAY , 1976				
31...	1635	23.0	2.5	2600
AUG				
12...	1905	22.0	.80	4400
SEP				
22...	1310	15.5	2.0	5410
Site 42 Christiansen Wash at mouth, at (D-22-6)33bdc				
JUL , 1975				
23...	1645	23.5	5.0	2400
AUG				
26...	1950	18.0	1.5	--
NOV				
19...	1420	1.0	5.0	1920
APR , 1976				
01...	1608	13.5	1.0	2100
MAY				
31...	1640	19.5	2.0	3280
AUG				
12...	1915	19.0	.50	5640

Table.6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 43 Christiansen Wash at State Highway 10, near Emery									
JUL , 1975					MAY , 1976				
23...	1620	24.5	.01	7100	31...	1710	20.0	.15	1750
AUG					AUG				
26...	1925	18.0	.02	5820	12...	1145	21.0	.02	8510
NOV					SEP				
19...	1445	.0	3.5	580	22...	1645	17.5	.04	7610
APR , 1976									
01...	1630	10.0	1.0	690					
Site 43.2 Christiansen Wash at (D-22-6)16ccc									
AUG , 1976									
12...	1820	19.0	.10	4950					
Site 43.4 Christiansen Wash at (D-22-6)27bcb									
AUG , 1976									
12...	1810	21.5	.20	9900					
Site 44.1 Canal terminus at (D-22-6)17cca, at State Highway 10									
AUG , 1976									
13...	1120	18.0	5.0	327					
Site 44.15 Canal at (D-22-6)9bcb, at State Highway 10									
AUG , 1975					MAY , 1976				
26...	1910	18.5	16	380	31...	--	15.0	32	360
NOV					AUG				
19...	--	1.0	13	420	12...	1705	22.0	9.0	389
APR , 1976									
01...	1640	11.0	2.5	475					
Site 44.18 Canal at (D-22-6)9bbd, at State Highway 10									
AUG , 1976									
12...	1700	22.0	2.0	366					
Site 44.2 Canal at (D-22-6)9dda									
AUG , 1976									
12...	1720	23.0	.10	679					
Site 44.25 Canal at (D-22-6)14bcb									
AUG , 1976									
12...	1725	24.0	.50	643					
Site 44.3 Canal at (D-22-6)15dca									
AUG , 1976									
12...	1735	24.0	.50	642					

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 44.5 Canal at (D-22-6)2cdc									
AUG , 1976									
12...	1640	20.5	1.5	358					
Site 44.6 Canal at (D-22-6)3acd, at State Highway 10									
AUG , 1976									
12...	1610	20.5	1.5	360					
Site 44.65 Canal at (D-22-6)4cca									
AUG , 1976									
12...	1655	22.0	11	362					
Site 44.9 Canal at (D-21-6)22ddd									
AUG , 1976									
12...	1545	20.5	13	358					
Site 44.95 Canal at (D-21-6)22bcd, near diversion from Muddy Creek									
AUG , 1976									
12...	1355	20.0	3.0	365					
Site 44.99 Canal at (D-21-7)30ccd, at State Highway 10									
JUL , 1975					MAY , 1976				
23...	1420	18.0	.20	385	31...	--	--	.00	--
AUG					AUG				
26...	--	--	.00	--	12...	--	--	.00	--
Site 45 Muddy Creek below Miller Canyon, near Emery									
JUL , 1975					MAY , 1976				
23...	1930	23.0	6.0	2250	31...	1205	16.0	5.0	2340
AUG					AUG				
26...	1610	25.0	.50	3640	11...	--	--	.00	--
NOV									
19...	1115	1.0	2.5	5190					
Site 46 Miller Canyon at mouth, near Emery									
JUL , 1975					MAY , 1976				
23...	1920	21.5	.10	2800	31...	1220	19.0	1.0	1610
AUG					AUG				
26...	1620	21.0	.03	3300	11...	--	--	.00	--
NOV									
19...	1130	.0	.25	3470					

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

Site 47 Muddy Creek at (D-21-6)36bbb, at State Highway 10, near Emery

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
JUL , 1975				
23...	1415	28.0	.50	2100
AUG				
26...	1645	25.5	.06	2860
NOV				
19...	1510	3.0	.60	2240
APR , 1976				
01...	1650	10.0	1.0	1720
MAY				
31...	1735	22.0	.25	1740
AUG				
12...	--	--	.00	--

Site 47.2 Unnamed tributary to Muddy Creek at (D-22-6)1ccd

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
AUG , 1976				
12...	1630	22.0	.05	5750

Site 47.8 Muddy Creek at (D-21-6)22bc, immediately below total diversion

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
AUG , 1976				
12...	1400	22.0	.03	651

Site 49 Muddy Creek near Emery

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
AUG , 1971				
04...	1350	17.0	43	390
SEP				
01...	1400	18.0	35	380
OCT				
04...	1400	10.0	17	410
NOV				
04...	1400	1.5	18	420
DEC				
01...	1310	.0	12	440
JAN , 1972				
04...	1330	.0	9.8	420
FEB				
02...	1400	.0	8.4	460
MAR				
03...	1300	1.0	11	440
APR				
05...	1200	1.5	152	450
JUN				
06...	1725	15.0	63	360
AUG				
09...	1625	23.0	34	340
31...	1340	14.5	16	375
OCT				
13...	0940	8.0	10	390
NOV				
29...	1010	.0	8.1	520
DEC				
28...	1520	.0	10	330
JAN , 1973				
16...	1430	.0	8.3	460
FEB				
14...	1230	.0	8.0	480
MAR				
19...	1230	1.5	9.5	460
APR				
11...	1230	7.0	12	340
MAY				
07...	1345	6.0	53	350
31...	1700	12.5	147	400
JUN , 1973				
14...	1315	11.5	201	380
JUL				
12...	1350	13.0	80	400
AUG				
15...	1530	17.0	52	440
NOV				
13...	1430	7.0	11	500
DEC				
17...	1415	.0	10	450
FEB , 1974				
02...	1130	.0	8.0	400
MAR				
28...	1000	2.0	11	520
MAY				
09...	1100	6.5	17	410
JUN				
06...	1330	9.0	147	400
AUG				
15...	1100	9.5	40	420
SEP				
12...	1210	10.0	23	450
OCT				
16...	1100	4.0	14	400
NOV				
26...	1230	.0	15	500
DEC				
17...	1245	.0	11	460
JAN , 1975				
27...	1545	.0	8.4	500
MAR				
06...	1130	.0	8.9	450
APR				
02...	1430	1.5	23	520
MAY				
06...	1520	8.5	12	420
JUN				
03...	1330	8.0	163	400

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 49 Muddy Creek near Emery--Continued				
JUN , 1975				
30...	1410	11.0	149	370
JUL				
23...	1440	16.5	75	365
AUG				
05...	1600	15.5	48	380
26...	1705	18.0	50	415
SEP				
09...	1300	11.5	39	380
OCT				
07...	1130	8.0	34	460
NOV				
04...	1100	4.5	13	420
19...	--	.5	10	410
DEC				
11...	1100	.0	12	480
JAN , 1976				
14...	1230	.0	8.5	440
15...	1200	.0	7.6	420
FEB , 1976				
12...	1300	.0	6.5	420
MAR				
12...	1120	.0	4.7	480
18...	1040	4.0	6.0	420
APR				
21...	1245	11.5	14	420
MAY				
20...	1030	7.5	64	400
31...	1755	14.0	63	378
JUN				
25...	1030	8.5	41	400
JUL				
15...	1250	16.0	41	420
AUG				
12...	1100	10.5	15	286
SEP				
16...	1150	13.0	13	400
Site 50 Ivie Creek above diversions, near Emery				
AUG , 1975				
25...	1715	19.0	4.8	340
MAY , 1976				
31...	1405	13.0	7.0	446
Site 51 Ivie Creek below Red Creek, at State Highway 10				
AUG , 1975				
25...	--	19.0	4.6	290
MAY , 1976				
31...	1520	13.5	4.5	370
Site 52 Red Creek at mouth, near Interstate Highway 70				
AUG , 1975				
25...	1705	16.0	4.5	270
MAY , 1976				
31...	1500	13.5	4.2	290
Site 53 Tommy Hollow at mouth, at Interstate Highway I-70				
AUG , 1975				
25...	1700	16.0	.10	1500
MAY , 1976				
31...	1510	17.0	.30	1290
Site 55 Birch Creek at mouth, near Hankville				
AUG , 1975				
26...	--	--	.00	--
MAR , 1976				
31...	--	--	.00	--
MAY , 1976				
26...	--	--	.00	--
AUG				
10...	--	--	.00	--

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 56 Town Wash at mouth, near Hanksville									
AUG , 1975					MAY , 1976				
28...	--	--	.00	--	26...	--	--	.00	--
MAR , 1976					AUG				
31...	--	--	.00	--	10...	--	--	.00	--
Site 57 Fremont River below Neilson Wash, at State Highway 24, near Hanksville									
AUG , 1975					MAY , 1976				
28...	1105	19.5	25	1260	31...	--	26.0	38	1210
NOV					AUG				
17...	1755	7.0	105	750	10...	1800	26.0	16	1170
APR , 1976					SEP				
01...	0920	9.0	70	739	08...	0740	16.0	25	1030
Site 58 Neilson Wash at mouth, at State Highway 24, near Hanksville									
JUL , 1975					APR , 1976				
25...	--	--	.00	--	01...	--	--	.00	--
AUG					MAY				
28...	--	--	.00	--	26...	--	--	.00	--
NOV					AUG				
17...	--	--	.00	--	10...	--	--	.00	--
Site 59 Sweetwater Creek at mouth, near Caineville									
JUL , 1975					MAY , 1976				
25...	--	--	.00	--	26...	1610	26.5	6.0	1120
AUG					AUG				
28...	1240	24.0	.35	2450	10...	1720	26.0	.80	3940
NOV					SEP				
17...	1705	8.5	.15	4000	08...	--	27.0	.04	4230
Site 60 Sweetwater Creek at (D-31-8)25aaa, near Caineville									
JUL , 1975					MAY , 1976				
25...	0920	17.5	1.5	1080	25...	--	13.0	.80	1210
AUG									
29...	0830	9.5	1.2	2420					
Site 61 Unnamed Wash at mouth at (D-28-8)25dcc, near Caineville									
AUG , 1975					MAY , 1976				
28...	--	--	.00	--	26...	--	--	.00	--
APR , 1976					AUG				
01...	--	--	.00	--	10...	1640	25.0	1.0	2680

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 61.2 Fremont River above Sweetwater Creek, near Caineville									
APR , 1976					MAY , 1976				
01...	--	8.0	70	783	26...	1850	24.5	30	1200
Site 62 Fremont River at Caineville									
AUG , 1975					AUG , 1976				
25...	1350	24.0	25	1310	10...	1630	25.0	18	841
APR , 1976					SEP				
01...	--	9.0	70	766	08...	--	26.0	36	862
MAY									
26...	--	26.0	25	1040					
Site 63 Caineville Wash at mouth, at State Highway 24, at Caineville									
JUL , 1975					APR , 1976				
24...	--	--	.00	--	01...	--	--	.30	6070
AUG					MAY				
28...	1335	26.0	.50	--	30...	1500	14.5	.05	6070
NOV					AUG				
17...	--	--	.00	--	10...	--	--	.00	--
Site 64 Sandy Creek at mouth, near Caineville									
JUL , 1975					APR , 1976				
24...	--	--	.00	--	01...	1100	14.5	3.0	2300
AUG					MAY				
28...	--	--	.00	--	26...	1810	24.5	2.0	1980
NOV					AUG				
17...	1600	8.5	.30	2880	10...	--	--	.00	--
Site 65 Blind Trail Wash at (D-31-8)16cb, near Caineville									
JUL , 1975					MAY , 1976				
25...	--	--	.00	--	25...	--	--	.00	--
AUG									
28...	--	--	.00	--					
Site 66 Sand Creek at (D-31-8)17ca, near Caineville									
JUL , 1975					MAY , 1976				
25...	0850	17.0	.03	4000	25...	2010	16.5	4.5	980
AUG									
28...	2035	17.0	1.3	710					
Site 67 Oak Creek at mouth, at (D-31-8)19aa, near Caineville									
JUL , 1975					MAY , 1976				
25...	0955	23.5	.01	1750	25...	2000	17.0	2.5	705
AUG									
28...	1950	18.5	1.0	680					

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 68 Sandy Creek above Spring Canyon, near Caineville									
JUL , 1975					MAY , 1976				
25...	--	--	.00	--	25...	--	--	.00	--
AUG									
28...	--	--	.00	--					
Site 69 Spring Canyon at mouth, at (D-32-8)6da, near Caineville									
AUG , 1975					MAY , 1976				
28...	--	--	.00	--	25...	--	--	.00	--
Site 70 Fremont River at State Highway 24, above Sandy Creek, near Caineville									
JUL , 1975					MAY , 1976				
24...	1745	28.0	25	820	26...	1750	25.0	37	872
AUG					AUG				
28...	1440	23.0	31	780	10...	1545	24.0	32	737
NOV					SEP				
17...	1530	8.0	115	670	09...	--	16.5	22	736
APR , 1976									
01...	1110	10.0	55	649					

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

Site 71 Fremont River near Caineville

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
AUG , 1971				
05...	0830	16.5	45	740
SEP				
14...	1440	23.0	45	825
OCT				
19...	1015	3.0	54	850
NOV				
30...	1255	3.0	98	790
JAN , 1972				
13...	1150	3.5	94	610
FEB				
14...	1120	5.0	106	640
MAR				
24...	1035	10.0	53	740
APR				
25...	0930	9.5	53	945
MAY				
26...	0945	14.0	40	775
JUL				
06...	1045	20.5	35	750
AUG				
09...	1100	24.0	28	700
SEP				
19...	1025	16.0	53	700
OCT				
17...	1135	14.5	65	610
DEC				
05...	1225	.0	82	600
FEB , 1973				
06...	1005	.0	82	625
APR				
06...	0950	8.0	90	610
MAY				
01...	1040	7.5	601	320
23...	1035	19.0	75	560
JUL				
10...	0935	18.5	33	690
AUG				
15...	1110	21.0	41	800
SEP , 1973				
21...	0950	12.5	32	700
NOV				
01...	0925	5.5	72	760
DEC				
12...	1020	.5	108	620
FEB , 1974				
06...	1240	.0	108	650
MAR				
21...	1220	6.0	100	660
MAY				
06...	1230	20.5	29	610
JUN				
07...	0915	14.0	28	490
JUL				
09...	0975	18.0	29	610
AUG				
22...	1030	16.0	32	495
OCT				
01...	1115	12.0	34	740
NOV				
12...	1020	4.0	96	650
JAN , 1975				
16...	1435	.0	53	400
MAR				
18...	1450	10.0	90	580
APR				
16...	1110	11.0	76	660
MAY				
14...	1150	15.0	182	500
25...	1420	24.0	54	620
JUN				
10...	1210	14.5	78	535
JUL				
11...	0950	20.0	59	720
AUG				
14...	0935	16.0	34	910
28...	1515	23.5	35	790

Table 6.--Water temperature, water dishcarge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 71 Fremont River near Caineville--Continued				
SEP , 1975				
12...	0950	6.5	55	960
OCT				
07...	1045	11.0	45	770
NOV				
18...	1210	6.0	96	660
DEC				
15...	1315	.0	74	600
JAN , 1976				
21...	1245	.0	92	570
FEB				
23...	1335	4.0	95	590
MAR				
23...	1010	6.0	94	605
APR , 1976				
19...	1355	17.0	60	740
MAY				
17...	1420	24.0	54	620
25...	--	19.0	31	870
JUN				
14...	1250	19.5	44	730
JUL				
20...	1050	21.0	33	790
AUG				
19...	1355	25.0	35	645
Site 72 Pleasant Creek near Caineville				
AUG , 1971				
30...	1330	18.0	2.6	--
SEP				
14...	1155	20.0	1.8	1600
OCT				
19...	1340	12.0	3.0	1120
NOV				
05...	1700	8.0	1.7	--
30...	1530	4.0	1.6	1450
JAN , 1972				
13...	1500	1.0	2.8	1100
FEB				
14...	1430	5.5	4.6	1200
MAR				
24...	0915	5.0	1.5	1480
MAY				
26...	1245	23.0	7.3	--
JUL , 1972				
06...	0935	18.0	.60	1500
AUG				
09...	1435	33.5	.50	1500
SEP				
09...	0850	13.5	.60	1500
19...	0850	13.5	.60	1500
AUG , 1975				
28...	1530	25.0	1.5	1340
NOV				
17...	1520	9.0	3.0	1470
MAY , 1976				
25...	1800	20.0	4.0	870
AUG				
10...	1515	24.0	1.8	1170
SEP				
09...	--	19.0	3.0	1190
Site 73 Pleasant Creek at State Highway 24, at Notom				
JUL , 1975				
25...	0730	14.0	3.0	850
AUG				
28...	1910	18.5	.60	1240
APR , 1976				
01...	1140	15.0	3.0	687
MAY				
25...	1900	16.0	3.0	869
Site 74 Capitol Wash at mouth, at State Highway 24, at Notom				
JUL , 1975				
25...	--	--	.00	--
AUG				
28...	--	--	.00	--
MAY , 1976				
25...	--	--	.00	--

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 75 Pleasant Creek at (D-30-7)29a									
JUL , 1975					MAY , 1976				
24...	1905	19.5	5.0	205	25...	1600	16.0	10	251
AUG									
27...	2125	16.0	5.0	216					
Site 76 Fremont River below Sulphur Creek, near Fruita									
JUL , 1975					NOV , 1975				
24...	1815	20.5	25	780	17...	1450	6.0	115	655
AUG					MAY , 1976				
28...	1550	19.5	35	740	25...	1735	16.0	40	862
Site 77 Fremont River at State Highway 24, above Sulphur Creek, at Fruita									
AUG , 1975					AUG , 1976				
28...	1635	19.0	33	670	10...	1350	16.5	32	662
MAY , 1976					SEP				
25...	1645	16.0	36	672	09...	1320	16.5	33	646
Site 78 Sulphur Creek at mouth, at Fruita									
AUG , 1975					AUG , 1976				
28...	1605	22.0	1.8	1740	10...	1420	19.0	1.2	1470
NOV					SEP				
17...	1440	7.5	5.0	1550	09...	1415	23.0	1.0	2030
MAY , 1976									
25...	1715	17.5	3.5	1930					
Site 79 Sulphur Creek below Sand Creek, at State Highway 24, near Torrey									
AUG , 1975					MAY , 1976				
28...	1745	19.0	.08	4000	25...	1510	19.5	1.8	--
NOV					AUG				
17...	1430	6.0	.50	2930	10...	1335	22.0	1.2	1770
APR , 1976									
01...	1245	11.0	3.0	2270					
Site 80 Fish Creek at mouth, at State Highway 24, near Torrey									
AUG , 1975					MAY , 1976				
28...	--	--	.00	--	25...	--	--	.00	--
Site 81 Fremont River above Fish Creek, at State Highway 24, near Torrey									
AUG , 1975					MAY , 1976				
28...	1655	19.0	36	680	25...	--	16.0	35	670

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 82 Fremont River at State Highway 24, 1.5 mi west of Torrey									
AUG , 1975					MAY , 1976				
27...	2025	17.5	45	640	25...	1330	12.5	45	624
NOV					AUG				
17...	--	5.0	90	580	10...	1310	16.0	55	556
APR , 1976					SEP				
01...	1305	7.5	30	544	09...	1510	16.0	31	621
Site 83 High Line Ditch terminus at State Highway 24, near Bicknell									
AUG , 1975					MAY , 1976				
27...	1940	--	.00	--	25...	--	--	.00	--
NOV					AUG				
17...	--	--	.00	--	10...	--	--	.00	--
Site 84 Fremont River at (D-29-4)7bac, near Bicknell									
AUG , 1975					AUG , 1976				
27...	--	--	70	520	10...	1215	14.0	80	508
MAY , 1976									
25...	--	14.0	95	558					
Site 85 Pine Creek at (D-29-3)11dd, near mouth, near Bicknell									
AUG , 1975					AUG , 1976				
27...	1955	9.0	30	240	10...	--	11.0	45	228
MAY , 1976					SEP				
25...	1245	11.0	60	224	09...	1630	12.0	22	232

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

Site 86 Pine Creek near Bicknell

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
SEP , 1971				
13...	1620	17.5	2.7	140
OCT				
20...	1005	.5	.40	140
DEC				
01...	0935	.0	1.4	115
JAN , 1972				
14...	0950	.0	1.4	120
FEB				
15...	0935	.0	1.8	125
MAR				
23...	1910	5.0	2.2	130
APR				
25...	1210	5.0	2.5	155
MAY				
25...	1335	15.0	2.1	135
JUL				
05...	1530	18.0	1.8	125
AUG				
08...	--	--	2.0	120
SEP				
18...	1515	13.0	2.5	120
OCT				
10...	1440	10.5	2.9	120
DEC				
18...	1120	.0	.60	115
FEB , 1973				
05...	1620	.0	.90	120
MAR				
06...	1145	.0	1.6	120
APR				
06...	1135	4.5	3.6	110
30...	1450	6.5	38	60
MAY				
22...	1540	14.0	15	80
JUL				
09...	1450	22.0	4.6	130
AUG				
15...	1350	15.0	8.0	125
SEP				
21...	1400	8.5	7.4	140
OCT , 1973				
31...	1525	7.0	6.4	135
DEC				
11...	1550	.0	5.9	140
FEB , 1974				
06...	--	.0	4.0	135
MAR				
21...	1435	4.0	6.0	130
MAY				
06...	1540	16.0	3.6	150
JUN				
07...	1115	11.0	3.3	140
JUL				
09...	1305	18.0	2.5	145
AUG				
22...	1425	16.5	3.2	130
NOV				
12...	1215	.0	4.7	130
JAN , 1975				
16...	--	.0	4.1	100
FEB				
13...	1540	.0	3.0	90
MAR				
17...	1355	.5	4.2	125
APR				
16...	1335	7.0	2.7	135
MAY				
14...	1425	12.5	31	70
JUN				
10...	1435	12.5	2.5	130
JUL				
11...	1300	17.5	3.6	140
AUG				
14...	1205	12.0	4.1	155
SEP				
11...	1515	14.0	5.4	145
OCT				
07...	1245	7.0	5.6	175

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 86 Pine Creek near Bicknell--Continued									
NOV , 1975					APR , 1976				
18...	1415	1.0	5.2	135	19...	1530	10.0	3.4	130
DEC					MAY				
15...	1540	.0	4.8	135	17...	1600	17.5	12	70
JAN , 1976					JUN				
21...	1545	.0	5.4	110	14...	1450	14.5	3.5	145
FEB					JUL				
23...	1545	.0	7.6	120	20...	0845	13.0	3.8	125
MAR					AUG				
22...	1410	5.0	6.2	125	18...	1120	13.5	4.0	140
Site 87 Fremont River below Big Hollow, 1 mi southwest of Bicknell									
AUG , 1975					AUG , 1976				
27...	1900	15.0	9.5	700	10...	1130	14.5	10	738
MAY , 1976									
25...	1200	14.0	15	826					
Site 88 Big Hollow at mouth, near Bicknell									
AUG , 1975					AUG , 1976				
27...	--	--	.00	--	10...	--	--	.00	--
MAY , 1976									
25...	1215	12.5	.01	643					
Site 89 Fremont River below Blackburn Ditch terminus, near Bicknell									
AUG , 1975					MAY , 1976				
27...	1725	19.0	3.0	1370	25...	1140	14.0	12	1060
NOV					AUG				
17...	1330	8.0	20	694	09...	2025	20.0	6.0	942
Site 90 Spring Creek at State Highway 24, at Loa									
AUG , 1975					MAY , 1976				
27...	1210	16.0	4.5	420	25...	--	14.0	3.5	390
NOV					AUG				
17...	--	11.0	11	420	09...	1955	22.0	8.0	300
Site 90.1 Loa Town Ditch at State Highway 24, at Loa									
AUG , 1976									
09...	1845	21.5	8.0	232					
Site 90.2 Long Hollow at mouth, at (D-28-2)12dcc									
AUG , 1976									
09...	--	--	.00	--					

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 90.25 Canal at (D-28-2)11ddb, near Loa									
AUG , 1976									
09...	1930	21.0	3.0	235					
Site 90.3 Road Creek at (D-28-2)12bdd, 0.5 mi south of Loa									
AUG , 1976									
09...	1945	20.0	3.0	297					
Site 90.4 Spring Creek at (D-27-2)30cba, near Loa									
AUG , 1976									
09...	1830	19.0	10	268					
Site 91 Fremont River at State Highway 24, at Loa									
AUG , 1975					AUG , 1976				
27...	1200	14.0	1.5	1030	09...	2005	18.0	1.0	799
NOV					SEP				
17...	1255	5.0	4.2	1280	10...	--	12.0	.60	814
MAY , 1976									
25...	1125	12.0	3.0	1200					
Site 92 Blackburn Ditch at State Highway 24, 1 mi west of Lyman									
AUG , 1975					MAY , 1976				
27...	--	--	.00	--	25...	--	--	.00	--
NOV					AUG				
17...	--	--	.00	--	09...	--	--	.00	--
Site 93 High Line Ditch at Lyman									
AUG , 1975					MAY , 1976				
27...	1140	14.5	21	205	25...	1045	10.0	55	216
Site 93.1 High Line Ditch near Bicknell									
AUG , 1976									
10...	1100	14.0	12	196					
Site 93.2 High Line Ditch at Bicknell									
AUG , 1976									
10...	--	--	.00	--					

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)	DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 94 Fremont River near Fremont									
AUG , 1975					AUG , 1976				
27...	1500	15.0	115	190	09...	1750	15.0	110	190
NOV					SEP				
17...	1220	7.5	1.2	380	10...	1210	14.5	22	197
MAY , 1976									
24...	1835	9.0	140	210					
Site 94.1 Fremont River at (D-27-3)17daa, near Fremont									
AUG , 1976									
09...	1810	16.5	1.5	194					
Site 94.2 Fremont River at (D-27-3)19daa, near Fremont									
AUG , 1976									
09...	1820	17.5	5.0	1000					
Site 95 UM Creek at inflow point to Mill Meadow Reservoir									
AUG , 1975					MAY , 1976				
27...	1445	14.5	40	220	24...	1820	12.0	50	205
Site 96 UM Creek below Forsyth Reservoir, near Fremont									
AUG , 1975					MAY , 1976				
27...	1535	15.0	35	190	24...	2020	11.0	45	183
Site 96.2 Short Creek at mouth, at Forsyth Reservoir									
MAY , 1976									
24...	1905	12.0	.50	162					
Site 96.4 Forsyth Springs at Forsyth Reservoir									
MAY , 1976									
24...	1955	9.5	5.0	175					
Site 97 UM Creek at inflow point to Forsyth Reservoir									
AUG , 1975					MAY , 1976				
27...	1615	12.5	12	210	24...	1930	11.0	43	148
Site 98 Fremont River at inflow point to Mill Meadow Reservoir									
AUG , 1975					MAY , 1976				
27...	1430	15.0	56	160	24...	1800	10.5	75	146

Table 6.--Water temperature, water discharge, and specific conductance at sites in the Dirty Devil River basin, water years 1971-76--Continued

DATE	TIME	TEMPERATURE (DEG C)	DISCHARGE (FT^3/S)	SPECIFIC CONDUCTANCE (MICROMHOS)
Site 99 Fremont River below Johnson Valley Reservoir, near Fremont				
AUG , 1975				
27...	1400	16.0	65	150
MAY , 1976				
24...	1725	10.0	75	141
Site 100 Seven Mile Creek near Fish Lake				
AUG , 1971				
05...	1435	10.0	14	140
SEP				
13...	1430	11.5	12	130
MAR , 1972				
03...	1035	.0	7.0	145
MAY				
08...	1035	1.5	31	120
JUN				
08...	1030	5.5	18	140
JUL				
05...	1330	13.0	8.6	135
AUG				
08...	1535	14.0	6.7	160
OCT				
10...	1045	4.5	7.9	140
MAR , 1973				
20...	1045	1.0	6.0	160
MAY				
22...	1130	4.0	84	100
JUL				
06...	1345	14.0	18	145
AUG				
14...	1635	14.5	12	125
SEP				
20...	1020	3.5	10	130
OCT				
31...	1245	.5	13	160
MAY , 1974				
24...	1315	5.0	47	110
JUL				
08...	1420	13.0	14	145
AUG , 1974				
21...	1545	11.5	10	115
OCT				
03...	1110	4.0	10	140
NOV				
11...	1245	.0	9.7	120
JUN , 1975				
04...	1155	4.0	92	80
JUL				
10...	1245	12.0	34	155
AUG				
13...	1240	9.5	13	150
27...	1340	10.0	20	120
SEP				
11...	1250	8.0	11	130
OCT				
06...	1400	7.5	12	120
NOV				
10...	1155	.0	13	95
DEC				
16...	1050	.0	9.2	135
APR , 1976				
13...	1200	.0	12	195
MAY				
18...	0930	1.5	73	105
24...	--	13.0	50	101
JUN				
15...	1040	4.0	13	130
JUL				
19...	1450	14.0	9.2	160
AUG				
20...	1110	9.0	6.6	130
Site 101 Lake Creek below Fish Lake				
AUG , 1975				
27...	1320	14.0	10	115
MAY , 1976				
24...	1645	17.5	.10	145
Site 102 Deadman Hollow at State Highway 24, near Fish Lake				
AUG , 1975				
27...	--	--	.00	--
NOV				
17...	--	--	.00	--
MAY , 1976				
24...	--	--	.00	--
AUG				
09...	--	--	.00	--
Site 103 Riley Canyon above Road Creek, at (D-27-2)34dcc				
AUG , 1976				
09...	1700	23.0	.10	287

Table 7.-Summary of selected hydrologic

Site No.: Numbers refer to sites shown on plate 1.
Number of chemical analyses: SC, specific-conductance determination.
Dominant cation(s): Ca, calcium; Mg, magnesium; Na, sodium.
Dominant anion(s): HCO3, bicarbonate; SO4, sulfate; Cl, chloride.
Water-use problems: A blank entry indicates that no problem is known to exist. Listings under "Public supply" are based on the recommended limits from U.S. Public Health Service (1962, p. 6-8); Cl, chloride; N, nitrogen; NO3, nitrate; SO4, sulfate. Listings of salinity and sodium hazards under "Irrigation supply" are based on U.S. Salinity Laboratory Staff (1954, p. 80).

Site No.	Site name	Number of chemical analyses	Period of record	Discharge range of observations (ft^3/s)	Dissolved-solids range (mg/L)	Specific-conductance range (µmho/cm at 25°C)	Dominant cation(s)		Dominant anion(s)	
							Low flow	High flow	Low flow	High flow
1	Dirty Devil River near Hite	Daily[1]	1948-54	0.1-12,800	708-6,310	898-9,070	Ca,Na	Ca	SO4	SO4
2	Dirty Devil River above Poison Spring Wash, near Hanksville	13+ 41SC	1971-76	1.1-317	963-3,460	1,200-5,000	Ca,Na	Ca,Na	SO4	SO4
3	Poison Spring Wash at mouth, near Hanksville	-	1975-76	See remarks.	-	-	-	-	-	-
4	Poison Spring Wash at State Highway 95, near Hanksville	-	1975-76	do	-	-	-	-	-	-
5	Granite Wash below Pool Spring, near Hanksville	-	1975-76	do	-	-	-	-	-	-
6	Dry Valley Wash near Hanksville	1	1975-76	3.0	247	399	Ca	-	HCO3	-
7	Bull Creek at mouth, at Hanksville	2	1975-76	0.05-0.2	889-899	1,270-1,290	Ca	Ca	SO4	SO4
8	Blackburn Draw at mouth, near Hanksville	-	1975-76	See remarks.	-	-	-	-	-	-
9	Dirty Devil River near Hanksville	145[2]	1946-48, 1973-76	4-351	496-3,980	783-5,270	Ca,Na	Ca,Na	SO4	SO4
10	Fremont River 1 mi above mouth, near Hanksville	40[3]	1975-76	1-138	504-2,410	710-2,940	Ca	Ca	SO4	SO4
11	Muddy Creek at mouth, near Hanksville	35[4]	1975-76	0.01-3,810	3,200-8,100	3,830-10,800	Na,Ca	Na,Ca	SO4,Cl	SO4
12	Muddy Creek below Salt Wash	5	1975-76	2.7-16	2,610-5,480	3,500-8,590	Na	Na,Ca	Cl,SO4	SO4,Cl
13	Salt Wash at mouth, at Muddy Creek	6	1975-76	2.0-2.6	5,420-5,870	8,500-9,400	Na	-	Cl,SO4	-
14	Salt Wash at (D-27-7)23, in Middle Desert	-	1975-76	See remarks.	-	-	-	-	-	-
15	Salt Wash at (D-27-6)2b, in Middle Desert	-	1975-76	do	-	-	-	-	-	-
16	Muddy Creek 0.5 mi above Salt Wash	5	1975-76	0.3-14	2,170-3,850	2,900-5,070	Na	Na,Ca	Cl,SO4	SO4,Cl
17	South Temple Wash at (D-25-11)2d	-	1975-76	See remarks.	-	-	-	-	-	-
18	Wild Horse Creek at (D-26-11)5cb, above Chute Canyon	-	1975-76	do	-	-	-	-	-	-
19	Chute Canyon at mouth, at (D-26-11)6da	-	1975-76	do	-	-	-	-	-	-
20	Reds Canyon at mouth	-	1975-76	do	-	-	-	-	-	-
21	Muddy Creek at Delta Mine, near Hanksville	10	1975-76	0.02-9.9	2,210-4,760	3,050-5,690	Na,Ca	Na,Ca	SO4	SO4
22	Muddy Creek below Reds Canyon, at Tomsich Butte	2	1975-76	0.5-5.0	3,590-4,170	4,720-5,380	Na,Ca	Na,Ca	SO4	SO4
23	Last Chance Creek at (D-25-5)13c, below Solomon Creek	-	1975-76	See remarks.	-	-	-	-	-	-
24	Last Chance Creek at (D-25-5)6bbb, below Round Spring Draw	3	1975-76	0.04-0.45	388-509	592-850	Ca,Mg	Ca,Mg	HCO3	HCO3
25	Round Spring Draw at mouth, at (D-25-4)1aa	-	1975-76	See remarks.	-	-	-	-	-	-
26	North Last Chance Creek at mouth, at (D-25-4)11aaa	2	1976	0.01-0.1	326-358	580-615	Ca	-	HCO3	-
27	South Last Chance Creek at (D-25-4)11ca	3	1975-76	0.04-0.1	274-287	435-495	Ca,Mg	Ca,Mg	HCO3	HCO3
28	Willow Springs Wash at (D-24-7)17cca	-	1975-76	See remarks.	-	-	-	-	-	-
29	Road End Reservoir outflow at (D-24-7)17ccd	-	1975-76	do	-	-	-	-	-	-
30	Mussentuchit Wash at (D-24-7)30a	-	1975-76	do	-	-	-	-	-	-
31	South Salt Wash at Interstate Highway 70	-	1975-76	do	-	-	-	-	-	-
32	Muddy Creek below Interstate Highway 70, near Emery	122+[5] 29SC	1973-76	0.1-166	431-6,310	691-6,660	Na	Na,Ca,Mg	SO4	SO4
33	Ivie Creek at mouth, at Interstate Highway 70	7	1975-76	0.1-13	1,210-4,410	1,700-5,370	Na	Na,Ca,Mg	SO4	SO4

Significant upstream diversions	Significant upstream irrigation	Water-use problems: Public supply: Dissolved solids (mg/L)	Public supply: Specific ions (mg/L)	Irrigation supply: Salinity hazard	Irrigation supply: Sodium hazard	Irrigation supply: Boron (µg/L)	Concentration range of selected ions (mg/L): Calcium (Ca)	Sodium (Na)	Sulfate (SO4)	Chloride (Cl)	Remarks
Yes	Yes	>500	SO4>250	High to very high	Low to high		184-645	84-946	519-2,340	80-1,480	Site has been inundated by Lake Powell since 1964 (not shown on plate 1).
Yes	Yes	>500	SO4>250	High to very high	Low to medium		140-550	110-440	420-1,900	92-370	
-	-						-	-	-	-	Dry during seven visits July 1975-September 1976.
-	-						-	-	-	-	Do.
-	-						-	-	-	-	Dry during six visits July 1975-August 1976.
No	No			Medium	Low		58	11	83	3.6	Dry during five of six visits July 1975-August 1976.
No	No	>500	SO4>250	High	Low		140-160	57-78	460-500	30-59	Dry during three of five visits July 1975-August 1976.
-	-						-	-	-	-	Dry during three visits July 1975-May 1976.
Yes	Yes	>500	SO4>250	High to very high	Low to medium		95-545	33-790	230-1,920	21-790	
Yes	Yes	>500	SO4>250	High to very high	Low		85-340	29-270	210-1,500	18-210	
Yes	Yes	>500	SO4>250 Cl>250	Very high	Medium to very high		340-670	420-1,800	1,500-3,400	200-1,900	Does not flow continuously during summer months.
Yes	Yes	>500	SO4>250 Cl>250	Very high	Medium to very high		230-380	500-1,400	1,200-1,800	470-2,200	
No	No	>500	SO4>250 Cl>250	Very high	Very high		330-390	1,500-1,600	1,200-1,400	2,200-2,300	Flow maintained by discharge from Caine Springs.
-	-						-	-	-	-	Dry during three visits July 1975-May 1976.
-	-						-	-	-	-	Do.
Yes	Yes	>500	SO4>250 Cl>250	Very high	Medium to high		200-290	340-730	630-2,100	210-1,200	
-	-						-	-	-	-	Dry during six visits July 1975-August 1976.
-	-						-	-	-	-	Dry during four visits July 1975-August 1976.
-	-						-	-	-	-	Do.
-	-						-	-	-	-	Dry during two visits August 1975 and May 1976.
Yes	Yes	>500	SO4>250 Cl>250	Very high	Medium to high		180-480	370-810	1,200-2,600	180-630	Does not flow continuously during summer months.
Yes	Yes	>500	SO4>250 Cl>250	Very high	Medium to high		320-370	620-780	1,900-2,300	440-460	Do.
-	-						-	-	-	-	Dry during three visits July 1975-May 1976.
No	No			Medium	Low		64-74	21-37	83-130	19-29	
-	-						-	-	-	-	Dry during three visits July 1975-May 1976.
No	No			Medium	Low		67	12-20	32	12-14	
No	No			Medium	Low		54-58	7.7-11	15-17	8.6-11	
-	-						-	-	-	-	Dry during three visits July 1975-May 1976.
-	-						-	-	-	-	No outflow during three visits July 1975-May 1976.
-	-						-	-	-	-	Dry during three visits July 1975-May 1976.
-	-						-	-	-	-	Dry during five visits July 1975-August 1976.
Yes	Yes	>500	SO4>250	High to very high	Low to very high		62-440	41-940	200-4,000	8.5-350	
Yes	Yes	>500	SO4>250	High to very high	Low to high		120-290	160-850	670-2,800	32-140	

Table 7.–Summary of selected hydrologic

Site No.	Site name	Number of chemical analyses	Period of record	Discharge range of observations (ft^3/s)	Dissolved-solids range (mg/L)	Specific-conductance range (umho/cm at 25°C)	Dominant cation(s)		Dominant anion(s)	
							Low flow	High flow	Low flow	High flow
34	Quitchupah Creek at mouth, near Interstate Highway 70	5	1975-76	0.5-12	1,070-3,710	1,550-4,600	Na	Na,Ca,Mg	SO4	SO4
35	Ivie Creek below Dog Valley Wash, at Interstate Highway 70	3	1975-76	1.0-2.5	1,420-3,580	2,030-4,190	Na,Ca,Mg	-	SO4	-
36	Dog Valley Wash at mouth, at Interstate Highway 70	-	1975-76	See remarks.	-	-	-	-	-	-
37	Ivie Creek at State Highway 10, near Emery	38+[6] 1SC	1975-76	0.01-2	364-1,250	605-1,700	Ca,Mg	Ca,Mg	SO4	HCO3,SO4
38	Oak Spring Creek at State Highway 10, near Emery	23[7]	1975-76	0.15-0.8	1,630-7,290	2,150-7,570	Mg,Na,Ca	-	SO4	-
38.2	Oak Spring Creek at (D-23-5)21ccc	1	1976	0.15	5,620	6,210	Mg,Ca,Na	-	SO4	-
39	Saleratus Creek at State Highway 10, near Emery	27[8]	1975-76	0.2-1.0	2,010-5,280	2,600-5,580	Mg,Na,Ca	-	SO4	-
39.05	Saleratus Creek above Trough Hollow, near Emery	1	1976	0.1	900	1,450	Na	-	SO4,HCO3	-
39.1	Ivie Creek above Coal Wash, near Emery	1	1976	0.3	6,160	6,960	Mg,Na,Ca	-	SO4	-
39.2	Coal Wash at mouth, near Emery	-	1976	See remarks.	-	-	-	-	-	-
40	Quitchupah Creek at State Highway 10, near Emery	6+ 1SC	1975-76	0.01-2.0	400-1,290	640-1,740	Ca,Na,Mg	-	SO4,HCO3	-
40.1	Link Canyon Wash at mouth, near Emery	-	1976	See remarks.	-	-	-	-	-	-
40.15	Quitchupah Creek above Link Canyon Wash, near Emery	-	1976	do	-	-	-	-	-	-
40.2	Unnamed tributary to Quitchupah Creek at (D-22-6)29bb	1	1976	0.05	3,420	3,980	Na,Ca	-	SO4	-
40.25	Unnamed tributary to Quitchupah Creek at (D-22-6)29ac	1	1976	0.04	1,080	1,520	Mg,Ca,Na	-	SO4	-
40.3	Unnamed tributary at mouth, at (D-22-6)32aa	1	1976	0.03	4,490	5,820	Na	-	SO4	-
40.35	Quitchupah Creek at (D-22-6)32ab, near Emery	1	1976	0.8	1,940	2,580	Na,Ca	-	SO4	-
40.4	Unnamed tributary to Quitchupah Creek at (D-22-6)32adc	-	1976	See remarks.	-	-	-	-	-	-
41	Quitchupah Creek above Christiansen Wash, at (D-22-6)33bcd	6+ 1SC	1975-76	0.8-5.0	647-4,460	990-5,410	Na	Na,Ca	SO4	SO4,HCO3
42	Christiansen Wash at mouth, at (D-22-6)33bdc	6	1975-76	0.5-5.0	1,400-4,330	1,920-5,640	Na,Mg	Na,Mg,Ca	SO4	SO4
43	Christiansen Wash at State Highway 10, near Emery	7	1975-76	0.01-3.5	298-7,410	580-8,510	Na	Ca,Mg	SO4	HCO3
43.2	Christiansen Wash at (D-22-6)16ccc	1	1976	0.1	4,520	4,950	Mg,Ca,Na	-	SO4	-
43.4	Christiansen Wash at (D-22-6)27bcb	1	1976	0.2	8,940	9,900	Na	-	SO4	-
44.1	Canal terminus at (D-22-6)17cca, at State Highway 10	1	1976	5.0	190	327	Ca,Mg	Ca,Mg	HCO3	HCO3
44.15	Canal at (D-22-6)9bcb, at State Highway 10	4+ 1SC	1975-76	2.5-32	198-264	359-475	Ca,Mg	Ca,Mg	HCO3	HCO3
44.18	Canal at (D-22-6)9bbd, at State Highway 10	1	1976	2.0	198	366	Ca,Mg	Ca,Mg	HCO3	HCO3
44.2	Canal at (D-22-6)9dda	1	1976	0.1	418	679	Na,Mg,Ca	-	SO4,HCO3	-
44.25	Canal at (D-22-6)14bcb	1	1976	0.5	396	643	Na,Mg,Ca	-	SO4,HCO3	-
44.3	Canal at (D-22-6)15dca	1	1976	0.5	409	642	Na,Mg,Ca	-	SO4,HCO3	-
44.5	Canal at (D-22-6)2cdc	1	1976	1.5	202	358	Ca,Mg	Ca,Mg	HCO3	HCO3
44.6	Canal at (D-22-6)3acd, at State Highway 10	1	1976	1.5	202	360	Ca,Mg	Ca,Mg	HCO3	HCO3
44.65	Canal at (D-22-6)4cca	1	1976	11	204	362	Ca,Mg	Ca,Mg	HCO3	HCO3
44.9	Canal at (D-21-6)22ddd	1	1976	13	199	358	Ca,Mg	Ca,Mg	HCO3	HCO3
44.95	Canal at (D-21-6)22bcd, near diversion from Muddy Creek	1	1976	3	210	365	Ca,Mg	Ca,Mg	HCO3	HCO3
44.99	Canal at (D-21-7)30ccd, at State Highway 10	1	1975	0.2	212	385	Ca,Mg	Ca,Mg	HCO3	HCO3
45	Muddy Creek below Miller Canyon, near Emery	4	1975-76	0.5-6.0	1,670-4,390	2,250-5,190	Na,Ca	-	SO4	-
45.6	Muddy Creek above Ivie Creek, at (D-23-6)12cdc	24[9]	1975-76	0.2-6.4	974-5,590	1,330-6,190	Na	-	SO4	-
46	Miller Canyon at mouth, near Emery	4	1975-76	0.03-1.0	1,250-2,990	1,610-3,470	Ca	-	SO4	-
47	Muddy Creek at (D-21-6)36bbb, at State Highway 10, near Emery	5	1975-76	0.06-1.0	1,230-2,230	1,720-2,860	Ca,Na,Mg	-	SO4	-

data for the Dirty Devil River basin–Continued

Significant upstream diversions	Significant upstream irrigation	Water-use problems					Concentration range of selected ions (mg/L)				Remarks
		Public supply		Irrigation supply							
		Dissolved solids (mg/L)	Specific ions (mg/L)	Salinity hazard	Sodium hazard	Boron (µg/L)	Calcium (Ca)	Sodium (Na)	Sulfate (SO4)	Chloride (Cl)	
Yes	Yes	>500	SO4>250; NO3(as N) 10 on 8-11-76	High to very high	Low to high		100-190	150-700	540-2,300	24-96	
Yes	Yes	>500	SO4>250	High to very high	Medium to high		130-290	150-450	800-2,300	79-150	Dry during two visits August 1975 and August 1976.
-	-						-	-	-	-	Dry during six visits July 1975-August 1976.
Yes	No	>500	SO4>250	Medium to high	Low		52-210	20-67	110-760	27-64	Dry during visit August 1976.
Yes	Yes	>500	SO4>250	High to very high	Low to medium	Commonly 1,000	130-480	160-710	950-4,700	52-380	
Yes	Yes	>500	SO4>250	Very high	Medium		440	480	3,600	300	
Yes	Yes	>500	SO4>250	Very high	Medium		160-410	300-550	1,200-3,500	56-190	
No	No	>500	SO4>250	High	Medium		14	290	320	41	
Yes	Yes	>500	SO4>250	Very high		1,200	410	730	4,000	330	
-	-						-	-	-	-	Dry during visit August 1976.
No	No	>500	SO4>250	High	Low to medium		55-200	40-160	120-620	14-52	
-	-						-	-	-	-	Dry during visit August 1976.
-	-						-	-	-	-	Do.
No	Yes	>500	SO4>250	Very high	Medium		320	480	2,200	38	
No	Yes	>500	SO4>250	High	Low		110	100	560	12	
No	Yes	>500	SO4>250	Very high	Very high		130	1,100	2,700	160	
No	Yes	>500	SO4>250	Very high	Medium		200	290	1,100	44	
-	-						-	-	-	-	Dry during visit August 1976.
No	Yes	>500	SO4>250	High to very high	Low to very high		78-190	84-1,000	280-2,700	15-140	
No	Yes	>500	SO4>250; NO3(as N) 20 on 8-26-75; 24 on 8-12-76	High to very high	Low to high		120-260	200-840	710-2,700	29-95	
No	Yes	>500 (summer)	SO4>250 (summer)	Medium to very high	Low to very high		50-500	17-1,400	49-4,700	3.8-84	
No	Yes	>500	SO4>250	Very high	Medium		510	380	2,900	57	
No	Yes	>500	SO4>250; NO3(as N) 49 on 8-12-76	Very high	High		450	1,700	5,600	220	
-	No			Medium	Low		31	6.7	14	2.1	
-	No			Medium	Low		32-44	5.0-20	13-32	2.2-5.9	
-	No			Medium	Low		35	6.9	14	2.1	
-	Yes			Medium	Low		38	61	170	7.0	
-	Yes			Medium	Low		32	59	170	6.6	
-	Yes			Medium	Low		35	59	180	6.8	
-	Yes			Medium	Low		36	7.1	18	2.2	
-	Yes			Medium	Low		38	6.6	15	2.0	
-	No			Medium	Low		39	6.4	15	2.1	
-	No			Medium	Low		37	6.3	13	2.1	
-	No			Medium	Low		40	6.7	16	2.1	
-	No			Medium	Low		43	7.3	15	1.7	Dry during three visits August 1975 and May and August 1976.
Yes	Yes	>500	SO4>250	High to very high	Medium to high		110-320	300-740	940-2,800	30-67	Dry during visit August 1976.
Yes	Yes	>500	SO4>250	High to very high	Low to very high		73-350	140-1,100	550-3,600	12-140	
No	Yes	>500	SO4>250	High to very high	Low		180-490	79-170	760-2,000	16-29	Dry during visit August 1976.
Yes	Yes	>500	SO4>250	High to very high	Low		160-270	120-240	690-1,400	17-29	Do.

Table 7.-Summary of selected hydrologic

Site No.	Site name	Number of chemical analyses	Period of record	Discharge range of observations (ft^3/s)	Dissolved-solids range (mg/l)	Specific-conductance range (µmho/cm at 25°C)	Dominant cation(s)		Dominant anion(s)	
							Low flow	High flow	Low flow	High flow
47.2	Unnamed tributary to Muddy Creek at (D-22-6)1ccd	1	1976	0.05	4,970	5,750	Na,Mg,Ca	-	SO4	-
47.8	Muddy Creek at (D-21-6)22bc, immediately below total diversion	1	1976	0.03	409	651	Ca,Mg	-	HCO3	-
49	Muddy Creek near Emery	8+[10] 57SC	1949 1957-58 1971-75	4.7-254	175-250	286-520	Ca,Mg	Ca,Mg	HCO3	HCO3
50	Ivie Creek above diversions, near Emery	1[11]	1958 1975-76	4.8-8.2	162-255	243-437	Ca	Ca	HCO3	HCO3
51	Ivie Creek below Red Creek, at State Highway 10	2	1975-76	4.5-4.6	173-218	290-370	Ca	-	HCO3	-
52	Red Creek at mouth, near Interstate Highway 70	2	1975-76	4.2-4.5	159-186	270-290	Ca	-	HCO3	-
53	Tommy Hollow at mouth, at Interstate Highway 70	2	1975-76	0.1-0.3	817-999	1,290-1,500	Mg,Ca,Na	-	SO4,HCO3	-
55	Birch Creek at mouth, near Hanksville	-	1975-76	See remarks.	-	-	-	-	-	-
56	Town Wash at mouth, near Hanksville	-	1975-76	do	-	-	-	-	-	-
57	Fremont River below Neilson Wash, at State Highway 24, near Hanksville	11[12]	1949 1957-58 1975-76	1.5-148	472-1,820	739-2,110	Ca	Ca	SO4	SO4
58	Neilson Wash at mouth, at State Highway 24, near Hanksville	-	1975-76	See remarks.	-	-	-	-	-	-
59	Sweetwater Creek at mouth, near Caineville	5	1975-76	0.04-6.0	853-3,960	1,120-4,230	Ca	Ca	SO4	SO4
60	Sweetwater Creek at (D-31-8)25aaa, near Caineville	3	1975-76	0.8-1.5	763-1,920	1,080-2,420	Ca	-	SO4	-
61	Unnamed wash at mouth at (D-28-8)25dcc, near Caineville	1	1975-76	1.0	2,360	2,680	Ca	-	SO4	-
61.2	Fremont River above Sweetwater Creek, near Caineville	27[13]	1976	8-90	437-1,290	698-1,650	Ca	Ca	SO4	SO4,HCO3
62	Fremont River at Caineville	5	1975-76	18-70	492-799	766-1,310	Ca	Ca	SO4,HCO3	SO4,HCO3
63	Caineville Wash at mouth, at State Highway 24, at Caineville	3	1975-76	0.05-0.5	4,350-4,540	6,070	Na,Ca	-	SO4,Cl	-
64	Sandy Creek at mouth, near Caineville	3	1975-76	0.3-3.0	1,550-2,470	1,980-2,880	Ca	-	SO4	-
65	Blind Trail Wash at (D-31-8)16cb, near Caineville	-	1975-76	See remarks.	-	-	-	-	-	-
66	Sandy Creek at (D-31-8)17ca, near Caineville	3	1975-76	0.03-4.5	497-3,560	710-4,000	Ca,Na	Ca	SO4	SO4,HCO3
67	Oak Creek at mouth, at (D-31-8)19aa, near Caineville	3	1975-76	0.01-2.5	460-1,410	680-1,750	Ca	Ca	SO4	SO4,HCO3
68	Sandy Creek above Spring Canyon, near Caineville	-	1975-76	See remarks.	-	-	-	-	-	-
69	Spring Canyon at mouth, at (D-32-8)6da, near Caineville	-	1975-76	do	-	-	-	-	-	-
70	Fremont River at State Highway 24, above Sandy Creek, near Caineville	7	1975-76	22-115	419-614	649-872	Ca	Ca	SO4,HCO3	SO4,HCO3
71	Fremont River near Caineville	2+ 51SC	1971-76	28-601	210-650[15]	320-960	Ca	Ca	SO4,HCO3	SO4,HCO3
72	Pleasant Creek near Caineville	5+ 13SC	1971-72 1975-76	0.5-4.6	650-1,260[16]	870-1,600	Ca	Ca	SO4	SO4
73	Pleasant Creek at State Highway 24, at Notom	4	1975-76	0.6-3.0	457-921	687-1,240	Ca	Ca	SO4,HCO3	SO4,HCO3
74	Capitol Wash at mouth, at State Highway 24, at Notom	-	1975-76	See remarks.	-	-	-	-	-	-
75	Pleasant Creek at (D-30-7)29a	3	1975-76	5.0-10	134-162	205-251	Ca	Ca	HCO3	HCO3
76	Fremont River below Sulphur Creek, near Fruita	4	1975-76	25-115	458-585	655-862	Ca	Ca	SO4,HCO3	SO4,HCO3
77	Fremont River at State Highway 24, above Sulphur Creek, at Fruita	7[17]	1949 1975-76	32-36	411-454	646-760	Ca,Mg	Ca,Mg	SO4,HCO3	SO4,HCO3
78	Sulphur Creek at mouth, at Fruita	5	1975-76	1.0-5.0	1,070-1,630	1,470-2,030	Ca	Ca	SO4	SO4
79	Sulphur Creek below Sand Creek, at State Highway 24, near Torrey	5	1975-76	0.08-3.0	1,310-3,720	1,770-4,000	Ca,Mg	Ca	SO4	SO4
80	Fish Creek at mouth, near Torrey	-	1975-76	See remarks.	-	-	-	-	-	-
81	Fremont River above Fish Creek, near Torrey	2	1975-76	35-36	429-432	670-680	Ca,Mg	Ca,Mg	HCO3,SO4	HCO3,SO4
82	Fremont River at State Highway 24, 1.5 mi west of Torrey	5+ 1SC	1975-76	30-90	339-421	544-640	Ca,Mg	Ca,Mg	HCO3,SO4	HCO3,SO4

data for the Dirty Devil River basin–Continued

Significant upstream diversions	Significant upstream irrigation	Water-use problems: Public supply: Dissolved solids (mg/L)	Public supply: Specific ions (mg/L)	Irrigation supply: Salinity hazard	Irrigation supply: Sodium hazard	Irrigation supply: Boron (µg/L)	Concentration range of selected ions (mg/L): Calcium (Ca)	Sodium (Na)	Sulfate (SO4)	Chloride (Cl)	Remarks
No	Yes	>500	SO4>250	Very high	High		360	830	3,400	49	
Yes	No			Medium	Low		70	25	110	6.2	
No	No			Medium	Low		32-47	5-12	11-26	1.8-3.5	
No	No			Low to medium	Low		32-50	6.9-12	0-33	11-18	
No	No			Medium	Low		36-42	7.4-11	14-26	8.2-15	
No	No			Medium	Low		33-39	7.6-9.0	7.3-15	6.5-11	
No	No			High	Low		90-96	68-74	290-400	96-120	
-	-						-	-	-	-	Dry during four visits August 1975-August 1976.
-	-						-	-	-	-	Do.
Yes	Yes	>500	SO4>250	Medium to high	Low		81-413	28-136[14]	200-1,155	14-52	
-	-						-	-	-	-	Dry during six visits July 1975-August 1976.
No	No	>500	SO4>250 NO3(as N) 11 on 8-10-76	High to very high	Low		120-550	79-430	500-2,700	15-56	Dry during visit July 1975.
No	No	>500	SO4>250	High to very high	Low		120-250	56-160	410-1,200	12-29	
No	No	>500	SO4>250	Very high	Low		560	97	1,500	17	Dry during three visits August 1975-May 1976.
Yes	Yes	>500	SO4>250	High	Low		87-260	22-200	190-790	16-220	
Yes	Yes	>500	SO4>250	High	Low		89-140	26-75	210-400	21-63	
No	No	>500	SO4>250 Cl>250	Very high	Very high		460-560	770-920	1,800-2,200	790-1,000	Dry during three visits July and November 1975, August 1976.
Yes	Yes	>500	SO4>250	High to very high	Low		310-470	78-160	990-1,600	17-24	Dry during three visits July and August 1975, August 1976.
-	-						-	-	-	-	Dry during three visits July and August 1975, May 1976.
Yes	Yes	>500	SO4>250	Medium to very high	Low to medium		110-550	11-300	250-2,300	3.5-76	
Yes	No			Medium to high	Low		100-320	9.8-32	210-830	2.6-15	
-	-						-	-	-	-	Dry during three visits July and August 1975, May 1976.
-	-						-	-	-	-	Do.
Yes	Yes			Medium to high	Low		75-110	17-25	170-310	16-20	
Yes	Yes			Medium to high	Low		90-110	24-25	230-330	19-20	
Yes	Yes	>500	SO4>250	Medium to high	Low		130-220	20-61	340-670	6.6-9.3	
Yes	Yes	>500	SO4>250	Medium to high	Low		94-200	14-24	190-480	4.7-7.3	
-	-						-	-	-	-	Dry during three visits July and August 1975, May 1976.
No	No			Low	Low		24-28	3.5-4.5	19-31	1.1-3.0	
Yes	Yes			Medium	Low		81-100	20-24	180-290	16-20	
Yes	Yes			Medium	Low		74-81	19-30	150-198	17-24	
Yes	Yes	>500	SO4>250	High	Low		190-330	34-48	600-1,000	28-38	
Yes	Yes	>500	SO4>250	Very high	Low		230-550	24-110	770-2,500	18-69	
-	-						-	-	-	-	Dry during two visits August 1975 and May 1976.
Yes	Yes			Medium	Low		74-80	21	150-170	18-19	
Yes	Yes			Medium	Low		61-77	15-19	110-160	14-16	

Table 7.-Summary of selected hydrologic

Site No.	Site name	Number of chemical analyses	Period of record	Discharge range of observations (ft^3/s)	Dissolved-solids range (mg/L)	Specific-conductance range (µmho/cm at 25°C)	Dominant cation(s)		Dominant anion(s)	
							Low flow	High flow	Low flow	High flow
83	High Line Ditch terminus at State Highway 24, near Bicknell	-	1975-76	See remarks.	-	-	-	-	-	-
84	Fremont River at (D-29-4)7bac, near Bicknell	3	1975-76	70-95	317-365	508-558	Ca,Mg	Mc,Mg	HCO3,SO4	HCO3,SO4
85	Pine Creek at (D-29-3)11dd, near mouth, near Bicknell	4	1975-76	22-60	148-160	224-240	Ca	Ca	HCO3	HCO3
86	Pine Creek near Bicknell	50SC only	1971-76	0.4-38	-	60-175	-	-	-	-
87	Fremont River below Big Hollow, 1 mi southwest of Bicknell	3	1975-76	9.5-15	448-566	700-826	Ca,Mg	Ca,Mg	SO4	-
88	Big Hollow at mouth, near Bicknell	1	1975-76	0.01	434	643	Ca	-	SO4HCO3	-
89	Fremont River below Blackburn Ditch terminus, near Bicknell	4	1975-76	3.0-20	470-892	694-1,370	Ca,Mg	Ca,Mg	SO4HCO3	SO4HCO3
90	Spring Creek at State Highway 24, at Loa	3+ 1SC	1975-76	3.5-11	210-272	300-420	Ca	Ca	HCO3,SO4	HCO3,SO4
90.1	Loa Town Ditch at State Highway 24, at Loa	1	1976	8	155	232	Ca,Mg	Ca,Mg	HCO3	HCO3
90.2	Long Hollow at mouth, at (D-28-2)12dcc	-	1976	See remarks.	-	-	-	-	-	-
90.25	Canal at (D-28-2)11ddb, near Loa	1	1976	3.0	170	235	Ca	Ca	HCO3	HCO3
90.3	Road Creek at (D-28-2)12bdd, 0.5 mi south of Loa	1	1976	3.0	205	297	Ca	Ca	HCO3	HCO3
90.4	Spring Creek at (D-27-2)30cba, near Loa	1	1976	10	189	268	Ca	Ca	HCO3	HCO3
91	Fremont River at State Highway 24, at Loa	5	1975-76	0.6-4.2	521-941	799-1,280	Ca,Mg	Ca	HCO3	SO4,HCO3
92	Blackburn Ditch at State Highway 24, 1 mi west of Lyman	-	1975-76	See remarks.	-	-	-	-	-	-
93	High Line Ditch at Lyman	2	1975-76	21-55	114-137	205-216	Ca	Ca	HCO3	HCO3
93.1	High Line Ditch near Bicknell	1	1976	12	119	196	Ca	Ca	HCO3	HCO3
93.2	High Line Ditch at Bicknell	-	1976	See remarks.	-	-	-	-	-	-
94	Fremont River near Fremont	8[18]	1949 1957-58 1975-76	1.2-170	106-270	180-380	Ca	Ca	HCO3,SO4	HCO3
94.1	Fremont River at (D-27-3)17daa, near Fremont	1	1976	1.5	118	194	Ca	Ca	HCO3	HCO3
94.2	Fremont River at (D-27-3)19daa, near Fremont	1	1976	5.0	687	1,000	Ca	-	SO4,HCO3	-
95	UM Creek at inflow point to Mill Meadow Reservoir	2	1975-76	40-50	133-135	205-220	Ca	Ca	HCO3	HCO3
96	UM Creek below Forsyth Reservoir, near Fremont	2	1975-76	35-45	121	183-190	Ca	Ca	HCO3	HCO3
96.2	Short Creek at mouth, at Forsyth Reservoir	1	1976	0.5	118	162	Ca	Ca	HCO3	HCO3
96.4	Forsyth Springs at Forsyth Reservoir	1	1976	5.0	132	175	Ca	Ca	HCO3	HCO3
97	UM Creek at inflow point to Forsyth Reservoir	2	1975-76	12-43	100-136	148-210	Ca	Ca	HCO3	HCO3
98	Fremont River at inflow point to Mill Meadow Reservoir	2	1975-76	56-75	95-96	146-160	Ca	Ca	HCO3	HCO3
99	Fremont River below Johnson Valley Reservoir, near Fremont	2	1975-76	65-75	90-91	141-150	Ca	Ca	HCO3	HCO3
100	Seven Mile Creek near Fish Lake	5+[10] 32SC	1957-58 1971-76	6-92	55-130[15]	80-195	Ca	Ca	HCO3	HCO3
101	Lake Creek below Fish Lake	2	1975-76	0.1-10	70-105	115-145	Ca	Ca	HCO3	HCO3
102	Deadman Hollow at State Highway 24, near Fish Lake	-	1975-76	See remarks.	-	-	-	-	-	-
103	Riley Canyon above Road Creek, at (D-27-2)34dcc	1	1976	0.1	195	287	Ca	Ca	HCO3	HCO3

[1] Data in Iorns, Hembree, Phoenix, and Oakland (1964).
[2] Includes 122 analyses by U.S. Bureau of Reclamation and 21 analyses in Iorns, Hembree, Phoenix, and Oakland (1964).
[3] Includes 25 analyses by U.S. Bureau of Reclamation.
[4] Includes 22 analyses by U.S. Bureau of Reclamation.
[5] Includes 114 analyses by U.S. Bureau of Reclamation.
[6] Includes 33 analyses by U.S. Bureau of Reclamation.
[7] Includes 17 analyses by U.S. Bureau of Reclamation.
[8] Includes 20 analyses by U.S. Bureau of Reclamation.
[9] U.S. Bureau of Reclamation.
[10] Includes 3 analyses in Iorns, Hembree, Phoenix, and Oakland (1964).
[11] Includes 1 analysis in Iorns, Hembree, Phoenix, and Oakland (1964).
[12] Includes 2 analyses by Utah State University in 1949 and 3 analyses in Iorns, Hembree, Phoenix, and Oakland (1964).
[13] Includes 25 analyses by U.S. Bureau of Reclamation.
[14] 136 mg/L includes potassium.
[15] Estimated from specific-conductance data.
[16] 1,260 mg/L estimated from specific-conductance data.
[17] Includes 3 analyses by Utah State University in 1949.
[18] Includes 1 analysis by Utah State University and 2 analyses in Iorns, Hembree, Phoenix, and Oakland (1964).

data for the Dirty Devil River basin—Continued

Significant upstream diversions	Significant upstream irrigation	Water-use problems					Concentration range of selected ions (mg/L)				Remarks
		Public supply		Irrigation supply							
		Dissolved solids (mg/L)	Specific ions (mg/L)	Salinity hazard	Sodium hazard	Boron (µg/L)	Calcium (Ca)	Sodium (Na)	Sulfate (SO4)	Chloride (Cl)	
-	-						-	-	-	-	Dry during four visits August 1975-August 1976.
Yes	Yes			Medium	Low		56-61	15-17	100-130	12-15	
No	No			Low	Low		24-25	6.8-7.4	10-19	4.5-4.9	
-	-			Low	Low		-	-	-	-	
Yes	Yes			Medium	Low		78-100	22-25	180-240	19-23	
No	No			Medium	Low		82	18	170	18	Dry during two visits August 1975 and August 1976.
Yes	Yes	>500	SO4>250	Medium to high	Low		85-160	19-31	180-430	13-22	
Yes	No			Medium	Low		36-49	13-15	50-63	11	
-	-			Low	Low		28	9.6	12	7.5	
-	-						-	-	-	-	Dry during visit August 1976.
-	-			Low	Low		27	15	5.4	4.8	
Yes	No			Medium	Low		34	16	8.1	7.0	
No	No			Medium	Low		34	12	19	10	
Yes	Yes	>500	SO4>250	High	Low		100-190	22-27	140-440	12-18	Irrigation return flow.
-	-						-	-	-	-	Dry during four visits August 1975-August 1976.
-	-			Low	Low		22-25	5.1-6.4	5.7-11	3.4-5.5	
-	-			Low	Low		25	5.0	6	3.7	
-	-						-	-	-	-	Dry during visit August 1976.
No	No			Low to medium	Low		19-50	5.0-12	5.1-84	3.4-5.7	
Yes	No			Low	Low		25	5.0	6.3	3.8	
Yes	Yes			High	Low		140	19	330	7.8	
No	No			Low	Low		23-26	5.8-60	7.0-7.4	4.8-5.6	
No	No			Low	Low		21-23	4.0-4.3	2.3-6.4	2.5-3.3	
No	No			Low	Low		20	5.0	2.6	3.5	
-	-			Low	Low		23	5.8	6.0	4.1	
No	No			Low	Low		18-24	3.0-4.9	3.9-7.4	2.9-35	
No	No			Low	Low		19	3.2-4.2	2.0-3.3	2.3-24	
No	No			Low	Low		18	3.0-4.1	2.8-3.3	1.9-2.3	
No	No			Low	Low		12-16	2.3-3.9	2.1-4.2	0.8-2.4	
No	No			Low	Low		10-14	5.1-6.0	1.9-5.3	2.5-4.0	
-	-						-	-	-	-	Dry during four visits August 1975-August 1976.
No	No			Medium	Low		34	14	7.8	9.1	

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No. 41. Hydrologic reconnaissance of Pilot Valley, Utah and Nevada, by J. C. Stephens and J. W. Hood, U.S. Geological Survey, 1973.

No. 42. Hydrologic reconnaissance of the northern Great Salt Lake Desert and summary hydrologic reconnaissance of northwestern Utah, by J. C. Stephens, U.S. Geological Survey, 1973.

No. 43. Water resources of the Milford area, Utah, with emphasis on ground water, by R. W. Mower and R. M. Cordova, U.S. Geological Survey, 1974.

No. 44. Ground-water resources of the lower Bear River drainage basin, Box Elder County, Utah, by L. J. Bjorklund and L. J. McGreevy, U.S. Geological Survey, 1974.

No. 45. Water resources of the Curlew Valley drainage basin, Utah and Idaho, by C. H. Baker, Jr., U.S. Geological Survey, 1974.

No. 46. Water-quality reconnaissance of surface inflow to Utah Lake, by J. C. Mundorff, U.S. Geological Survey, 1974.

No. 47. Hydrologic reconnaissance of the Wah Wah Valley drainage basin, Millard and Beaver Counties, Utah, by J. C. Stephens, U.S. Geological Survey, 1974.

No. 48. Estimating mean streamflow in the Duchesne River basin, Utah, by R. W. Cruff, U.S. Geological Survey, 1974.

No. 49. Hydrologic reconnaissance of the southern Uinta Basin, Utah and Colorado, by Don Price and L. L. Miller, U.S. Geological Survey, 1975.

No. 50. Seepage study of the Rocky Point Canal and the Grey Mountain-Pleasant Valley Canal systems, Duchesne County, Utah, by R. W. Cruff and J. W. Hood, U.S. Geological Survey, 1976.

No. 51. Hydrologic reconnaissance of the Pine Valley drainage basin, Millard, Beaver, and Iron Counties, Utah, by J. C. Stephens, U.S. Geological Survey, 1976.

No. 52. Seepage study of canals in Beaver Valley, Beaver County, Utah, by R. W. Cruff and R. W. Mower, U.S. Geological Survey, 1976.

No. 53. Characteristics of aquifers in the northern Uinta Basin area, Utah and Colorado, by J. W. Hood, U.S. Geological Survey, 1976.

No. 54. Hydrologic evaluation of Ashley Valley, northern Uinta Basin area, Utah, by J. W. Hood, U.S. Geological Survey, 1977.

No. 55. Reconnaissance of water quality in the Duchesne River basin and some adjacent drainage areas, Utah, by J. C. Mundorff, U.S. Geological Survey, 1977.

No. 56. Hydrologic reconnaissance of the Tule Valley drainage basin, Juab and Millard Counties, Utah, by J. C. Stephens, U.S. Geological Survey, 1977.

No. 57. Hydrologic evaluation of the upper Duchesne River valley, northern Uinta Basin area, Utah, by J. W. Hood, U.S. Geological Survey, 1977.

No. 58. Seepage study of the Sevier Valley-Piute Canal, Sevier County, Utah, by R. W. Cruff, U.S. Geological Survey, 1977.

No. 59. Hydrologic reconnaissance of the Dugway Valley-Government Creek area, west-central Utah, by J. C. Stephens and C. T. Sumsion, U.S. Geological Survey, 1978.

No. 60. Ground-water resources of the Parowan-Cedar City drainage basin, Iron County, Utah, by L. J. Bjorklund, C. T. Sumsion, and G. W. Sandberg, U.S. Geological Survey, 1978.

No. 61. Ground-water conditions in the Navajo Sandstone in the central Virgin River basin, Utah, by R. M. Cordova, U.S. Geological Survey, 1978.

No. 62. Water resources of the northern Uinta Basin area, Utah and Colorado, with special emphasis on ground-water supply, by J. W. Hood and F. K. Fields, U.S. Geological Survey, 1978.

No. 63. Hydrology of the Beaver Valley area, Beaver County, Utah with emphasis on ground water, by R. W. Mower, U.S. Geological Survey, 1978.

No. 64. Hydrologic reconnaissance of the Fish Springs Flat area, Tooele, Juab, and Millard Counties, Utah, by E. L. Bolke and C. T. Sumsion, U.S. Geological Survey, 1978.

WATER CIRCULARS

No. 1. Ground water in the Jordan Valley, Salt Lake County, Utah, by Ted Arnow, U.S. Geological Survey, 1965.

No. 2. Ground water in Tooele Valley, Utah, by J. S. Gates and O. A. Keller, U.S. Geological Survey, 1970.

BASIC-DATA REPORTS

*No. 1. Records and water-level measurements of selected wells and chemical analyses of ground water, East Shore area, Davis, Weber, and Box Elder Counties, Utah, by R. E. Smith, U.S. Geological Survey, 1961.

No. 2. Records of selected wells and springs, selected drillers' logs of wells, and chemical analyses of ground and surface waters, northern Utah Valley, Utah County, Utah, by Seymour Subitzky, U.S. Geological Survey, 1962.

No. 3. Ground-water data, central Sevier Valley, parts of Sanpete, Sevier, and Piute Counties, Utah, by C. H. Carpenter and R. A. Young, U.S. Geological Survey, 1963.

*No. 4. Selected hydrologic data, Jordan Valley, Salt Lake County, Utah, by I. W. Marine and Don Price, U.S. Geological Survey, 1963.

*No. 5. Selected hydrologic data, Pavant Valley, Millard County, Utah, by R. W. Mower, U.S. Geological Survey, 1963.

*No. 6. Ground-water data, parts of Washington, Iron, Beaver, and Millard Counties, Utah, by G. W. Sandberg, U.S. Geological Survey, 1963.

No. 7. Selected hydrologic data, Tooele Valley, Tooele County, Utah, by J. S. Gates, U.S. Geological Survey, 1963.

No. 8. Selected hydrologic data, upper Sevier River basin, Utah, by C. H. Carpenter, G. B. Robinson, Jr., and L. J. Bjorklund, U.S. Geological Survey, 1964.

*No. 9. Ground-water data, Sevier Desert, Utah, by R. W. Mower and R. D. Feltis, U.S. Geological Survey, 1964.

No. 10. Quality of surface water in the Sevier Lake basin, Utah, by D. C. Hahl and R. E. Cabell, U.S. Geological Survey, 1965.

*No. 11. Hydrologic and climatologic data, collected through 1964, Salt Lake County, Utah, by W. V. Iorns, R. W. Mower, and C. A. Horr, U.S. Geological Survey, 1966.

No. 12. Hydrologic and climatologic data, 1965, Salt Lake County, Utah, by W. V. Iorns, R. W. Mower, and C. A. Horr, U.S. Geological Survey, 1966.

No. 13. Hydrologic and climatologic data, 1966, Salt Lake County, Utah, by A. G. Hely, R. W. Mower, and C. A. Horr, U.S. Geological Survey, 1967.

No. 14. Selected hydrologic data, San Pitch River drainage basin, Utah, by G. B. Robinson, Jr., U.S. Geological Survey, 1968.

No. 15. Hydrologic and climatologic data, 1967, Salt Lake County, Utah, by A. G. Hely, R. W. Mower, and C. A. Horr, U.S. Geological Survey, 1968.

No. 16. Selected hydrologic data, southern Utah and Goshen Valleys, Utah, by R. M. Cordova, U.S. Geological Survey, 1969.

No. 17. Hydrologic and climatologic data, 1968, Salt Lake County, Utah, by A. G. Hely, R. W. Mower, and C. A. Horr, U.S. Geological Survey, 1969.

No. 18. Quality of surface water in the Bear River basin, Utah, Wyoming, and Idaho, by K. M. Waddell, U.S. Geological Survey, 1970.

No. 19. Daily water-temperature records for Utah streams, 1944-68, by G. L. Whitaker, U.S. Geological Survey, 1970.

No. 20 Water-quality data for the Flaming Gorge area, Utah and Wyoming, by R. J. Madison, U.S. Geological Survey, 1970.

No. 21. Selected hydrologic data, Cache Valley, Utah and Idaho, by L. J. McGreevy and L. J. Bjorklund, U.S. Geological Survey, 1970.

No. 22. Periodic water- and air-temperature records for Utah streams, 1966-70, by G. L. Whitaker, U.S. Geological Survey, 1971.

No. 23. Selected hydrologic data, lower Bear River drainage basin, Box Elder County, Utah, by L. J. Bjorklund and L. J. McGreevy, U.S. Geological Survey, 1973.

No. 24. Water-quality data for the Flaming Gorge Reservoir area, Utah and Wyoming, 1969-72, by E. L. Bolke and K. M. Waddell, U.S. Geological Survey, 1972.

No. 25. Streamflow characteristics in northeastern Utah and adjacent areas, by F. K. Fields, U.S. Geological Survey, 1975.

No. 26. Selected Hydrologic data, Uinta Basin area, Utah and Colorado, by J. W. Hood, J. C. Mundorff, and Don Price, U.S. Geological Survey, 1976.

No. 27. Chemical and physical data for the Flaming Gorge Reservoir area, Utah and Wyoming, by E. L. Bolke, U.S. Geological Survey, 1976.

No. 28. Selected hydrologic data, Parowan Valley and Cedar City Valley drainage basins, Iron County, Utah, by L. J. Bjorklund, C. T. Sumsion, and G. W. Sandberg, U.S. Geological Survey, 1977.

No. 29. Climatologic and hydrologic data, southeastern Uinta Basin, Utah and Colorado, water years 1975 and 1976, by L. C. Conroy and F. K. Fields, U.S. Geological Survey, 1977.

No. 30. Selected ground-water data, Bonneville Salt Flats and Pilot Valley, western Utah, by. G. C. Lines, U.S. Geological Survey, 1977.

No. 31. Selected hydrologic data, Wasatch Plateau-Book Cliffs coal-fields area, Utah, by K. M. Waddell and others, U.S. Geological Survey, 1978.

INFORMATION BULLETINS

*No. 1. Plan of work for the Sevier River Basin (Sec. 6, P. L. 566), U.S. Department of Agriculture, 1960.

*No. 2 Water production from oil wells in Utah, by Jerry Tuttle, Utah State Engineer's Office, 1960.

*No. 3. Ground-water areas and well logs, central Sevier Valley, Utah, by R. A. Young, U.S. Geological Survey, 1960.

*No. 4. Ground- water investigations in Utah in 1960 and reports published by the U.S. Geological Survey or the Utah State Engineer prior to 1960, by H. D. Goode, U.S. Geological Survey, 1960.

*No. 5. Developing ground water in the central Sevier Valley, Utah, by R. A. Young and C. H. Carpenter, U.S. Geological Survey, 1961.

*No. 6. Work outline and report outline for Sevier River basin survey, (Sec. 6, P. L. 566), U.S. Department of Agriculture, 1961.

*No. 7. Relation of the deep and shallow artesian aquifers near Lynndyl, Utah, by R. W. Mower, U.S. Geological Survey, 1961.

*No. 8. Projected 1975 municipal water-use requirements, Davis County, Utah, by Utah State Engineer's Office, 1962.

No. 9. Projected 1975 municipal water-use requirements, Weber County, Utah, by Utah State Engineer's Office, 1962.

*No. 10. Effects on the shallow artesian aquifer of withdrawing water from the deep artesian aquifer near Sugarville, Millard County, Utah, by R. W. Mower, U.S. Geological Survey, 1963.

*No. 11. Amendments to plan of work and work outline for the Sevier River basin (Sec. 6, P. L. 566), U.S. Department of Agriculture, 1964.

*No. 12. Test drilling in the upper Sevier River drainage basin, Garfield and Piute Counties, Utah, by R. D. Feltis and G. B. Robinson, Jr., U.S. Geological Survey, 1963.

*No. 13. Water requirements of lower Jordan River, Utah, by Karl Harris, Irrigation Engineer, Agricultural Research Service, Phoenix, Arizona, prepared under informal cooperation approved by Mr. W. W. Donnan, Chief, Southwest Branch (Riverside, California) Soil and Water Conservation Research Division, Agricultural Research Service, U.S.D.A., and by W. D. Criddle, State Engineer, State of Utah, Salt Lake City, Utah, 1964.

*No. 14. Consumptive use of water by native vegetation and irrigated crops in the Virgin River area of Utah, by W. D. Criddle, J. M. Bagley, R. K. Higginson, and D. W. Hendricks, through cooperation of Utah Agricultural Experiment Station, Agricultural Research Service, Soil and Water Conservation Branch, Western Soil and Water Management Section, Utah Water and Power Board, and Utah State Engineer, Salt Lake City, Utah, 1964.

*No. 15. Ground-water conditions and related water-administration problems in Cedar City Valley, Iron County, Utah, February, 1966, by J. A. Barnett and F. T. Mayo, Utah State Engineer's Office.

*No. 16. Summary of water well drilling activities in Utah, 1960 through 1965, compiled by Utah State Engineer's Office, 1966.

*No. 17. Bibliography of U.S. Geological Survey water-resources reports for Utah, compiled by O. A. Keller, U.S. Geological Survey, 1966.

*No. 18. The effect of pumping large-discharge wells on the ground-water reservoir in southern Utah Valley, Utah County, Utah, by R. M. Cordova and R. W. Mower, U.S. Geological Survey, 1967.

No. 19. Ground-water hydrology of southern Cache Valley, Utah, by L. P. Beer, 1967.

*No. 20. Fluvial sediment in Utah, 1905-65, A data compilation by J. C. Mundorff, U.S. Geological Survey, 1968.

*No. 21. Hydrogeology of the eastern portion of the south slopes of the Uinta Mountains, Utah, by L. G. Moore and D. A. Barker, U.S. Bureau of Reclamation, and J. D. Maxwell and B. L. Bridges, Soil Conservation Service, 1971.

*No. 22. Bibliography of U.S. Geological Survey water-resources reports for Utah, compiled by B. A. LaPray, U.S. Geological Survey, 1972.

No. 23. Bibliography of U.S. Geological Survey water-resources reports for Utah, compiled by B. A. LaPray, U.S. Geological Survey, 1975.