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Elizabeth A. Brown
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8 **IN THE SUPREME COURT OF THE STATE OF NEVADA**

9 ADAM SULLIVAN, P.E., NEVADA
10 STATE ENGINEER, DIVISION OF
11 WATER RESOURCES,
12 DEPARTMENT OF
13 CONSERVATION AND NATURAL
14 RESOURCES; LAS VEGAS
15 VALLEY WATER DISTRICT;
16 SOUTHERN NEVADA WATER
17 AUTHORITY; and CENTER FOR
18 BIOLOGICAL DIVERSITY,

19 Appellants,

20 vs.

21 LINCOLN VALLEY WATER
22 DISTRICT; VIDLER WATER
23 COMPANY, INC.; COYOTE
SPRINGS INVESTMENT, LLC;
NEVADA COGENERATION
ASSOCIATES NOS 1 AND 2; APEX
HOLDING COMPANY, LLC; DRY
LAKE WATER LLC; GEORGIA-
PACIFIC GYPSUM, LLC;
REPUBLIC ENVIRONMENTAL
TECHNOLOGIES, INC.; MUDDY
VALLEY IRRIGATION COMPANY;
SIERRA PACIFIC POWER
COMPANY, d/b/a NV ENERGY;
NEVADA POWER COMPANY, d/b/a

Supreme Court No. 84739

1 NV ENERGY; THE CHURCH OF
2 JESUS CHRIST OF LATTER-DAY
3 SAINTS; MOAPA VALLEY WATER
4 DISTRICT; WESTERN ELITE
5 ENVIRONMENTAL, INC.; BEDROC
6 LIMITED, LLC; and CITY OF
7 NORTH LAS VEGAS,

8 Respondents.

9 CENTER FOR BIOLOGICAL
10 DIVERSITY; SOUTHERN NEVADA
11 WATER AUTHORITY; LAS VEGAS
12 VALLEY WATER DISTRICT;
13 MUDDY VALLEY IRRIGATION
14 COMPANY; COYOTE SPRINGS
15 INVESTMENT, LLC; LINCOLN
16 COUNTY WATER DISTRICT; APEX
17 HOLDING COMPANY, LLC; DRY
18 LAKE WATER, LLC; NEVADA
19 COGENERATION ASSOCIATES
20 NOS. 1 AND 2; GEORGIA-PACIFIC
21 GYPSUM, LLC; REPUBLIC
22 ENVIRONMENTAL
23 TECHNOLOGIES, INC; and VIDLER
WATER COMPANY, INC.;

Appellants,

vs.

NEVADA STATE ENGINEER; THE
CHURCH OF JESUS CHRIST OF
LATTER-DAY SAINTS; SIERRA
PACIFIC POWER COMPANY d/b/a
NV ENERGY AND NEVADA
POWER COMPANY d/b/a NV
ENERGY; MOAPA VALLEY
WATER DISTRICT; CITY OF
NORTH LAS VEGAS; WESTERN

Supreme Court No. 84742

1 ELITE ENVIRONMENTAL, INC.;
2 and BEDROC LIMITED, LLC,

3 Respondents.

4 SOUTHERN NEVADA WATER
5 AUTHORITY,

6 Appellant,

7 vs.

8 COYOTE SPRINGS INVESTMENT,
9 LLC; APEX HOLDING COMPANY,
10 LLC; NEVADA COGENERATION
11 ASSOCIATES NOS. 1 AND 2;
12 GEORGIA-PACIFIC GYPSUM, LLC;
13 DRY LAKE WATER, LLC;
14 REPUBLIC ENVIRONMENTAL
15 TECHNOLOGIES, INC.; LINCOLN
16 COUNTY WATER DISTRICT;
17 VIDLER WATER COMPANY, INC.;
18 MUDDY VALLEY IRRIGATION
19 COMPANY; THE CENTER FOR
20 BIOLOGICAL DIVERSITY; SIERRA
21 PACIFIC POWER COMPANY d/b/a
22 NV ENERGY AND NEVADA
23 POWER COMPANY d/b/a NV
ENERGY; MOAPA VALLEY
WATER DISTRICT; THE CHURCH
OF JESUS CHRIST OF LATTER-
DAY SAINTS; CITY OF NORTH
LAS VEGAS; WESTERN ELITE
ENVIRONMENTAL, INC.; BEDROC
LIMITED, LLC, and ADAM
SULLIVAN, P.E. NEVADA STATE
ENGINEER,

Respondents.

Supreme Court No. 84741

MUDDY VALLEY IRRIGATION
COMPANY,

Appellant,

vs.

ADAM SULLIVAN, P.E., NEVADA
STATE ENGINEER, DIVISION OF
WATER RESOURCES,
DEPARTMENT OF
CONSERVATION AND NATURAL
RESOURCES; LAS VEGAS
VALLEY WATER DISTRICT;
SOUTHERN NEVADA WATER
AUTHORITY; COYOTE SPRINGS
INVESTMENT, LLC; APEX
HOLDING COMPANY, LLC; DRY
LAKE WATER, LLC; CENTER FOR
BIOLOGICAL DIVERSITY;
NEVADA COGENERATION
ASSOCIATES NOS. 1 AND 2;
GEORGIA-PACIFIC GYPSUM, LLC;
REPUBLIC ENVIRONMENTAL
TECHNOLOGIES, INC.; LINCOLN
COUNTY WATER DISTRICT;
VIDLER WATER COMPANY, INC.;
SIERRA PACIFIC POWER
COMPANY, d/b/a NV ENERGY AND
NEVADA POWER COMPANY, d/b/a
NV ENERGY; MOAPA VALLEY
WATER DISTRICT; THE CHURCH
OF JESUS CHRIST OF LATTER-
DAY SAINTS; CITY OF NORTH
LAS VEGAS; WESTERN ELITE
ENVIRONMENTAL, INC.; AND
BEDROC LIMITED, LLC,

Respondents.

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Affirmation: The undersigned do hereby affirm that the preceding document and/or attachments do not contain the social security number of any person.

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¹ This technical report published by the Nevada Division of Water Resources and the U.S. Geological Survey was not designated by the State Engineer as part of the Record on Appeal, but was introduced in briefing by Appellant Coyote Springs Investment, LLC, and appears to have been implicitly relied upon by the District Court. See Order at 24-26.

EXHIBIT 13

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES

Carson City

WATER RESOURCES—INFORMATION SERIES
REPORT 6

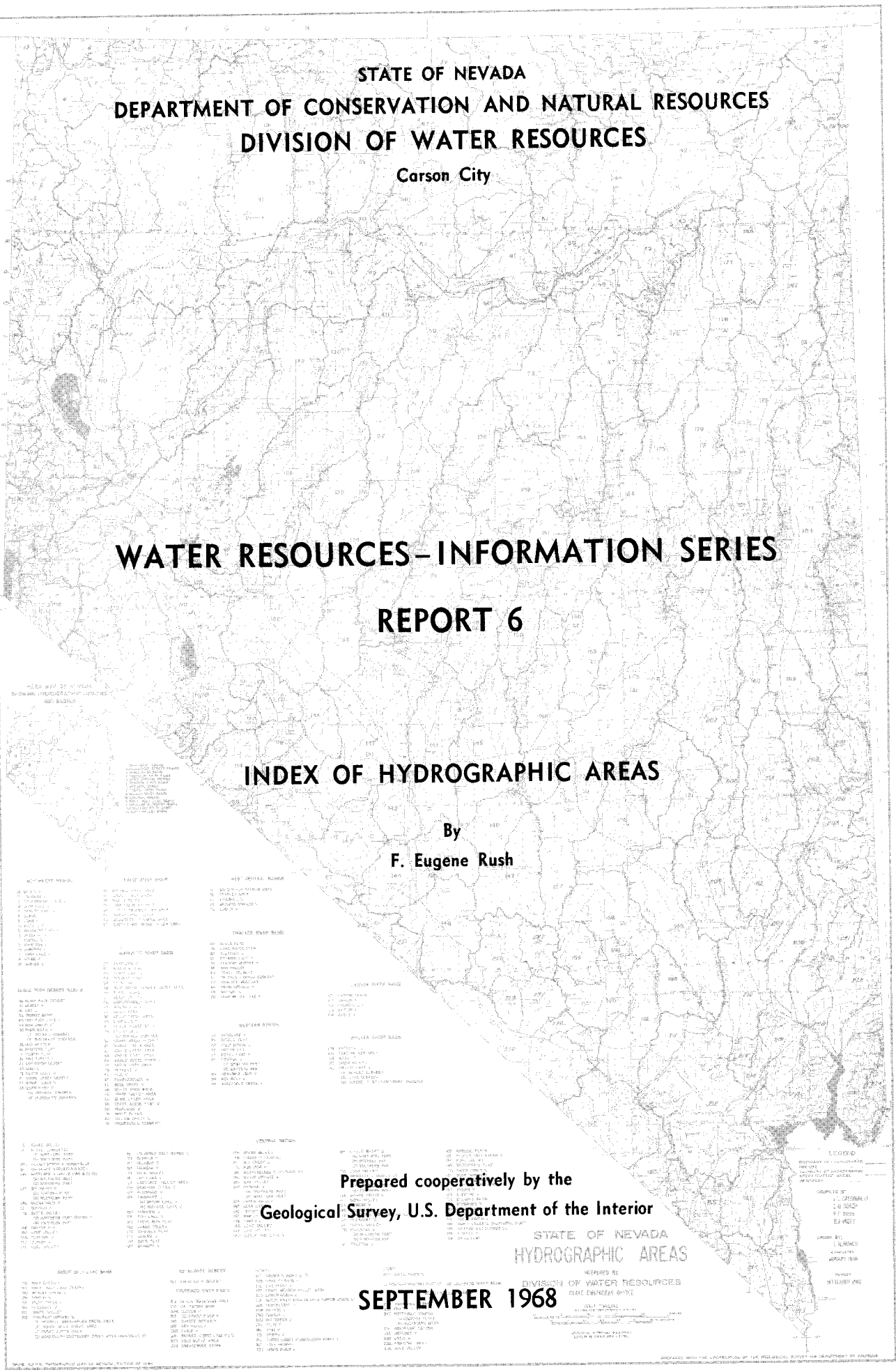
INDEX OF HYDROGRAPHIC AREAS

By
F. Eugene Rush

Prepared cooperatively by the
Geological Survey, U.S. Department of the Interior

STATE OF NEVADA
HYDROGRAPHIC AREAS

SEPTEMBER 1968



WATER RESOURCES - INFORMATION SERIES

REPORT 6

INDEX OF HYDROGRAPHIC AREAS IN NEVADA

by

F. Eugene Rush

Hydrologist

Prepared cooperatively by the
Geological Survey, U.S. Department of the Interior

September 1968

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INDEX OF HYDROGRAPHIC AREAS IN NEVADA

By F. Eugene Rush

SUMMARY

This report contains a map and three tables showing and describing the 14 hydrographic regions and basins and the 253 hydrographic areas of Nevada. The map was compiled by personnel of the U.S. Geological Survey and the State Engineer's office and was distributed by the State in January 1968. This report and the map have been prepared as a guide to all water-resources and other natural-resources and research agencies.

The tables present selected information on geographic features of each area and lists the hydrologic reports prepared by the U.S. Geological Survey that were published by the State and Federal Governments. Alphabetical and county lists of areas are also included.

INTRODUCTION

Purpose and Scope of the Report

Nevada is composed of more than 200 valleys bounded by mostly northtrending mountain ranges. Each valley is partly filled with alluvium, mostly derived by weathering and erosion from surrounding mountains. The alluvium is the principal storage reservoir for ground water. The valley floors are the principal ground-water and surface-water use areas. Thus, the valley commonly has become the basic unit of social, economic, and water-development activity in Nevada.

Miller and others (1953, p. 12) subdivided the State into what they called "cartographic areas." That report was a useful reference in preparing the detailed hydrographic map and tables of this report.

For the study, research, development, management, and administration of water resources, a need for a systematic identification of "valleys," or preferably "hydrographic areas," of Nevada was recognized by both the U.S. Geological Survey and the State Engineer's office. Because of the long-term cooperative program of water-resources evaluation between the Geological Survey and the State of Nevada, it was appropriate that personnel of the Survey and the State Engineer's office work together to compile a hydrographic areas map (Rush and others, 1968). A revised edition of the map is incorporated with this report, which includes geographic descriptions of the hydrographic regions and areas. The primary purpose for the report and map is to define and describe specifically the hydrographic regions, basins, and areas so that these descriptions and map can be available as an official guide to all water-resources and other natural-resources agencies. The hydrographic areas map (Rush and others, 1968) was compiled by F. E. Rush, Hydrologist, U.S. Geological Survey and J. L. Cardinalli, L. M. Roach, and B. J. Vasey, Engineers, Nevada State Engineer's Office.

Because this is the first known effort to identify completely and systematically the hydrographic regions and areas of Nevada, minor revision may be necessary after many engineers and hydrologists have had the opportunity to use and criticize the report and map. Revised editions are planned as and when the need develops.

For easy reference, the 14 regions and basins are listed and shown on the "Index map of Nevada," which is an inset on the large "Hydrographic areas" map (in pocket). In addition, the map lists all 253 hydrographic areas by regions and in alphabetical order by basins.

Acknowledgments

The compilation of this report required knowledge of a large number of persons familiar with the State of Nevada. The vast knowledge of George Hardman and Hugh Shamberger was utilized, as well as that of George Hennen and Tom Humphrey, all formerly with the Nevada Department of Conservation and Natural Resources. My colleagues, G. F. Worts, Jr. and Thomas Eakin, contributed much information. The single biggest source of information, however, was the topographic maps compiled by personnel of the Army Map Service and the Topographic Division, U.S. Geological Survey. Without these maps this report would not have been possible.

DEFINITION AND BOUNDARIES

The general term "hydrographic area" is used mostly in place of "valley," but it also applies to areas that are called flat, desert, basin, meadow, area, segment, plains, wash, canyon, and mesa. The names of the hydrographic areas, in most cases, are the names used by people who live in and near the areas. These names commonly are shown on U.S. Geological Survey and Army Map Service topographic maps. When more than one name was encountered for an area, the most commonly used name was selected. A few less commonly used names are shown parenthetically on the map and in the tables.

Most of the boundary lines of hydrographic areas are drawn along topographic ridges, as interpreted from the most detailed topographic maps available in 1967. In some localities, the lines are drawn across nearly flat alluvial terrain. Low divides were located with the aid of aerial photographs (scale about 1:60,000). In other areas, hydrographic-area boundaries were drawn on the basis of boundary decisions in published hydrologic reports or on the basis of the collective judgment of the authors of the map and others identified in the acknowledgments section of this report. Boundaries not drawn on topographic divides are shown as dotted lines.

Methods Used to Measure Areas

Each of the 253 hydrographic-area units was planimetered on the 1:500,000 scale (1 inch = 8 miles) edition of the hydrographic areas map. The sum of the computed areas was within 0.27 percent of the area of the State, which is 110,540 square miles (U.S. Dept. Commerce, 1965, p. 168). The difference was prorated and a correction factor applied so that the sum of the 253 areas would equal the total area of the State. The extent of each hydrographic region and basin was computed as the sum of the hydrographic areas of that region or basin. (See "Index map of Nevada" inset on large map showing "Hydrographic areas," in pocket.) The areal extents of the hydrographic areas are listed in table 1. For the computations, all digits are shown so that their arithmetic sum is equal to the total area of Nevada. However, because the areas were not surveyed, they may not be accurate to more than two to three figures and therefore may not agree precisely with areas listed in other reports.

HYDROGRAPHIC AREAS

The 253 hydrographic areas in Nevada range in size from about 9 square miles for Granite Basin and Newcomb Lake Valley to 2,182 square miles for the Carson Desert. The Carson Desert and 12 other hydrographic areas are larger than the small State of Rhode Island. The valley-floor altitudes range from 800 feet along the Colorado River (area 213) to 7,200 feet above sea level in little Stevens Basin (area 152).

For descriptive purposes, the sizes of the hydrographic areas may be grouped into three general categories: small (1-200 square miles), medium (201-1,000 square miles), and large (1,001-2,200 square miles). The average size of the areas is nearly 440 square miles, and the median size is 334 square miles.

The approximate altitudes of the valley floors shown in table 1 were taken from topographic maps. The altitudes are a rough measure or average of the altitude range of the valley lowlands. For descriptive purposes, these altitudes may be grouped into three broad categories: low (800-3,000 feet), medium (3,001-5,000 feet) and high (5,001-7,200 feet). In general, the southern part of Nevada in and near the Colorado River and Death Valley Basins contains most of the low-altitude hydrographic areas, the west-central part of the State generally contains most of the medium-altitude areas, and the east-central and northwestern parts of the State contain most of the high-altitude valleys. The following tabulation shows the size distribution of the 253 hydrographic areas:

<u>Area range</u> <u>(square miles)</u>	<u>Number of areas</u>	<u>Area range</u> <u>(square miles)</u>	<u>Number of areas</u>
1-100	53	801-900	5
101-200	29	901-1,000	9
201-300	28	1,001-1,200	7
301-400	31	1,201-1,400	5
401-500	24	1,401-1,600	1
501-600	28	1,601-1,800	3
601-700	13	1,801-2,000	1
701-800	13	2,001-2,200	3
		Total	253

Three tables are presented in this report. Table 1 is a compilation of the principal geographic features of the hydrographic areas. Also included in table 1 are report-references to hydrologic studies made in these areas by the Water Resources Division of the U.S. Geological Survey working in cooperation with the Nevada Department of Conservation and Natural Resources--the principal water-resources evaluating agencies conducting studies in Nevada.

The Desert Research Institute of the University of Nevada at Reno is a newly established research organization in the field of water resources, and additional reports on a few areas are available from that division of the university.

Most reports include consideration of the hydrology of the entire hydrographic area; however, many are limited in area to small parts of hydrographic areas or limited in scope to the consideration of specific hydrologic features of certain areas. In 1968, only 34 areas do not have some published hydrologic information. In table 1 the areas are listed in numerical order; on the map the area names (and numbers) are listed alphabetically.

Table 2 is an alphabetical listing of hydrographic areas indexed to region or basin number and hydrographic-area number.

In table 3 the areas are listed by counties and regions and basins.

HYDROGRAPHIC REGIONS AND BASINS

The hydrographic areas of Nevada were grouped into 14 hydrologic regions and basins. Large-scale unifying hydrographic features which were the general basis for the regions and basins fall into three broad categories, (1) drainage basins of large regional streams, (2) drainage basins that have no large regional stream, and (3) groups of mostly topographically closed valleys.

The drainage basins of large regional streams are commonly linear in form, most valleys forming segments like links of a chain. The basins included in this group are the Snake, Humboldt, Truckee, Carson, Walker, and Colorado Rivers.

The drainage basins that have no major regional streams are the Black Rock Desert Region and the Great Salt Lake, Escalante Desert, and the Death Valley Basins. In the Nevada parts of these basins and regions, the drainage may enter the sink area from several directions, but carry little streamflow.

The third type of hydrographic regions and basins, consisting mostly of topographically closed valleys, is isolated from other similar groups by region and basin types (1) and (2) listed above. This type includes the Northwest, West Central, Western, and Central Regions.

Brief descriptions of the 14 hydrographic regions and basins of Nevada are presented in the following sections. The regions and basins are shown on the index map of Nevada (on large map, in pocket).

Northwest Region (1)

The Northwest Region includes parts of Washoe and Humboldt Counties. The region includes 16 hydrographic areas and covers 3,073 square miles. It is characterized by small, high-altitude valleys and includes a mixture of isolated (topographically closed) and hydrologically connected valleys. The region is bounded on the west by California, on the north by Oregon, and on the south-east by the Black Rock Desert Region.

Black Rock Desert Region (2)

The Black Rock Desert Region includes parts of Washoe, Humboldt, and Pershing Counties. It includes 17 valleys, 2 of which are divided into two subareas each. The region covers 8,632 square miles and is characterized by both very large and small valleys, most of which are presently or were tributary to the Black Rock and Smoke Creek Deserts (areas numbered 28 and 21 on the map).

Snake River Basin (3)

The Snake River Basin in northern Nevada includes parts of Elko and Humboldt Counties. The entire basin is drained by the Snake River System in Idaho, which is tributary to the Columbia River. The basin in Nevada includes eight hydrographic areas, covers 5,230 square miles, and is characterized by high tablelands and highlands. Except for Independence Valley (area 36) the basin also is characterized by deep canyons.

Humboldt River Basin (4)

The Humboldt River Basin is in northern Nevada and includes parts of eight counties. The Humboldt River is the largest stream wholly within Nevada. The basin includes 34 hydrographic areas, covers 16,843 square miles, and is characterized by moderate- to large-sized, medium- to high- altitude valleys that are all tributary to the Humboldt River. The river flows westward, generally terminating in Lovelock Valley and White Plains (areas 73 and 74). No topographic divide exists between White Plains and the Carson Desert (area number 101), a part of the Carson River Basin. Because water seldom flows between the two areas and therefore between the two river basins, an arbitrary boundary was established.

West-Central Region (5)

The West-Central Region includes parts of Pershing, Lyon, and Churchill Counties. This small region covers 1,656 square miles and is composed of only five hydrographic areas. It is characterized by moderate and small sized, mostly medium-altitude valleys and is similar to the Central Region where topographically closed valleys predominate.

Truckee River Basin (6)

The Truckee River Basin in western Nevada includes parts of Washoe, Pershing, Douglas, Ormsby, and Storey Counties. It includes 12 valleys and river segments of the Truckee River, which ultimately discharges into Pyramid Lake (in area 81) and at one time also discharged into Winnemucca Lake (in area 80). The basin includes 2,300 square miles and is characterized by small, medium- to high-altitude valleys. The Truckee Canal now carries much of the Truckee River flow of the Tracy Segment (area 83) across the Fernley Area (area 76) of the West-Central Region to Churchill Valley (area 102) of the Carson River Basin, where it is stored in Lahontan Reservoir.

Western Region (7)

The Western Region is wholly within Washoe County; it consists of nine valleys, one of which, Lemmon Valley (area 92), is divided into two subareas by a low alluvial divide. The region includes 577 square miles and is characterized by small, medium- to high-altitude, mostly isolated valleys, and is similar to the Central Region where isolated valleys predominate.

Carson River Basin (8)

The Carson River Basin in western Nevada includes parts of six counties and consists of five valleys that ultimately discharge to the Carson Desert (Sink). The basin includes 3,519 square miles and is characterized by moderate- to large-sized, medium- to high-altitude valleys. As described above, the Carson River Basin receives flow diverted from the Truckee River Basin and intermittent natural flow from the Humboldt River Basin.

Walker River Basin (9)

The Walker River Basin in western Nevada includes parts of Mineral, Lyon, and Douglas Counties. The basin is composed of seven hydrographic areas and covers 3,048 square miles. It is characterized by small- to moderate-sized, medium- to high-altitude valleys. All areas are drained by the Walker River system which ultimately discharges into Walker Lake (in area 110B). Mason Valley (area 108) infrequently drains to Churchill Valley (area 102) of the Carson River Basin through Adrian Valley when the Walker River is at high flood stage.

Central Region (10)

The Central Region includes parts of 12 counties and has an area of about 46,783 square miles. It is by far the largest hydrographic region of Nevada, covering 42 percent of the State. The region includes 89 valleys that are generally large in size, medium to high in altitude, and are mostly isolated, though some have interflow of surface water.

Great Salt Lake Basin (11)

The Great Salt Lake Basin of eastern Nevada includes the easternmost parts of Elko, White Pine, and Lincoln Counties. It consists of 11 hydrographic areas and covers 3,807 square miles. The basin in Nevada is characterized by high-altitude areas that drain eastward to the Great Salt Lake Desert in Utah.

Escalante Desert Basin (12)

The Escalante Desert Basin, also called Escalante Valley, covers a large area in Utah but only a very small part of the basin is in Lincoln County, Nevada. Its area in Nevada is only 106 square miles. The Nevada part has a high altitude and surface water flows to Utah.

Colorado River Basin (13)

The Colorado River Basin of Nevada includes parts of Clark, Lincoln, Nye, and White Pine Counties and is divided into 27 hydrographic areas covering 12,376 square miles. The basin is characterized by small- to moderate-sized, medium- to low-altitude valleys. All but three of the hydrographic areas are tributary to the Colorado River system which flows to the Pacific Ocean. Two of the noncontributing areas, Garnet and Hidden Valleys (areas 216 and 217), are topographically closed but are completely surrounded by areas that drain to the Colorado River. The third noncontributing area is the southern part of Three Lakes Valley (area 211). Lee Canyon discharges flood water on an alluvial fan; the flow may go either eastward to the Colorado River drainage or northward to the dry lake in the southern part of Three Lakes Valley, depending upon which distributary channels the flow occupies.

Death Valley Basin (14)

The part of the Death Valley Basin in southern Nevada includes parts of Nye and Esmeralda Counties. It includes nine hydrographic areas and covers 2,593 square miles. The basin in Nevada is characterized by small- to moderate-sized, low-altitude valleys that are all tributary to Death Valley in California.

REFERENCES CITED

- Miller, M. R., and others, 1953, Irrigation waters of Nevada:
Univ. Nevada Agr. Expt. Sta. Bull. 187, 63 p.
- Rush, F. E., and others, 1968 (revised September 1968),
Hydrographic areas of Nevada: Nevada Dept. Conserv. and
Nat. Resources, Division of Water Resources Map.
- U.S. Department of Commerce, 1965, Statistical abstracts of the
United States-1965: Washington, D. C., U.S. Government
Printing Office, 1,047 p.
- U.S. Geological Survey, 1968, Water resources investigations in
Nevada: U.S. Geol. Survey Bibliog. Brochure.

Table 1.--Geographical features and numerical listing of the hydrographic areas

Counties: CH, Churchill; C, Clark; DS, Douglas; EL, Elko, ES, Esmeralda; EU, Eureka; HU, Humboldt; LA, Lander; LN, Lincoln; LY, Lyon; MN, Mineral; NY, Nye; OR, Ormsby; PE, Pershing; ST, Storey; W, Washoe; WP, White Pine (same system as that used on license plates for Nevada vehicles.)

Townships and ranges are all with reference to the Mount Diablo base line and meridian

Published hydrologic reports prepared by USGS: R, Nevada Water Resources - Reconnaissance Series Report; B, Nevada Water Resources Bulletin, both published by the Nevada Department of Conservation and Natural Resources, Nye Building, Carson City, Nevada 89701, W, Water-Supply Paper, U.S. Geological Survey; P, Professional Paper, U.S. Geological Survey, 222 E. Washington Street, Carson City, Nevada 89701 (see U.S. Geol. Survey, 1963)

Area number on map	Hydrographic area shown on map	Principal counties	Location	Approximate			Stream inflow and outflow	Principal geographic names in area	Published hydrologic reports by USGS
				Townships	area (sq mi)	altitude of valley floor (feet)			
NORTHWEST REGION (1)									
1	Pueblo Valley	HU	44-47 N.	26-32	a 113	4,200	None	Denio	R-22
2	Continental Lake Valley	HU	43-47 N.	27-30	a 214	4,200	Both		R-22
3	Gridley Lake Valley	HU	42-45 N.	26-28	195	4,500	Outflow		R-22
4	Virgin Valley	HU	42-47 N.	23-27	a 494	4,300	do.	Sheldon Antelope Range	R-22
5	Sage Hen Valley	HU	46-47 N.	24-25	a 22	5,600	do.	do.	R-15
6	Guano Valley	W	45-47 N.	21-24	a 147	5,400	do.	Sheldon Nat. Antelope Refuge	R-15
7	Swan Lake Valley	W	42-46 N.	21-24	226	5,700	None	do.	R-15
8	Massacre Lake Valley	W	42-45 N.	20-22	176	5,700	do.		R-15

Table 1.--Continued

Area number on map	Hydrographic area shown on map	Principal area		Location	Ranges	E.	Approximate area (sq. mi.)	Approximate altitude of valley floor (feet)	Stream inflow and outflow	Principal geographic names in area	Published hydrologic reports by USGS
		counties	Townships								
9	Long Valley	W	39-47 N.	19-22			433	5,600	None	Vya	R-15
10	Macy Flat	W	46-47 N.	20-21			a 27	5,300	Inflow		R-15
11	Coleman Valley	W	46-47 N.	19-20			a 51	4,300	Outflow		R-15
12	Mosquito Valley	W	45-46 N.	19-20			32	5,700	None		R-15
13	Warner Valley	W	45-47 N.	18-19			a 32	5,300	Outflow		R-15
14	Surprise Valley	W	37-46 N.	18-19			a 214	4,500	do.		R-17
15	Boulder Valley	W	39-41 N.	18-20			88	5,700	None		R-15
16	Duck Lake Valley	W	34-39 N.	18-21			a 533	4,700	Inflow		R-17
BLACK ROCK DESERT REGION (2)											
17	Pilgrim Flat	W	34-35 N.	18			a 12	6,400	Inflow		R-44
18	Painters Flat	W	33-35 N.	18			a 31	5,700	Outflow		R-44
19	Dry Valley	W	28-29 N.	18-19			39	4,200	None		R-44
20	Sano Valley	W	28 N.	20-21			12	4,000	do.		R-44
21	Smoke Creek Desert	W	27-36 N.	18-23			a 930	3,900	Inflow	Pyramid Lake Indian Res.	R-44
22	San Emidio Desert	W	27-32 N.	22-24			305	4,000	Both	Gerlach, Empire	R-44
23	Granite Basin	W	33 N.	23			9	5,000	Outflow		R-20
24	Mualapai Flat	W	33-37 N.	22-24			315	4,100	None		R-11
25	High Rock Lake Valley	W	37-43 N.	20-24			665	5,000	do.		R-20
26	Mud Meadow	EU	36-42 N.	24-26			495	4,000	Outflow		R-20
27	Summit Lake Valley	EU	41-42 N.	25-27			60	5,900	None	Summit Lake Indian Res.	R-20

Table 1.--Continued

Area number on map	hydrographic area shown on map	Principal counties	Location Townships	Ranges E.	Approximate area (sq mi)	Approximate altitude of valley floor (feet)	Stream inflow and outflow	Principal geographic names in area	Published hydrologic reports by USGS
28	Black Rock Desert	HU, PE	31-43 N.	23-32	2,179	4,000	Both	Sulphur	R-20
29	Pine Forest Valley	HU	40-46 N.	29-33	528	4,000	do.		R-4
30	Kings River Valley	HU	41-47 N.	32-35	a 413	4,200	do.	Fort McDermitt Indian Res.	B-16, 31, W-1619-L
A	Rio King Subarea	HU	43-47 N.	32-35	a 300	4,300	do.		B-16, 31, W-1619-L
B	Sou Mouse Subarea	HU	41-43 N.	33-35	113	4,200	do.		B-16, 31, W-1619-L
31	Desert Valley	HU	34-42 N.	31-35	1,052	4,200	do.	Jungo	R-7
32	Silver State Valley	HU	36-41 N.	35-37	313	4,200	Outflow		B-14, 34
33	Quinn River Valley	HU	40-47 N.	35-41	a 1,224	4,300	Both	Fort McDermitt Indian Res.	B-14, 34
A	Orovada Subarea	HU	40-46 N.	35-39	632	4,200	do.	Orovada	B-14, 34
B	McDermitt Subarea	HU	42-47 N.	34-41	a 592	4,500	do.	McDermitt	B-14, 34
SNAKE RIVER BASIN (3)									
34	Little Owyhee River Area	HU, EL	43-47 N.	41-47	a 716	5,100	Outflow		R-46
35	South Fork Owyhee River Area	EL	40-47 N.	46-53	a 1,310	5,000	Both	Duck Valley Indian Res.	R-46
36	Independence Valley	EL	38-42 N.	50-53	345	5,700	Outflow	Tuscarora	R-8, 46
37	Owyhee River Area	EL	42-47 N.	51-56	a 533	5,300	do.	Duck Valley Indian Res.	R-46

Table 1.--Continued

Area number on map	hydrographic area shown on map	Principal counties	Location	Townships	Ranges E.	Approximate area (sq mi)	Approximate altitude of valley floor (feet)	Stream inflow and outflow	Principal geographic names in area	Published hydrologic reports by USGS
38	Bruneau River Area	EL	41-47 N.		53-58	a 514	5,000	Outflow		R-48
39	Jarbridge River Area	EL	45-47 N.		57-61	a 273	5,000	do.		R-48
40	Salmon Falls Creek Area	EL	41-47 N.		59-67	a 1,218	5,200	do.	Jackpot, Contact	R-48
41	Goose Creek Area	EL	44-47 N.		66-70	a 316	5,200	do.		R-48
<u>MUMBOLET RIVER BASIN (4)</u>										
42	Marys River Area	EL	36-45 N.		58-64	1,073	5,600	do.	Wells	B-32
43	Starr Valley Area	EL	33-38 N.		58-62	332	6,000	Both		B-32
44	North Fork Area	EL	35-43 N.		53-58	1,116	5,400	do.		B-32
45	Lamoille Valley	EL	31-35 N.		56-59	257	5,400	do.	Lamoille	B-32
46	South Fork Area	EL	30-32 N.		56-58	99	5,600	Outflow	Lee	R-35, B-32
47	Muntington Valley	EL, WP	24-32 N.		53-58	787	5,500	do.	Jiggs	R-35, B-32, W-1475-L
48	Dixie Creek--Tenmile Creek Area	EL	29-34 N.		53-57	392	5,400	Both	South Fork Indian Res.	R-35, B-32
49	Elko Segment	EL	32-37 N.		52-56	314	5,100	do.	Elko	B-12, 32
50	Susie Creek Area	EL	33-37 N.		52-54	223	5,000	do.		B-32
51	Maggie Creek Area	EL, EU	32-38 N.		51-53	395	5,300	Outflow		B-32
52	Marys Creek Area	EU, EL	32-33 N.		51-52	61	5,200	Both	Carlin	B-32
53	Pine Valley	EU, EL	23-32 N.		48-54	1,002	5,400	Outflow		R-2, B-32
54	Crescent Valley	EU, LA	25-32 N.		45-51	752	5,000	Both	Beowawe	B-15, 32, W-1581
55	Carico Lake Valley	LA	22-28 N.		43-46	376	5,100	Outflow		R-37, B-32
56	Upper Reese River Valley	LA, WY	11-24 N.		39-45	1,138	5,800	do.	Austin, Yomba Ind. Res.	R-31, B-32 W-425-D

Table 1.--Continued

Area number on map	Hydrographic area shown on map	Principal counties	Location Townships	Ranges E.	Approximate area (sq mi)	Approximate altitude of valley floor (feet)	Stream inflow and outflow	Principal geographic names in area	Published hydrologic reports by USGS
57	Antelope Valley	LA	19-27 N.	40-42	452	5,000	Outflow		R-19, B-32 W-425-D
58	Middle Reese River Valley	LA	24-28 N.	41-44	319	4,900	Both		R-19, B-32 W-425-D
59	Lower Reese River Valley	LA	27-32 N.	42-48	508	4,700	do.	Battle Mountain	B-25, 32 W-425-D
60	Whirlwind Valley	EU, LA	30-32 N.	47-48	84	4,600	do.		B-32
61	Boulder Flat	EU, LA	32-37 N.	45-50	544	4,750	do.		B-32, W-425-D
62	Rock Creek Valley	LA, EL	33-38 N.	45-50	444	4,900	do.		B-32
63	Willow Creek Valley	EL	37-41 N.	45-50	405	5,100	Outflow		B-32
64	Clovers Area	HU, LA	32-39 N.	42-46	720	4,500	Both		B-32, W-425-D
65	Pumpnickel Valley	HU, PE	31-36 N.	39-43	299	4,500	do.		B-32
66	Kelly Creek Area	HU	36-40 N.	40-44	301	4,400	do.		B-32
67	Little Humboldt Valley	HU, EL	30-46 N.	39-47	975	4,600	Outflow		B-32
68	Carascrabble Area	HU	42-45 N.	39-42	167	5,200	do.		B-32
69	Paradise Valley	HU	36-41 N.	37-41	600	4,500	Both	Paradise Valley	B-32
70	Winnemucca Segment	HU	34-38 N.	34-41	435	4,400	do.	Winnemucca Golconda	B-19, 20, 22, 24, 25, 27, 32, W-1669-M W-1754, 1795, 1816, P-424-C P-450-B, R-29, B-32
71	Grass Valley	PE, HU	30-36 N.	36-40	520	4,400	Outflow		R-5, B-32
72	Imlay Area	PE	30-34 N.	30-37	771	4,200	Both	Rye Patch Reservoir	
73	Lovelock Valley	PE	24-30 N.	29-34	b 635	4,900	do.	Lovelock	R-32, B-2, 32
74	Oreana Subarea White Plains	PE Ca	28-30 N. 22-25 N.	32-34 27-29	98 164	4,300 3,900	do. do.		R-32, B-32

Table 1.--Continued

Area number on map	Hydrographic area shown on map	Principal counties	Location		Approximate altitude of valley floor (feet)	Stream inflow and outflow	Principal Published geographic hydrologic names in area	Principal Published hydrologic reports by USGS
			Townships	Ranges E.				
WEST CENTRAL REGION (5)								
75	Bradys Hot Springs Area	Ch, LY	21-24 N.	27-29	178	Both		
76	Fernley Area	LY	19-21 N.	23-26	120	Inflow	Fernley	B-17, W-1619-AA
77	Fireball Valley	Ch	22-24 N.	25-26	53	Outflow		
78	Granite Springs Valley	PE	24-31 N.	24-31	967	None		
79	Kumiva Valley	PE	27-32 N.	24-27	333	do.		
TRUCKEE RIVER BASIN (6)								
80	Winnemucca Lake Valley	N, PE	24-30 N.	23-25	371	Inflow	Pyramid Lake Indian Res.	B-15, W-1539-C
81	Pyramid Lake Valley	N	21-29 N.	20-25	672	Both	Nixon, Sutcliffe	
82	Dodge Flat	N	21-22 N.	23-24	92	do.	Pyramid Lake Indian Res.	
83	Tracy Segment	ST	17-21 N.	20-24	285	do.	Wadsworth	R-43
84	Warm Springs Valley	W	21-24 N.	19-22	247	Outflow		
85	Spanish Springs Valley	W	20-21 N.	20-21	76	do.		R-43
86	Sun Valley	W	20 N.	19-20	10	do.		R-43
87	Truckee Meadows	W	17-20 N.	16-21	203	Both	Reno, Sparks	B-28, W-1779-S, P-450-C

Table 1.--Continued

Area number on map	Hydrographic area shown on map	Principal counties	Location Townships	Ranges E.	Approximate area (sq mi)	Approximate altitude of valley floor (feet)	Stream inflow and outflow	Principal geographic names in area	Published hydrologic reports by USGS
88	Pleasant Valley	W	17 E.	12-20	39	4,500	Both		
89	Washoe Valley	W	15-17 N.	13-20	32	5,100	Outflow	Washoe City, R-41 Washoe Lake	
90	Lake Tahoe Basin	W, SS, OR	13-17 N.	13-19	a 139	6,200	do.	Incline Village, Glenbrook	
91	Truckee Canyon Segment	W	17-20 N.	13	a 34	4,900	Both	Verdi	
WESTERN REGION (7)									
92	Lennon Valley	W	20-22 N.	13-20	93	5,000	None		R-43
A	Western part	W	20-22 N.	13-19	53	5,000	do.	Stead Air Force Base	R-43
B	Eastern part	W	20-21 N.	13-20	40	5,000	do.	Black Springs	R-43
93	Antelope Valley	W	22 N.	19-20	13	5,200	do.		R-43
94	Bedell Flat	W	21-24 N.	13-20	53	5,000	Outflow		R-43
95	Dry Valley	W	24-25 N.	13-20	a 80	4,600	do.		R-43
96	Newcomb Lake Valley	W	25 N.	13-19	9	5,200	None		R-43
97	Honey Lake Valley	W	25-26 N.	13-20	a 193	4,000	Outflow	Flanigan	R-43
98	Skedaddle Creek Valley	W	23-30 N.	13	a 43	4,300	do.		R-44
99	Red Rock Valley	W	22-24 N.	13-19	a 50	4,900	Both		R-43
100	Cold Spring Valley	W	20-22 N.	13	30	5,100	None		R-43
CARSON RIVER BASIN (3)									
101	Carson Desert	CA, NE	15-20 N.	23-35	2,152	3,900	Inflow	Fallon	
102	Churchill Valley	LY, CA	14-19 N.	22-27	400	4,200	Both	Lahontan Reservoir	
103	Dayton Valley	LY, ST	14-18 N.	20-24	369	4,400	do.	Virginia City, Dayton, Gold Hill	

Table 1.--Continued

Area number on map	Hydrographic area shown on map	Principal counties	Location	Approximate area (sq mi)	Approximate altitude of valley floor (feet)	Stream inflow and outflow	Principal geographic names in area	Published hydrologic reports by USGS
104	Eagle Valley	OK	14-16 N. 15-20	69	4,700	Both	Carson City New Empire Stewart	K-39
105	Carson Valley	DS	10-14 N. 19-22	a 419	4,800	do.	Gardnerville Minden	
<u>WALKER RIVER BASIN (9)</u>								
106	Antelope Valley	DS	5-11 N. 21-23	a 115	5,000	do.	Topaz Lake	W-1228
107	Smith Valley	LY, DS	7-14 N. 22-26	a 479	4,700	do.	Smith, Wellington	
108	Mason Valley	LY, MN	9-16 N. 24-26	516	4,500	do.	Yerington	
109	East Walker Area	LY, MN	5-11 N. 24-29	a 536	6,000	do.		
110	Walker Lake Valley	MN, LY	3-16 N. 26-33	1,350	4,300	Inflow		R-40
A	Schurz Subarea	MN, LY	11-16 N. 26-31	502	4,200	Both	Schurz, Walker River	R-40
B	Lake Subarea	MN	5-11 N. 23-32	307	4,000	do.	Indian Res.	
C	Whiskey Flat-Hawthorne Subarea	MN	3-9 N. 29-33	541	4,800	Outflow	Walker Lake Hawthorne, Babbitt	R-40
<u>CENTRAL REGION (10)</u>								
111	Alkali Valley	MN	4-5 N. 23-30	a 33	6,900	Outflow		
A	Northern part	MN	5 N. 29	18	7,050	None		
B	Southern part	MN	4-5 N. 26-30	a 65	6,850	Outflow		
112	Mono Valley	MN	3-4 N. 29-30	a 27	7,000	do.		
113	Huntton Valley	MN	2-4 N. 30-32	a 97	5,300	Inflow		
114	Teels Marsh Valley	MN	1-5 N. 31-34	323	5,000	None		
115	Adobe Valley	MN	1-2 N. 30-31	a 15	5,400	Outflow		
116	Queen Valley	MN	1 S.-1 N. 31-33	a 65	6,200	do.		
117	Fish Lake Valley	ES	6 S.-1 N. 33-40	a 706	4,300	Both	Iyer	B-11, W-224
118	Columbus Salt Marsh Valley	ES, MN	1-5 N. 33-36	370	4,600	Inflow		

Table 1.--Continued

Area number on map	Hydrographic area shown on map	Principal counties	Location Townships	Ranges	E.	Approximate area (sq mi)	Approximate altitude of valley floor (feet)	Stream inflow and outflow	Principal geographic names in area	Published hydrologic reports by USGS
119	Rhodes Salt Marsh Valley	IN	3-5 N.	34-36		199	4,600	None		
120	Garfield Flat	IN	5-7 N.	32-34		92	5,700	do.		
121	Soda Spring Valley	IN	6-9 N.	32-36		376	4,600	do.		
A	Eastern part	IN	6-9 N.	34-36		246	4,600	do.	Mina, Luning	
	Western part	IN	7-9 N.	32-34		130	4,500	do.		
122	Gabbs Valley	IN, NY	7-15 N.	31-37		1,277	4,300	do.	Gabbs	R-9
123	Rawhide Flats	CA, IN	14-16 E.	26-32		227	4,000	do.	Walker River	R-40
									Indian Res.	
124	Fairview Valley	CA	14-13 N.	32-35		265	4,200	do.		R-23
125	Stingaree Valley	CA	16-17 E.	34-35		43	4,400	Both		R-23
126	Cowkick Valley	CA	15-19 N.	34-36		110	4,700	do.		R-23
127	Eastgate Valley	CA	15-19 N.	36-38		216	4,800	Outflow	Eastgate	R-23
	Area									
128	Dixie Valley	CA, PE	16-27 N.	33-40		1,303	3,600	Inflow	Dixie Valley	R-23
129	Buena Vista Valley	PE	24-31 N.	34-37		742	4,100	None	Unionville	B-13
130	Pleasant Valley	PE	26-30 N.	37-40		235	4,400	Outflow		R-23
131	Buffalo Valley	LA, PE	27-33 N.	40-43		504	4,700	None		B-32, W-425-D
132	Jersey Valley	PE	25-26 E.	39-41		142	4,200	Outflow		R-23
133	Edwards Creek Valley	CA	16-22 N.	36-40		416	5,200	None		R-26
134	Smith Creek Valley	LA, NY	13-20 N.	37-41		582	6,100	do.		R-28
135	Ione Valley	NY	8-14 N.	37-40		460	6,000	Outflow	Ione	R-20
136	Monte Cristo Valley	ES, IN	4-3 N.	36-38		234	5,400	None		
137	Big Smoky A Tonopah Flat	WY, ES, LA WY, ES	1 S.-26 N. 1 S.-10 N.	37-46 37-44		2,926 1,603	5,100 4,600	Inflow do.		B-3, W-423, 375 B-3, W423, 375
	B Northern Part	NY, LA	9-20 N.	41-46		1,323	5,500	None	Tonopah, Nannettan Round Mountain	W-375, 423 R-37
138	Grass Valley	LA, EU	20-26 N.	45-49		595	5,700	do.	Cortez	

Table 1.--Continued

Area number on map	hydrographic area shown on map	Principal counties	Location Townships	Ranges E.	Approximate area (sq mi)	Approximate altitude of valley floor (feet)	Stream inflow and outflow	Principal geographic names in area	Published hydrologic reports by USGS
139	Koben Valley	EU, LA	17-23½ N.	46-52	363	6,200	Both		R-30
140	Monitor Valley	NY, LA	8-18 N.	45-49	1,038	6,700	Outflow		R-30
A	Northern part	NY, LA	12-18 N.	45-49	529	6,500	do.	Potts	R-30
	Southern part	NY	8-13 N.	45-48	509	7,000	None		R-30
141	Ralston Valley	NY	2-9 N.	42-47	971	5,600	Inflow	Belmont	R-12, 45
142	Alkali Spring Valley	ES	3 S.-2 N.	40-43	313	5,000	None	Goldfield	R-45, W-423
143	Clayton Valley	ES	5 S.-1 N.	37-41	555	4,400	do.	Silver Peak	R-45, W-423, W-224
144	Lida Valley	ES, NY	3-7 S.	40-44	535	5,000	Outflow	Lida, Gold Point	R-45, W-224
145	Stonewall Flat	NY	1-5 S.	43-47	381	4,800	None		R-45, W-224
146	Sarcobatus Flat	NY	5-12 S.	42-47	812	4,100	Inflow	Death Valley National Monument	R-10, W-224
147	Gold Flat	NY	1-8 S.	46-51	684	5,200	None		W-224
148	Cactus Flat	NY	4 S.-1 N.	46-50	403	5,400	do.		
149	Stone Cabin Valley	NY	2 S.-3 N.	49-50	985	5,700	Outflow		K-12, 45
150	Little Fish Lake Valley	NY	8-14 N.	48-51	434	6,500	None		K-38
151	Antelope Valley	EU, NY	14-19 N.	49-52	444	6,200	Outflow		R-30
152	Stevens Basin	EU	18-19 N.	52-53	17	7,200	None		R-30
153	Diamond Valley	EU	18-27 N.	51-55	752	5,900	Inflow	Eureka	R-6, B-35
154	Newark Valley	WP	16-24 N.	54-58	601	5,900	do.		R-1, W-1475-L
155	Little Smoky Valley	NY	6-18 N.	51-55	1,158	6,200	Outflow		R-38, W-1475-L
A	Northern part	NY, EU, WP	12-18 N.	51-55	591	6,100	do.		R-38, W-1475-L
	Central part	NY	11-12 N.	52	57	6,500	None		R-38, W-1475-L
C	Southern part	NY	6-14 N.	52-55	510	5,900	do.		R-38, W-1475-L
	Hot Creek Valley	NY	1-12 N.	49-52	1,036	5,300	Outflow	Tybo, Warm Springs	R-38, W-1475-L R-38, B-12
157	Kavich Valley	NY	3-8 S.	51-52	350	5,500	None		B-12, W-224

Table 1.--Continued

Area number on map	Hydrographic area shown on map	Principal counties	Location Townships	Ranges	E.	Approximate area (sq mi)	Approximate altitude of valley floor (feet)	Stream inflow and outflow	Principal geographic names in area	Published hydrologic reports by USGS
158	Emigrant Valley	LM	5-11 S.	52-57		767	4,600	None		W-224
A	Groom Lake Valley	LM, NY	5-10 S.	52-57		663	4,600	do.		
B	Papoose Lake Valley	LM	9-11 S.	54-56		134	4,600	do.		
159	Yucca Flat	NY	8-12 S.	51-53		305	4,000	do.		W-224
160	Frenchman Flat	NY	10-15 S.	51-56		463	3,200	do.		W-224, 365
161	Indian Springs Valley	C	10-13 S.	54-57		655	3,200	do.	Indian Springs	B-4, 5, 6
162	Pahrump Valley	C	17-23 S.	51-57		a 789	2,300	Outflow	Pahrump	W-224, 365
										B-3, 5, 6
										W-224, 365,
										W-450, 1832
163	Mesquite Valley (Sandy Valley)	C	21-27 S.	55-58		a 236	2,600	do.	Sandy	R-46, W-224,
164	Ivanpah Valley	C	23-29 S.	58-61		a 326	2,700	do.		W-450, 490-B
A	Northern part	C	23-27 S.	58-61		253	2,700	None	Goodsprings, Jean	R-46, W-224,
B	Southern part	C	27-29 S.	59-61		a 73	2,800	Outflow		W-450, 490-B
165	Jean Lake Valley	C	23-26 S.	59-61		96	2,600	None		R-46, W-224,
166	Hidden Valley (South)	C	24-25 S.	61		34	3,100	do.		W-490-B
167	Edorado Valley	C	23-28 S.	61-65		530	1,800	do.	Boulder City	R-46, W-224,
168	Three Lakes Valley, northern part	C	9-14 S.	57-60		298	3,600	do.		W-224, 365
169	Tikapoo (Tickaboo) Valley	LM	4-14 S.	55-61		998	4,300	do.		W-224, 365,
170	Penoyer Valley (Sand Spring Valley)	LM	2 N.-5 S.	52-58		700	5,000	do.	Tempiute	W-1475-L
										B-12, W-1475-L

Table 1.--Continued

Area number on map	hydrographic area shown on map	Location		Approximate area (sq mi)	Approximate altitude of valley floor (feet)	Stream inflow and outflow	Principal geographic names in area	Published hydrologic reports by USGS
		Principal counties	Townships					
171	Coal Valley	LM	3 S.-4 N. 58-62	460	5,000	Inflow		K-18, B-33, W-365, 1475-L
172	Garden Valley	LM	2 S.-5 N. 55-59	493	5,500	Outflow	Adaven	K-18, B-33, W-365, 1475-L
173	Railroad Valley	NY	3 S.-16 N. 50-59	2,752	4,900	None		B-12, W-1475-L
A	Southern part	NY	3 S.-3 N. 50-54	603	4,900	do.		B-12, W-1475-L
B	Northern part	NY	2-16 N. 51-59	2,149	4,800	Inflow	Duckwater Indian Res.	B-12, W-365, W-1475-L
174	Jakes Valley	WP	14-19 N. 59-61	422	6,400	None	Current	B-33, W-1475-L
175	Long Valley	WP	18-27 N. 56-60	651	6,100	do.		R-3, B-33, W-1475-L
176	Ruby Valley	EL	24-35 N. 57-61	1,004	6,000	do.		B-12, W-1475-L
177	Clover Valley	EL	31-37 N. 61-63	464	5,700	Outflow		B-12
178	Butte Valley	WP	18-31 N. 59-63	1,010	6,200	None		R-49, W-1475-L
A	Northern part	WP	27-31 N. 61-63	271	6,100	do.	Gedgers Ranch Indian Reservation	R-49, W-1475-L
179	Southern part	WP	18-27 N. 59-63	739	6,300	do.		R-49, W-1475-L
	Steptoe Valley	WP	10-29 N. 61-67	1,942	5,900	Outflow	Ely, McGill Ruth, Curried	R-42, W-467, W-1475-L
180	Cave Valley	LM	5-11 N. 62-64	362	6,100	None		K-13, B-33 W-365, 1475-L
181	Dry Lake Valley	LM	5 S.-7 N. 63-66	332	4,800	do.		K-16, B-33, W-365, 1475-L
182	Delamar Valley	LM	3-6 S. 62-65	383	4,600	do.		K-16, B-33, W-365, 1475-L
183	Lake Valley	LM	5-11 N. 64-68	557	6,000	do.		K-24, W-365, W-1475-L
184	Spring Valley	LM	6-25 N. 65-69	1,661	5,700	do.		R-33, W-365, W-1475-L

Table 1.--Continued

Area number on map	hydrographic area shown on map	Principal counties	Location Townships	Ranges E.	Approximate area (sq mi)	Approximate altitude of valley floor (feet)	Stream inflow and outflow in area	Principal geographic names in area	Published hydrologic reports by USGS
GREAT SALT LAKE BASIN (11)									
135	Tippett Valley	WP	21-25 N.	66-69	345	5,700	None	Tippett	W-1475-L
136	Antelope Valley	WP, EL	25-30 N.	66-69	325	5,700	do.		B-12, W-1475-L
A	Southern part	WP, EL	25-28 N.	67-69	125	5,900	do.		W-1475-L
B	Northern part	WP, EL	26-30 N.	66-68	270	5,600	do.		B-12, W-1475-L
137	Goshute Valley	EL	27-36 N.	63-68	954	5,600	Inflow	Oasis, Cobres-12	
138	Independence Valley (Pequop Valley)	EL	31-39 N.	63-65	562	5,600	do.		B-12
139	Thousand Springs Valley	EL	36-46 N.	61-70	a 1,446	5,400	Outflow		R-47
A	Merrell Siding- Brush Creek Area	EL	39-42 N.	61-65	163	5,900	do.		R-47
B	Toano-Rock Spring Area	EL	38-46 N.	64-68	613	5,600	Both		R-47
C	Rocky Butte Area	EL	40-43 N.	66-68	a 183	5,200	do.		R-47
D	Montello- Crittenden Creek Area (Montello Valley)	EL	36-44 N.	67-70	482	4,900	do.	Montello	R-47
190	Grouse Creek Valley	EL	40-44 N.	69-70	a 55	5,000	Outflow		R-47
191	Pilot Creek Valley	EL	33-36 N.	68-70	a 326	4,600	do.		
192	Great Salt Lake Desert	EL	27-37 N.	68-70	a 507	4,300	do.	Wendover	
193	Deep Creek Valley	LM	22-27 N.	69-70	a 206	5,200	do.	Goshute Indian Res.	W-1475-L
194	Pleasant Valley	WP	20-22 N.	69-70	a 75	6,200	do.		R-34, W-1475-L
195	Snake Valley	WP	10-21 N.	68-70	a 777	5,200	do.	baker, Lehman Caves Nat'l Mon.	R-34, W-1475-L
196	Hamlin Valley	LM	3-12 N.	68-71	a 413	5,600	do.		R-34, W-1475-L

Table 1.--Continued

Area number on map	hydrographic area shown on map	Principal counties	Location		Approximate area (sq mi)	Approximate altitude of valley floor (feet)	Stream inflow and outflow	Principal geographic names in area	Published hydrologic reports by USGS
			Townships	Ranges					
			E. W.						
ESCALANTE DESERT (12)									
197	Escalante Desert	LN	3 S.-1 N.	69-71	a 106	5,800	Outflow		R-51, W-1475-L
COLORADO RIVER BASIN (13)									
198	Dry Valley	LN	2 S.-1 N.	68-71	a 113	5,400	both		R-27, B-7, W-365, 1475-L
199	Rose Valley	LN	1 N.	69-70	12	5,500	do.		R-27, B-7, W-365, 1475-L
200	Eagle Valley	LN	1-2 N.	69-71	52	5,600	do.	Ursine	R-27, B-7, W-365, 1475-L
201	Spring Valley	LN	2-6 N.	68-71	a 287	6,000	Outflow		R-27, B-7, W-365, 1475-L
202	Patterson Valley	LN	1 S.-5 N.	65-69	418	5,600	do.	Pioche	R-27, B-7, W-365, 1475-L
203	Panaca Valley	LN	4 S.-1 N.	65-70	334	4,800	Both	Panaca, Caselton	R-27, B-7, W-365, 1475-L
204	Clover Valley	LN	3-7 S.	67-71	a 364	5,000	Outflow		R-27, B-7, W-365, 1475-L
205	Lower Meadow Valley Wash	LN	4-14 S.	64-69	379	2,600	Both	Caliente, Carp, Glendale	R-27, W-224, W-365, 1475-L
206	Kane Springs Valley	LN	6-10 S.	63-66	234	3,300	Outflow		R-25, B-33, W-365
207	White River Valley	NY	3-16 N.	58-63	1,607	5,400	do.	Preston, Lund, Sunnyside	R-8, 33, W-365, 1475-L
208	Pahroc Valley	LN	3 S.-5 N.	63-66	508	5,000	Both		R-21, B-33, W-365, 1475-L
209	Pahrnagat Valley	LN	2-9 S.	58-63	763	3,700	do.	Hiko, Alamo	R-21, B-33, W-365, 1475-L

Table 1.--Continued

Area number on map	Hydrographic area shown on map	Principal counties	Location Townships	Ranges	E.	Approximate area (sq mi)	Approximate altitude of valley floor (feet)	Stream inflow and outflow	Principal geographic names in area	Published hydrologic reports by USGS
210	Coyote Spring Valley	LM	8-15 S.	61-64		657	2,500	Both		R-25, B-33, W-224, 365
211	Three Lakes Valley, southern part ^{1/}	CL	14-18 S.	56-61		311	3,100	None		B-4, 5, 6, W-224, 365
212	Las Vegas Valley	CL	15-24 S.	56-64		1,564	2,000	Outflow	Las Vegas, Henderson	B-3, 4, 5, 6, B-18, 23, 29, W-224, 365, W-490-B, 849-L, W-1669-Q, W-1780 R-36, W-224
213	Colorado River Valley	CL	22-33 S.	63-66		a 563	800	Both	Lake Mead Nat. Rec. Area	
214	Piute Valley	CL	27-32 S.	61-65		a 338	2,300	Outflow	Searchlight	R-36, W-224, W-490-B
215	Black Mountains Area	CL	16-23 S.	63-68		630	1,200	Both	Lake Mead Nat. Rec. Area	R-50, W-224, W-365, P-295, P-298
216	Garnet Valley ^{1/}	CL	15-19 S.	61-64		156	2,000	None	Dry Lake	R-50, W-224, W-365
217	Hidden Valley (North) ^{1/}	CL	15-17 S.	62-63		80	2,700	do.		R-50, W-224, W-365
218	California Wash Area	CL	14-15 S.	63-66		313	1,000	Both	Moapa, Moapa Indian Res.	R-50, W-224, W-365
219	Muddy River Springs Area (Upper Moapa Valley)	CL	12-15 S.	63-65		91	1,600	do.		R-25, B-33, W-224, 365, P-501-D
220	Lower Moapa Valley	CL	12-17 S.	66-68		252	1,400	do.	Overton, Logandale	R-50, W-224, W-365
221	Tule Desert	LM	7-11 S.	66-70		132	3,200	Outflow		R-51
222	Virgin River Valley	CL	7-17 S.	67-71		a 907	1,500	Both	Mesquite Bunkerville ^{1/}	R-51, W-224, W-365

Table 1.---Continued

Area number on map	Hydrographic area shown on map	Location		Approximate area (sq mi)	Approximate altitude of valley floor (feet)	Stream inflow and outflow	Principal geographic names in area	Published hydrologic reports by USGS
		Principal counties	Townships					
223	Gold Butte Area	CL	15-22 S. 68-71	533	1,200	Outflow	Lake Mead Nat. Rec. Area	R-50, W-224, W-365, P-295, P-298 K-50, W-224
224	Greasewood Basin	CL	15-20 S. 70-71	a 100	2,200	do.		
225	Mercury Valley	NY	15-17 S. 52-54	110	3,200	do.	Mercury	K-14, W-224, W-365
226	Rock Valley	NY	14-15 S. 50-52	82	3,300	do.		K-14, W-224
227	Fortymile Canyon	NY	8-15 S. 49-52	519	4,000	do.		K-14, W-224
A	Jackass Flats	NY	11-15 S. 49-52	279	3,500	Both		K-14, W-224
B	Buckboard Mesa	NY	8-11 S. 49-51	240	5,000	Outflow		K-14, W-224
228	Oasis Valley	NY	7-12 S. 46-50	460	3,300	do.	Beatty	R-10, W-224, P-475-5
229	Crater Flat	NY	11-15 S. 47-49	182	3,200	do.		R-14, W-224
230	Amargosa Desert	NY	11-19 S. 44-54	a 696	2,600	Both	Lathrop wells, Death Valley Nat. Monument	R-14, E-3,
231	Grapevine Canyon	ES	8-12 S. 41-43	a 162	4,200	Outflow		K-45, W-224
232	Oriental Wash	ES	6-10 S. 38-42	a 182	4,000	do.		K-45, W-224

1. Noncontributing part of the Colorado River Basin.

a. Nevada part only.

b. Number does not include Oreana Subarea.

Table 2.--Alphabetical listing of hydrographic areas

Hydrographic area	Hydro- graphic region or basin number on index map	Area number on map and table 1	Hydrographic area	Hydro- graphic region or basin number on index map	Area number on map and table 1
Adobe Valley	10	115	Dayton Valley	6	103
Alkali Valley	10	111	Deep Creek Valley	11	193
Alkali Spring Valley	10	142	Delamar Valley	10	182
Amargosa Desert	14	230	Desert Valley	2	31
Antelope Valley	4	57	Diamond Valley	10	153
Antelope Valley	7	93	Dixie Creek-Tenmile Creek Area	4	48
Antelope Valley	9	106	Dixie Valley	10	128
Antelope Valley	10	151	Dodge Flat	6	82
Antelope Valley	10	186	Dry Lake Valley	10	181
Bedell Flat	7	94	Dry Lake Valley (see Garnet Valley)	13	216
Big Smoky	10	137	Dry Valley	7	95
Black Mountains Area	13	215	Dry Valley	2	19
Black Rock Desert	2	28	Dry Valley	13	198
Boulder Flat	4	61	Duck Lake Valley	1	16
Boulder Valley	1	15	Eagle Valley	6	104
Bradys Hot Spring Area	5	75	Eagle Valley	13	200
Bruneau River Area	3	38	Eastgate Valley Area	10	127
Buckboard Mesa	14	227B	East Walker Area	9	109
Buena Vista Valley	10	129	Edwards Creek Valley	10	133
Buffalo Valley	10	131	Eldorado Valley	10	167
Butte Valley	10	178	Elko Segment	4	49
Cactus Flat	10	148	Emigrant Valley	10	158
California Wash Area	13	218	Escalante Desert	12	197
Carico Lake Valley	4	55	Fairview Valley	10	124
Carson Desert	8	101	Fernley Area	5	76
Carson Valley	8	105	Fireball Valley	5	77
Cave Valley	10	180	Fish Lake Valley	10	117
Churchill Valley	8	102	Fortymile Canyon	14	227
Clayton Valley	10	143	Frenchman Flat	10	160
Clover Valley	10	177	Gabbs Valley	10	122
Clover Valley	13	204	Garden Valley	10	172
Clovers Area	4	64	Garfield Flat	10	120
Coal Valley	10	171	Garnet Valley	13	216
Cold Spring Valley	7	100	Gold Butte Area	13	223
Coleman Valley	1	11	Gold Flat	10	147
Colorado River Valley	13	213	Goose Creek Area	3	41
Columbus Salt Marsh Valley	10	118	Goshute Valley	10	187
Continental Lake Valley	1	2	Granite Basin	2	23
Cowkick Valley	10	126	Granite Springs Valley	5	78
Coyote Spring Valley	13	210	Grapevine Canyon	14	231
Crater Flat	14	229			
Crescent Valley	4	54			

Table 2.--Continued

Hydrographic area	hydro- graphic region or basin number on index map	Area number on map and table 1	Hydrographic area	hydro- graphic region or basin number on index map	Area number on map and table 1
Grass Valley	4	71	Lamoille Valley	4	45
Grass Valley	10	138	Las Vegas Valley	13	212
Greasewood Basin	13	224	Lenmon Valley	7	92
Great Salt Lake Desert	11	192	Lida Valley	10	144
Gridley Lake Valley	1	3	Little Fish Lake Valley	10	150
Groom Lake Valley	10	158A	Little Humboldt Valley	4	67
Grouse Creek Valley	11	190	Little Owyhee River Area	3	34
Guano Valley	1	6	Little Smoky Valley	10	155
			Long Valley	1	9
Hamlin Valley	11	196	Long Valley	10	175
Hardscrabble Area	4	68	Lovelock Valley	4	73
Herrell Siding-Brush Creek Area	11	189A	Lower Meadow Valley Wash	13	205
Hidden Valley (North)	13	217	Lower Moapa Valley	13	220
Hidden Valley (South)	10	166	Lower Reese River Valley	4	59
High Rock Lake Valley	2	25			
Honey Lake Valley	7	97	Macy Flat	1	10
Hot Creek Valley	10	156	Maggie Creek Area	4	51
Hualapai Flat	2	24	Marys Creek Area	4	52
Huntington Valley	4	47	Marys River Area	4	42
Huntoon Valley	10	113	Mason Valley	9	108
			Massacre Lake Valley	1	8
Imlay Area	4	72	McDermitt Subarea	2	33B
Independence Valley	3	36	Mercury Valley	14	225
Independence Valley	10	138	Mesquite Valley	10	163
Indian Springs Valley	10	161	Middle Reese River Valley	4	58
Ione Valley	10	135	Monitor Valley	10	140
Ivanpah Valley	10	164	Mono Valley	10	112
			Monte Cristo Valley	10	136
Jackass Flats	14	227A	Montello-Crittenden Creek Area	11	139D
Jakes Valley	10	174	Montello Valley	11	139D
Jarbridge River Area	3	39	Mosquito Valley	1	12
Jean Lake Valley	10	165	Muddy River Springs Area	13	219
Jersey Valley	10	132	Mud Meadow	2	26
Kane Springs Valley	13	206	Newark Valley	10	154
Kawich Valley	10	157	Newcomb Lake Valley	7	96
Kelly Creek Area	4	66	North Fork Area	4	44
Kings River Valley	2	30			
Kobeh Valley	10	139	Oasis Valley	14	228
Kumiva Valley	5	79	Oreana Subarea	4	73A
			Oriental Wash	14	232
Lake Subarea	9	110B	Orovada Subarea	2	33A
Lake Tahoe basin	6	90	Owyhee River Area	3	37
Lake Valley	10	163			

Table 2.--Continued

Hydrographic area	hydro- graphic region or basin number on index map	Area number on map and table 1	Hydrographic area	hydro- graphic region or basin number on index map	Area number on map and table 1
Pahranagat Valley	13	209	Sandy Valley (see Mesquite Valley)	10	163
Pahroc Valley	13	208	San Emidio Desert	2	22
Pahrump Valley	10	162	Sano Valley	2	20
Painters Flat	2	18	Sarcobatus Flat	10	146
Panaca Valley	13	203	Schurz Subarea	9	110A
Papoose Lake Valley	10	158B	Silver State Valley	2	32
Paradise Valley	4	69	Skedaddle Creek Valley	7	98
Patterson Valley	13	202	Smith Creek Valley	10	134
Penoyer Valley	10	170	Smith Valley	9	107
Pequop Valley (see Independence Valley)	10	183	Smoke Creek Desert	2	21
Pilgrim Flat	2	17	Snake Valley	11	195
Pilot Creek Valley	11	191	Soda Spring Valley	10	121
Pine Forest Valley	2	29	Sod House Subarea	2	30B
Pine Valley	4	53	South Fork Area	4	46
Piute Valley	13	214	South Fork Owyhee River Area	3	35
Pleasant Valley	11	194	Spanish Springs Valley	6	85
Pleasant Valley	10	130	Spring Valley	10	134
Pleasant Valley	6	83	Spring Valley	13	201
Pueblo Valley	1	1	Starr Valley Area	4	43
Pumpernickel Valley	4	65	Steptoe Valley	10	179
Pyramid Lake Valley	6	81	Stevens Basin	10	152
Queen Valley	10	116	Stingaree Valley	10	125
Quinn River Valley	2	33	Stone Cabin Valley	10	149
Railroad Valley	10	173	Stonewall Flat	10	145
Ralston Valley	10	141	Summit Lake Valley	2	27
Rawhide Flats	10	123	Sun Valley	6	86
Red Rock Valley	7	99	Surprise Valley	1	14
Reveille Valley (see Hot Creek and Railroad Valleys)	10	156, 173A	Susie Creek Area	4	50
Rhodes Salt Marsh Valley	10	119	Swan Lake Valley	1	7
Rio King Subarea	2	30A	Teels Marsh Valley	10	114
Rock Valley	14	226	Thousand Springs Valley	11	139
Rock Creek Valley	4	62	Three Lakes Valley, northern part	10	163
Rocky Butte Area	11	189C	Three Lakes Valley, southern part	13	211
Rose Valley	13	199	Tikapoo (Tickaboo) Valley	10	169
Ruby Valley	10	176	Tippett Valley	10	185
Sage Hen Valley	1	5	Toano-Rock Spring Area	11	189B
Salmon Falls Creek Area	3	40	Tonopah Flat	10	137A
Sand Spring Valley (see Penoyer Valley)	10	170	Tracy Segment	6	83
			Truckee Canyon Segment	6	91
			Truckee Meadows	6	37

Table 2.--Continued

Hydrographic area	Hydro- graphic region or basin number on index map	Area number on map and table 1
Tule Desert	13	221
Upper Moapa Valley (see Muddy River Springs Area)	13	219
Upper Reese River Valley	4	56
Virgin River Valley	13	222
Virgin Valley	1	4
Walker Lake Valley	9	110
Warm Springs Valley	6	84
Warner Valley	1	13
Washoe Valley	6	89
Whirlwind Valley	4	60
Whiskey Flat-Mawthorne Subarea	9	110C
White Plains	4	74
White River Valley	13	207
Willow Creek Valley	4	63
Winnemucca Lake Valley	6	80
Winnemucca Segment	4	70
Yucca Flat	10	159

Table 3.--County listing of hydrographic areas
 Containment within county: P, partially in county;
 E, entirely in county

Area number on map	Hydrographic area	Contain- ment within county	Area number on map	Hydrographic area	Contain- ment within county
<u>CHURCHILL COUNTY (17 areas)</u>					
<u>Humboldt River Basin</u>			<u>Colorado River Basin</u>		
73	Lovelock Valley	P	205	Lower Meadow Valley Wash	P
74	White Plains	P	210	Coyote Spring Valley	P
<u>West Central Region</u>			211	Three Lakes Valley, southern part	E
75	Bradys Hot Springs Area	P	212	Las Vegas Valley	E
76	Fernley Area	P	213	Colorado River Valley	E
77	Fireball Valley	E	214	Piute Valley	E
78	Granite Springs Valley	P	215	Black Mountains Area	E
<u>Carson River Basin</u>			216	Garnet Valley	E
101	Carson Desert	P	217	Hidden Valley (North)	E
102	Churchill Valley	P	218	California Wash Area	E
<u>Central Region</u>			219	Muddy River Springs Area	E
122	Gabbs Valley	P	220	Lower Moapa Valley	P
123	Rawnide Flats	P	222	Virgin River Valley	P
124	Fairview Valley	P	223	Gold Butte Area	E
125	Stingaree Valley	E	224	Greasewood Basin	E
126	Cowkick Valley	E	<u>DOUGLAS COUNTY (7 areas)</u>		
127	Eastgate Valley	E	<u>Truckee River Basin</u>		
128	Dixie Valley	P	90	Lake Tahoe Basin	P
129	Buena Vista Valley	P	<u>Carson River Basin</u>		
133	Edwards Creek Valley	P	102	Churchill Valley	P
<u>CLARK COUNTY (26 areas)</u>			103	Dayton Valley	P
<u>Central Region</u>			104	Eagle Valley	P
160	Frenchman Flat	P	105	Carson Valley	P
161	Indian Springs Valley	P	<u>Walker River Basin</u>		
162	Pahrump Valley	P	106	Antelope Valley	E
163	Mesquite Valley	E	107	Smith Valley	P
164	Ivanpah Valley		<u>ELKO COUNTY (45 areas)</u>		
A	Southern part	E	<u>SNAKE RIVER BASIN</u>		
B	Northern part	E	34	Little Owyhee River Area	P
165	Jean Lake Valley	E	35	South Fork Owyhee River Area	E
166	Hidden Valley (South)	E	36	Independence Valley	E
167	Eldorado Valley	E	37	Owyhee River Area	E
168	Three Lakes Valley, northern part	P	38	Bruneau River Area	E
169	Tikapoo Valley	P	39	Jarbridge River Area	E

Table 3.--Continued

Area number on map	Hydrographic area	Contain- ment within county	Area number on map	Hydrographic area	Contain- ment within county
<u>ELKO COUNTY (continued)</u>					
<u>Snake River Basin (continued)</u>			<u>Great Salt Lake Basin</u>		
40	Salmon Falls Creek Area	E	189	Thousand Springs Valley	
41	Goose Creek Area	E	A	Herrell Siding-Brush Creek Area	E
<u>Humboldt River Basin</u>			B	Toano-Rock Spring Area	E
42	Marys River Area	E	C	Rocky Butte Area	E
43	Starr Valley Area	E	D	Montello-Crittenden Creek Area	E
44	North Fork Area	E	190	Grouse Creek Valley	E
45	Lamoille Valley	E	191	Pilot Creek Valley	E
46	South Fork Area	E	192	Great Salt Lake Desert	E
47	Huntington Valley	P	193	Deep Creek Valley	E
48	Dixie Creek-Tenmile Creek Area	E	<u>ESMERALDA COUNTY (12 areas)</u>		
49	Elko Segment	P	<u>Central Region</u>		
50	Susie Creek Area	E	116	Queen Valley	P
51	Maggie Creek Area	P	117	Fish Lake Valley	E
52	Marys Creek Area	P	118	Columbus Salt Marsh Valley	P
53	Pine Valley	P	136	Monte Cristo Valley	P
61	Boulder Flat	P	137	Big Smoky Valley	
62	Rock Creek Valley	P	A	Tonopah Flat	P
63	Willow Creek Valley	E	141	Ralston Valley	P
64	Clovers Area	P	142	Alkali Spring Valley	P
66	Kelly Creek Area	P	143	Clayton Valley	E
67	Little Humboldt Valley	P	144	Lida Valley	P
<u>Central Region</u>			146	Sarcobatus Flat	P
153	Diamond Valley	P	<u>Death Valley Basin</u>		
175	Long Valley	P	231	Grapevine Canyon	E
176	Ruby Valley	P	232	Oriental Wash	E
177	Clover Valley	E	<u>EUREKA COUNTY (16 areas)</u>		
178	Butte Valley		<u>Humboldt River Basin</u>		
A	Northern part	E	49	Elko Segment	P
B	Southern part	P	51	Maggie Creek Area	P
179	Steptoe Valley	P	52	Marys Creek Area	P
186	Antelope Valley		53	Pine Valley	P
A	Southern part	P	54	Crescent Valley	P
B	Northern part	P	59	Lower Reese River Valley	P
187	Goshute Valley	E	60	Whirlwind Valley	P
188	Independence Valley (Pequop Valley)	E	61	Boulder Flat	P
			62	Rock Creek Valley	P

Table 3.--Continued

Area number on map	Hydrographic area	Contain- ment within county	Area number on map	Hydrographic area	Contain- ment within county
<u>EUREKA COUNTY (continued)</u>					
<u>Central Region</u>			<u>Snake River Basin (continued)</u>		
138	Grass Valley	P	67	Little Humboldt Valley	P
139	Kobeh Valley	P	68	Hardscrabble Area	E
140	Monitor Valley		69	Paradise Valley	E
A	Northern part	P	70	Winnemucca Segment	E
151	Antelope Valley	P	71	Grass Valley	P
152	Stevens Basin	E	<u>Central Region</u>		
153	Diamond Valley	P	131	Buffalo Valley	P
155	Little Smoky Valley		<u>LANDER COUNTY (19 areas)</u>		
A	Northern part	P	<u>Humboldt River Basin</u>		
<u>HUMBOLDT COUNTY (29 areas)</u>			54	Crescent Valley	P
<u>Northwest Region</u>			55	Carico Lake Valley	E
1	Pueblo Valley	E	56	Upper Reese River Valley	P
2	Continental Lake Valley	E	57	Antelope Valley	E
3	Gridley Lake Valley	E	58	Middle Reese River Valley	E
4	Virgin Valley	P	59	Lower Reese River Valley	E
5	Sage Hen Valley	E	60	Whirlwind Valley	P
6	Guano Valley	P	61	Boulder Flat	P
7	Swan Lake Valley	P	62	Rock Creek Valley	P
<u>Black Rock Desert Region</u>			64	Clovers Area	P
24	Hualapai Flat	P	<u>Central Region</u>		
25	High Rock Lake Valley	P	123	Dixie Valley	P
26	Mud Meadow	E	131	Buffalo Valley	P
27	Summit Lake Valley	E	132	Jersey Valley	P
28	Black Rock Desert	P	133	Edwards Creek Valley	P
29	Pine Forest Valley	E	134	Smith Creek Valley	P
30	Kings River Valley		137	Big Smoky Valley	
A	Rio King Subarea	E	B	Northern part	P
B	Sod House Subarea	E	138	Grass Valley	P
31	Desert Valley	P	139	Kobeh Valley	P
32	Silver State Valley	E	140	Monitor Valley	
33	Quinn River Valley		A	Northern part	P
A	Orovada Subarea	E	<u>LINCOLN COUNTY (34 areas)</u>		
B	McDermitt Subarea	E	<u>Central Region</u>		
<u>Snake River Basin</u>			153	Emigrant Valley	
34	Little Owyhee River Area	P	A	Groom Lake Valley	P
<u>Humboldt River Basin</u>			B	Papoose Lake Valley	P
64	Clovers Area	P	160	Frenchman Flat	P
65	Pumpnickel Valley	P	161	Indian Springs Valley	P
66	Kelly Creek Area	P			

Table 3.--Continued

Area number on map	Hydrographic area	Contain- ment within county	Area number on map	Hydrographic area	Contain- ment within county
<u>LINCOLN COUNTY (continued)</u>					
<u>Central Region (continued)</u>			<u>Truckee River Basin</u>		
168	Three Lakes Valley, northern part	P	83	Tracy Segment	P
169	Tikapoo Valley		<u>Carson River Basin</u>		
170	Penoyer Valley	P	101	Carson Desert	P
171	Coal Valley	P	102	Churchill Valley	P
172	Garden Valley	P	103	Dayton Valley	P
173	Railroad Valley		<u>Walker River Basin</u>		
A	Southern part	P	107	Smith Valley	P
B	Northern part	P	108	Mason Valley	P
180	Cave Valley	P	109	East Walker Area	P
181	Dry Lake Valley	E	110	Walker Lake Valley	
182	Delamar Valley	E	A	Schurz Subarea	P
183	Lake Valley	P	<u>Central Region</u>		
184	Spring Valley	P	123	Rawhide Flats	P
<u>Great Salt Lake Basin</u>			<u>MINERAL COUNTY (23 areas)</u>		
196	Hamlin Valley	P	<u>Walker River Basin</u>		
<u>Escalante Desert Basin</u>			108	Mason Valley	P
197	Escalante Desert	E	109	East Walker Area	P
<u>Colorado River Basin</u>			110	Walker Lake Valley	
198	Dry Valley	E	A	Schurz Subarea	P
199	Rose Valley	E	B	Lake Subarea	E
200	Eagle Valley	E	C	Whiskey Flat-Mawthorne Subarea	E
201	Spring Valley	E	<u>Central Region</u>		
202	Patterson Valley	E	111	Alkali Valley	
203	Panaca Valley	E	A	Northern part	E
204	Clover Valley	E	B	Southern part	E
205	Lower Meadow Valley Wash	P	112	Mono Valley	E
206	Kane Springs Valley	E	113	Huntoon Valley	E
207	White River Valley	P	114	Teels Marsh Valley	E
208	Pahroc Valley	P	115	Adobe Valley	E
209	Pahranagat Valley	E	116	Queen Valley	P
210	Coyote Spring Valley	P	118	Columbus Salt Marsh Valley	P
220	Lower Hoapa Valley	P	119	Rhodes Salt Marsh Valley	E
221	Tule Desert	E	120	Garfield Flat	E
222	Virgin River Valley	P	121	Soda Spring Valley	
<u>LYON COUNTY (11 areas)</u>			A	Eastern part	E
<u>West Central Region</u>			B	Western part	E
75	Bradys Hot Springs Area	P	122	Gabbs Valley	P
76	Fernley Area	P			

Table 3.--Continued

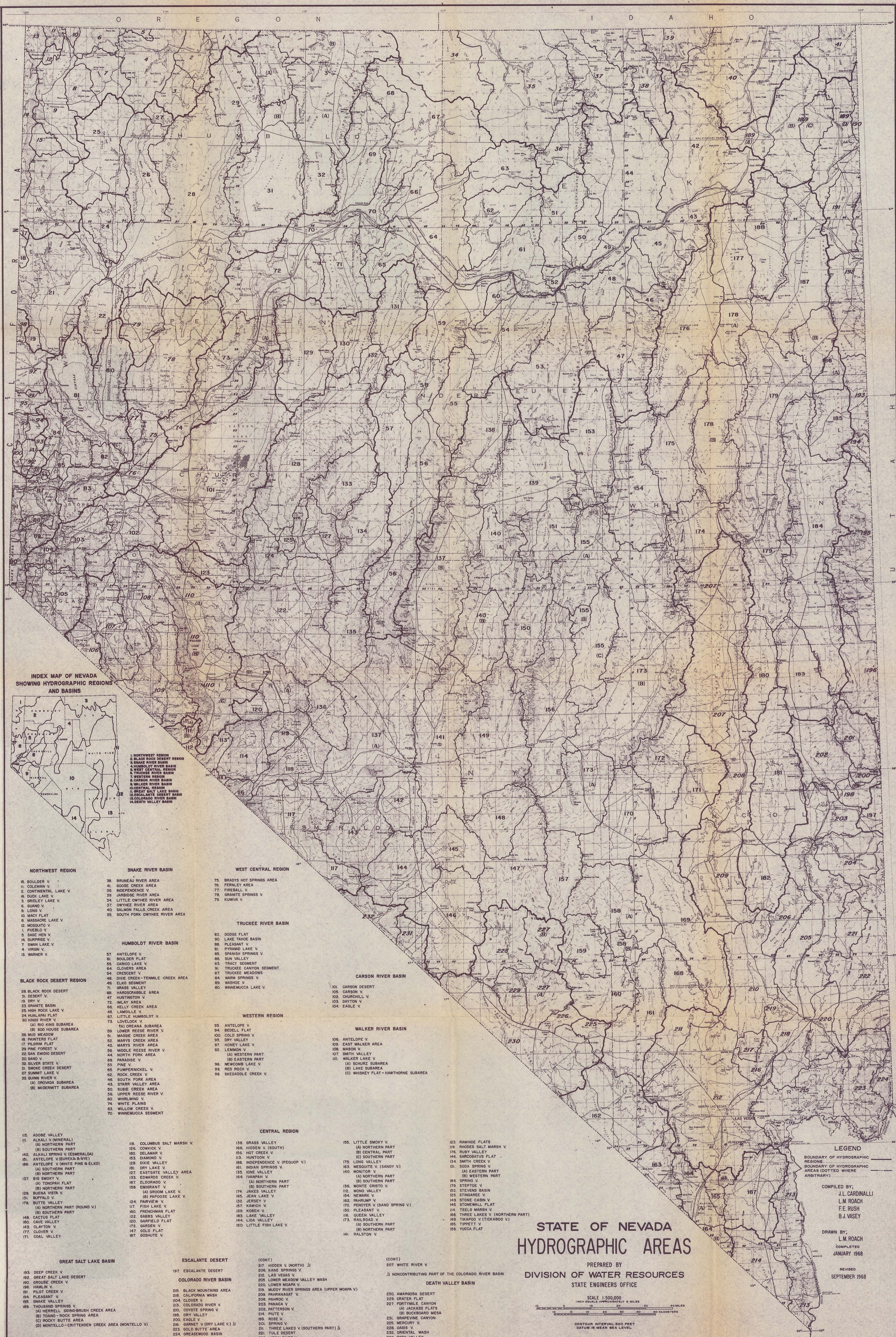
Area number on map	Hydrographic area	Contain- ment within county	Area number on map	Hydrographic area	Contain- ment within county
<u>MINERAL COUNTY (continued)</u>					
<u>Central Region (continued)</u>			<u>Central Region (continued)</u>		
123	Rawhide Flats	P	161	Indian Springs Valley	P
124	Fairview Valley	P	162	Pahrump Valley	P
135	Ione Valley	P	170	Penoyer Valley	P
136	Monte Cristo Valley	P	171	Coal Valley	P
137	Big Smoky Valley	P	172	Garden Valley	P
A	Tonopah Flat	P	173	Railroad Valley	P
<u>NYE COUNTY (44 areas)</u>			A	Southern part	P
<u>Humboldt River Basin</u>			B	Northern part	P
56	Upper Reese River Valley	P	<u>Colorado River Basin</u>		
<u>Central Region</u>			207	White River Valley	P
122	Gabbs Valley	P	208	Pahroc Valley	P
134	Smith Creek Valley	P	<u>Death Valley Basin</u>		
135	Ione Valley	P	225	Mercury Valley	E
137	Big Smoky Valley	P	226	Rock Valley	E
A	Tonopah Flat	P	227	Fortymile Canyon	
B	Northern part	P	A	Jackass Flats	E
140	Monitor Valley		B	Buckboard Mesa	E
A	Northern part	P	228	Oasis Valley	E
B	Southern part	E	229	Crater Flat	E
141	Ralston Valley	P	230	Amargosa Desert	E
142	Alkali Spring Valley	P	231	Grapevine Canyon	P
144	Lida Valley	P	<u>ORMSBY COUNTY (4 areas)</u>		
145	Stonewall Flat	E	<u>Truckee River Basin</u>		
146	Sarcobatus Flat	P	90	Lake Tahoe Basin	P
147	Gold Flat	E	<u>Carson River Basin</u>		
148	Cactus Flat	E	103	Dayton Valley	P
149	Stone Cabin Valley	E	104	Eagle Valley	P
150	Little Fish Lake Valley	E	105	Carson Valley	P
151	Antelope Valley	P	<u>PERSHING COUNTY (19 areas)</u>		
155	Little Smoky Valley		<u>Black Rock Desert</u>		
A	Northern part	P	22	San Emidio Desert	P
B	Central part	E	24	Hualapai Flat	P
C	Southern part	E	28	Black Rock Desert	P
156	Hot Creek Valley	E	31	Desert Valley	P
157	Kawich Valley	E			
158	Emigrant Valley				
A	Groom Lake Valley	P			
B	Papoose Lake Valley	P			
159	Yucca Flat	E			
160	Frenchman Flat	P			

Table 3.--Continued

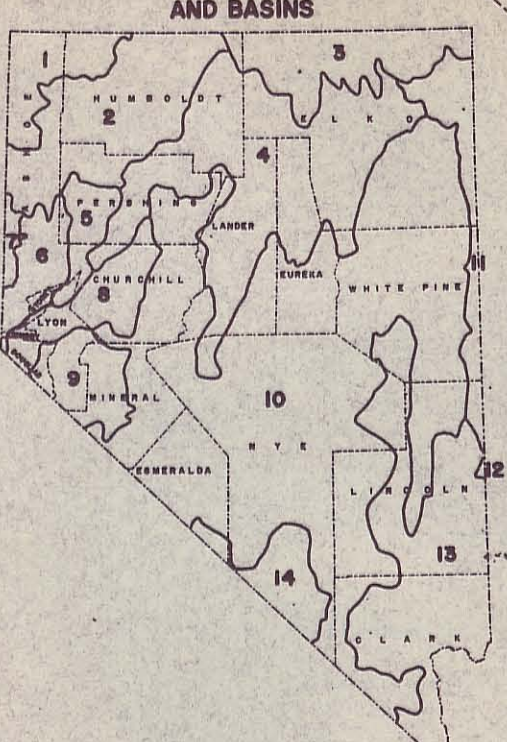
Area number on map	Hydrographic area	Contain- ment within county	Area number on map	Hydrographic area	Contain- ment within county
<u>PERSHING COUNTY (continued)</u>			<u>Northwest Region (continued)</u>		
<u>Humboldt River Basin</u>			11	Coleman Valley	E
65	Pumpnickel Valley	P	12	Mosquito Valley	E
71	Grass Valley	P	13	Warner Valley	E
72	Imlay Area	E	14	Surprise Valley	E
73	Lovelock Valley	P	15	Boulder Valley	E
A	Oreana Subarea	E	16	Duck Lake Valley	E
74	White Plains	F	<u>Black Rock Desert</u>		
<u>West Central Region</u>			17	Pilgrim Flat	E
78	Granite Springs Valley	P	18	Painters Flat	E
79	Kumiva Valley	E	19	Dry Valley	E
<u>Truckee River Basin</u>			20	Sano Valley	E
80	Winnemucca Lake Valley	P	21	Smoke Creek Desert	E
<u>Carson River Basin</u>			22	San Emidio Desert	P
101	Carson Desert	P	23	Granite Basin	E
<u>Central Region</u>			24	Mualapai Flat	P
128	Dixie Valley	P	25	High Rock Lake Valley	P
129	Buena Vista Valley	P	26	Black Rock Desert	P
130	Pleasant Valley	E	<u>West Central Region</u>		
131	Buffalo Valley	P	76	Fernley Area	P
132	Jersey Valley	P	<u>Truckee River Basin</u>		
<u>STOREY COUNTY (4 areas)</u>			80	Winnemucca Lake Valley	P
<u>West Central Region</u>			81	Pyramid Lake Valley	E
76	Fernley Area	P	82	Dodge Flat	E
<u>Truckee River Basin</u>			83	Tracy Segment	P
83	Tracy Segment	P	84	Warm Springs Valley	E
<u>Carson River Basin</u>			85	Spanish Springs Valley	E
102	Churchill Valley	P	86	Sun Valley	E
103	Dayton Valley	P	87	Truckee Meadows	E
<u>WASHOE COUNTY (45 areas)</u>			88	Pleasant Valley	E
<u>Northwest Region</u>			89	Wasnoe Valley	E
4	Virgin Valley	P	90	Lake Tahoe Basin	P
6	Guano Valley	P	91	Truckee Canyon Segment	E
7	Swan Lake Valley	P	<u>Western Region</u>		
8	Massacre Lake Valley	E	92	Lemmon Valley	
9	Long Valley	E	A	Western part	E
10	Macy Flat	E	B	Eastern part	E
			93	Antelope Valley	E
			94	Bedell Flat	E
			95	Dry Valley	E
			96	Newcomb Lake Valley	E

Table 3.--Continued

Area number on map	Hydrographic area	Contain- ment within county
<u>WASMOE COUNTY (continued)</u>		
<u>Western Region (continued)</u>		
97	Honey Lake Valley	E
98	Skedaddle Creek Valley	E
99	Red Rock Valley	E
100	Cold Spring Valley	E
<u>WHITE PINE COUNTY (20 areas)</u>		
<u>Humboldt River Basin</u>		
47	Huntington Valley	P
<u>Central Region</u>		
154	Newark Valley	E
155	Little Smoky Valley	
A	Northern part	P
173	Railroad Valley	
B	Northern part	P
174	Jakes Valley	E
175	Long Valley	P
176	Ruby Valley	P
178	Butte Valley	
B	Southern part	P
179	Steptoe Valley	P
180	Cave Valley	P
183	Lake Valley	P
184	Spring Valley	P
185	Tippett Valley	E
186	Antelope Valley	
A	Southern part	P
B	Northern part	P
<u>Great Salt Lake Basin</u>		
193	Deep Creek Valley	P
194	Pleasant Valley	E
195	Snake Valley	E
196	Hamlin Valley	P
<u>Colorado River Basin</u>		
207	White River Valley	P



INDEX MAP OF NEVADA
SHOWING HYDROGRAPHIC REGIONS
AND BASINS



NORTHWEST REGION 10. BOULDER V. 11. COLEMAN V. 12. CONTINENTAL LAKE V. 13. DUCK LAKE V. 14. GRIDLEY LAKE V. 15. GUANO V. 16. LONG V. 17. MACY FLAT 18. MASSACHUSETT LAKE V. 19. MOSQUITO V. 20. PUEBLO V. 21. SAGE HEN V. 22. SURPRISE V. 23. SWAN LAKE V. 24. VIRGIN V. 25. WARNER V.	SNAKE RIVER BASIN 30. BRUNEAU RIVER AREA 31. GOOSE CREEK AREA 32. INDEPENDENCE V. 33. JARRIS RIVER AREA 34. LITTLE OWYHEE RIVER AREA 35. OYHIE RIVER AREA 36. SALMON FALLS CREEK AREA 37. SOUTH FORK OWYHEE RIVER AREA	WEST CENTRAL REGION 75. BRADY'S HOT SPRINGS AREA 76. FERRELL AREA 77. FIREBALL V. 78. GRANITE SPRINGS V. 79. KUMIA V.	TRUCKEE RIVER BASIN 80. DODGE FLAT 81. LAKE TAHOE BASIN 82. PLEASANT V. 83. PYRAMID LAKE V. 84. SPANISH SPRINGS V. 85. SUN VALLEY 86. TRUCKEE CANYON SEGMENT 87. TRUCKEE MEADOWS 88. WARM SPRINGS V. 89. WASHOE V. 90. WINNEMUCCA LAKE V.	CARSON RIVER BASIN 101. CARSON DESERT 102. CARSON V. 103. CHURCHILL V. 104. DAYTON V. 105. EAGLE V.	WALKER RIVER BASIN 106. ANTELOPE V. 107. EAST WALKER AREA 108. MASON V. 109. SMITH VALLEY 110. WALKER LAKE V. (A) SCHURZ SUBAREA (B) LAKE SUBAREA (C) WHISKEY FLAT - HAWTHORNE SUBAREA	BLACK ROCK DESERT REGION 28. BLACK ROCK DESERT 29. DESERT V. 30. DRY V. 31. GRANITE BASIN 32. HIGH ROCK LAKE V. 33. HUALAPAI FLAT 34. KINGS RIVER V. (A) RIO KING SUBAREA (B) SOD HOUSE SUBAREA 35. MID MEADOW 36. PAINTERS FLAT 37. PILGRIM FLAT 38. PINE FOREST V. 39. SAN EMILIO DESERT 40. SAND V. 41. SILVER STATE V. 42. SMOKE CREEK DESERT 43. SUMMIT LAKE V. 44. SUNN RIVER V. (A) OROVADA SUBAREA (B) MODERMITT SUBAREA	HUMBOLDT RIVER BASIN 57. ANTELOPE V. 58. BOULDER FLAT 59. CARRO LAKE V. 60. CLOVERS AREA 61. CRESCENT V. 62. DIVE CREEK - TENMILE CREEK AREA 63. ELKO SEGMENT 64. GRASS VALLEY 65. HARDENHILL AREA 66. HUNTINGTON V. 67. INLAY AREA 68. KELLY CREEK AREA 69. LAMOLLE V. 70. LITTLE HUMBOLDT V. 71. LOVELOCK V. (A) OREANA SUBAREA 72. LOWER REESE RIVER V. 73. MAGGIE CREEK AREA 74. MARYS CREEK AREA 75. MARYS RIVER AREA 76. MIDDLE REESE RIVER V. 77. NORTH FORK AREA 78. PARADISE V. 79. PINE V. 80. PUMPERNICKEL V. 81. ROCK CREEK V. 82. SOUTH FORK AREA 83. STARR VALLEY AREA 84. SUSIE CREEK AREA 85. UPPER REESE RIVER V. 86. WHIRLWIND V. 87. WHITE PLAINS 88. WILLOW CREEK V. 89. WINNEMUCCA SEGMENT	WESTERN REGION 93. ANTELOPE V. 94. BEDELL FLAT 95. COLD SPRING V. 96. HONEY LAKE V. 97. LEMMON V. (A) WESTERN PART (B) EASTERN PART 98. NEWCOMB LAKE V. 99. RIDGE V. 100. SKEDADDLE CREEK V.	CENTRAL REGION 115. ADOBE VALLEY 116. ALKALI V. (MINERAL) 117. (A) NORTHERN PART (B) SOUTHERN PART 118. ALKALI SPRING V. (ESMERALDA) 119. ANTELOPE V. (BURSA-BRYE) 120. ANTELOPE V. (WHITE PINE & ELKO) 121. (A) SOUTHERN PART (B) NORTHERN PART 122. BIG SMOKY V. (A) TONOPAH FLAT (B) NORTHERN PART 123. BUENA VISTA V. 124. BUFFALO V. 125. BUTTE VALLEY (A) NORTHERN PART (ROUND V.) (B) SOUTHERN PART 126. CACTUS FLAT 127. CAVE VALLEY 128. CLAYTON V. 129. CLOVER V. 130. COAL VALLEY	ESCALANTE DESERT 197. ESCALANTE DESERT COLORADO RIVER BASIN 210. BLACK MOUNTAINS AREA 211. CLOVER V. 212. COLORADO RIVER V. 213. COYOTE SPRING V. 214. DRY VALLEY 215. GARRETT VALLEY 216. GARDEN V. 217. GOLD FLAT 218. GORDITE V.	DEATH VALLEY BASIN 230. AMARGOSA DESERT 231. FORTY MILE CANYON (A) JACKASS FLATS (B) BUCKBOARD MESA 232. GRAPEVINE CANYON 233. ROSE V. 234. MERCURY V. 235. OASIS V. 236. ORIENTAL WASH 237. ROCK VALLEY	LEGEND BOUNDARY OF HYDROGRAPHIC REGIONS BOUNDARY OF HYDROGRAPHIC AREAS (DOTTED WHERE ARBITRARY) COMPILED BY: J.L. CARDINALLI L.M. ROACH F.E. RUSH B.J. VASEY DRAWN BY: L.M. ROACH COMPLETED JANUARY 1968 REVISED SEPTEMBER 1968
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STATE OF NEVADA
HYDROGRAPHIC AREAS

PREPARED BY
DIVISION OF WATER RESOURCES
STATE ENGINEERS OFFICE

SCALE 1:500,000
1 INCH EQUALS APPROXIMATELY 8 MILES
CONTOUR INTERVAL 500 FEET
DATUM IS MEAN SEA LEVEL

EXHIBIT 14

1 Case No. CV1204049
2 Dept. 1
3
4
5

6 IN THE SEVENTH JUDICIAL DISTRICT COURT OF THE STATE OF NEVADA
7 IN AND FOR THE COUNTY OF WHITE PINE
8

9 _____
10 WHITE PINE COUNTY and CONSOLIDATED
11 CASES, E.T.. al.,

12 Plaintiffs,

13 vs.

14 **DECISION**

15 JASON KING, P.E., NEVADA STATE
16 ENGINEER, STATE OF NEVADA,
17 DIVISION OF WATER RESOURCES,

18 Defendant.
19 _____/

20 This matter is an appeal from the Nevada State Engineer, Jason Kings' rulings 6164,
21 6165, 6166 and 6167 concerning the grant of water rights to Southern Nevada Water
22 Authority in Spring Valley (Lincoln and White Pine Counties), Cave Valley, Dry Lake Valley
23 and Delarmar Valley.

24 Petitioners include the Great Basin Water Network, (GBWN),¹ White Pine County,
25 Nevada, Millard and Juab County, Utah, Ely Shoshone and Duckwater Shoshone Tribes,
26 Confederate Tribe of the Goshute Reservation and the Presiding Bishop of the Churchill of
27 Latter-Day Saints on behalf of the Cleveland Ranch.

28 As explained below, the State Engineer's rulings is remanded: for recalculation of
water available from the respective basins; for additional hydrological study of Delamar, Dry

¹ GBWN is a non-profit corporation formed by over fifty individuals and related conservation groups.

1 Lake and Cave Valley; and to establish standards for mitigation in the event of a conflict with
2 existing water rights or unreasonable effects to the environment or the public interest.

3
4 **I**
HISTORY

5 In 1989, Las Vegas Valley Water District applied for unappropriated water in
6 hydrographic basins 180, 181, 182 and 184; Cave Valley, Dry Lake, Delamar Valley and
7 Spring Valley respectively. In 1991, the current real party in interest, South Nevada Water
8 Authority (SNWA) became the successor in interest to the Las Vegas Valley Water District.

9 Several protests were filed against the application in July of 1989. The Nevada State
10 Engineer (Engineer) was required to rule on the application within one-year of the protest's
11 filing date. NRS 533.370(2). The applications were not ruled on within one-year, however,
12 hearings on the application were held in 2006. By 2006, the water rights had changed hands
13 many times and few right holders received notice of the 2006 hearings. Great Basin Water
14 Network v Nevada State Eng'r, 126 Nev. Adv. Op. 20, 234 P.3d 912 (2010).²

15
16 Prior to the 2006 hearings, The National Park Service, Bureau of Fish and Wildlife,
17 Bureau of Land Management (BLM) and the Bureau of Indian Affairs (BIA) were actively
18 protesting the orders granting water rights to SNWA: All of these entities are divisions of the
19 Department of the Interior. ROA 000007. Each entity entered into an agreement with SNWA,
20 withdrawing their protests in exchange for implementation of a hydrologic and biologic
21 Monitoring, Management and Mitigation plan. ROA 000012; 020791; 020806; Ex. SE 041.
22 This plan's stipulation was affirmed prior to the 2011 hearings, Id. and later revised to the
23 current plan approved by the Engineer. Certain specifics of this agreement will be addressed
24 later in this order. The Engineer is not a party to the stipulation, but has approved of the
25 agreement and incorporated its terms into his rulings. ROA 000103-000106.
26

27
28

² Subsequently, the Engineer's orders were vacated, new notices were sent, and the hearings
rescheduled for September and November, 2011.

1 After the Fall 2011 hearings, the Engineer approved 61,127 acre-feet annually (afa)
2 to SNWA from Spring Valley and reserving 4,000 afa for future growth in Order 6164 (March,
3 2012). ROA 000216. Other terms of the Order include:

- 4 A. First stage pumping is limited to 38,000 afa for eight
5 years, data to be collected, modelled reported to the Engineer
6 annually.
- 7 B. Stage two pumping shall be limited to 50,000 afa
8 for a minimum of eight years with the data collection
9 and modelling to be reported annually.
- 10 C. Stage three, SNWA will be allowed to pump the full
11 61,127 afa.

12 Id.

13 Further, the Enginner must approve each stage of pumping and SNWA must comply with the
14 MMM plan prepared by SNWA and approved by the Engineer. ROA 000216-000217.

15 Orders 6165, 6166 and 6167 concern the water rights granted to SNWA in Cave
16 Valley, Dry Lake Valley and Delamar Valley respectively. All three orders condition the water
17 grants as Compliance with the Hydrologic MMM plan prepared by SNWA and the Biological
18 Monitoring plan. ROA 00387-8; 000551; 00713-4. The MMM plan shall be subject to
19 modification by the Engineer. SNWA must report annually and provide 10-25-100 year
20 predictive models to the Engineer.

21 The Cave Valley appropriation is 5,235 afa with 50 afa reserved for future growth.
22 Dry Lake Valley's appropriation is 11,584 afa, 50 afa for future growth. Delamar Valley's
23 appropriation is 6,042 afa and 50 afa for future growth. Id.

24 The four rulings by the Engineer represent the largest water appropriations in Nevada
25 history. The water basins concerned including Spring, Cave, Dry Lake and Delamar Valleys
26 encompass 20,688 square miles of Nevada. ROA 000125.

27 The basins size has been compared to New England, encompassing great portions of
28 Vermont, New Hampshire, Massachusetts, Connecticut and some of New York.

1 SNWA Ex. 339, ROA 020181. It is likely the largest interbasin transfer of water in U.S.
2 history.

3 II 4 **AUTHORITY AND OBLIGATIONS OF THE STATE ENGINEER**

5 The Engineer "[s]hall approve an application submitted in proper form which
6 contemplates the application to beneficial use if:"

- 7 (a) The application is accompanied by the prescribed fee;
- 8 (b) The proposed use or change, if within an irrigation district,
9 does not adversely affect the cost of water for other holders
10 of water rights in the district or lessen the efficiency of the
11 district in its delivery or use of water; and
- 12 (c) The applicant provides proof satisfactory to the State
13 Engineer of the applicant's:
 - 14 (1) Intention is good faith to construct any work necessary to
15 apply the water to the intended beneficial use with
16 reasonable diligence; and
 - 17 (2) Financial ability and reasonable expectation actually to
18 construct the work and apply the water to the intended
19 beneficial use with reasonable diligence.

20 NRS 533.370 (1).

21 Additionally, the Engineer must determine;

- 22 1. Whether there is unappropriated water;
- 23 2. Whether the proposed use will conflict with existing rights
24 and/or domestic wells; or
- 25 (a) If the appropriation threatens to prove detrimental to
26 the public interest,

27 "The State Engineer shall reject the application" NRS 533.370 (2).

28 The Engineer must also consider:

- 29 (a) Whether the applicant has justified the need to import the
30 water from another basin.
- 31 (b) If the State Engineer determines that a plan for conservation
32 of water is advisable for the basin into which the water is to be
33 imported, whether the applicant has demonstrated that such a
34 plan has been adopted and is being effectively carried out;

- (c) Whether the proposed action is environmentally sound as it relates to the basin from which the water is exported;
- (d) Whether the proposed action is an appropriate long-term use which will not unduly limit the future growth and development to the basin from which the water is exported; and
- (e) Any other factor the State Engineer determines to be relevant.

NRS 533.370(3).

III STANDARD OF REVIEW

After the Engineer issues the rulings, an aggrieved party is entitled to have the order or decision reviewed by the District Court, in the nature of an appeal. NRS 533.450. On a petition for judicial review, the Court is confined to considering the administrative record.

NRS 533.450 (1). The proceedings in every case must be heard by the Court, and must be informal and a summary, but a full opportunity to be heard must be had before judgment is pronounced. NRS 533.450 (2).

In reviewing the record, the Court must treat the State Engineer's decision as "prima facie correct, and the burden of proof shall be upon the party" challenging the decision. NRS 533.450 (9). The Court may not substitute its judgment for that of the State Engineer, but is limited to determining whether there is substantial evidence in the record to support the decision. Revert v. Ray, 95 Nev. 782, 786, 603 P.2d 262, 264 (1979). Substantial evidence is "that which a reasonable mind might accept as adequate to support a conclusion." Bacher v. Office of the State Eng'r of Nev., 122 Nev. 1110, 1121, 146 P.3d 793, 800 (2006).

[A] conclusion that substantial evidence supports the findings of the State Engineer does not, however, dispose of the . . . appeal. The applicable standard of review of the decisions of the State Engineer, limited to an inquiry as to substantial evidence, presupposes the fullness and fairness of the administrative proceedings: all interested parties must have had a "full opportunity to be heard," See NRS 533.450 (2); the State Engineer must clearly resolve all the crucial issues presented, see *Nolan v. State Dep't of Commerce*, 86 Nev. 428, 470 P.2d 124 (1970) (on rehearing); the decision maker must prepare findings in sufficient detail to permit judicial review, *id.*; *Wright v State*

Insurance Commissioner, 449 P.2d 419 (Or. 1969); see also NRS 233B.125. When these procedures, grounded in basic notions of fairness and due process, are not followed, and the resulting administrative decision is arbitrary, oppressive, or accompanied by a manifest abuse of discretion, this court will not hesitate to intervene. *State ex rel. Johns v. Gragson*, 85 Nev. 478, 515 P.2d 65 (1973).

Revert, 95 Nev. At 786, 603 P.2d at 264.

The Court is free to decide purely legal questions de novo. Town of Eureka v. Office of the State Eng'r of Nev., 108 Nev. 163, 165, 626 P.2d 948, 949 (1992). A purely legal question is one that is not dependant (sic) upon, and must necessarily be resolved without reference to, any fact in the case. Beavers v Department of Motor Vehicles & Pub. Safety, 109 Nev. 435, 438 n.1, 851 P.2d 432, 434 n.1 (1993). While the State Engineer's interpretation of law is persuasive, and the court should give it great deference when it is within the language of the applicable statutory provisions, it is not controlling. Town of Eureka, 108 Nev. at 165, 826 P.2d at 950; Andersen Family Assocs., v Ricci, 124 Nev. Adv. Rep. 17, 179 P.3d 1201, 1203 (2008).

IV

NEVADA ENGINEERS' RULINGS COMMON TO SPRING, DELAMAR, CAVE AND DRY LAKE VALLEY

“The State Engineer held a hearing on the Spring, Cave, Dry Lake and Delamar Valley application between September 26, 2011, and November 18, 2011.” ROA 000010. NRS 533.370 (1) (c); (2) and (3) requires findings that water is available to be appropriated and that the statutory criteria for granting the water is satisfied by substantial evidence. “Both the Applicant [SNWA] and protestants submitted thousands of pages of scientific information, evidence and testimony for consideration during a record-long six-week hearing.” ROA 000029.

The Engineer made the following findings of fact:

1 That Southern Nevada provided substantial evidence of
2 need for additional water "independent of the Colorado
3 River," ROA 000037, and that "current available supplies
4 [are] insufficient to meet projected future water demands
5 under normal conditions." ROA 000038.

6 That Southern Nevada provided substantial evidence that it
7 "intends to construct the works necessary and put water
8 from the applications to beneficial use . . . with reasonable
9 diligence." ROA 000046.

10 That Southern Nevada provided substantial evidence of
11 financial ability and a "feasible conceptual plan of
12 development. ROA 000047.

13 These findings were opposed by many of the Protestants and countered with expert
14 opinions. However, there is no real question that the Engineer's findings above were not
15 based on substantial evidence acceptable to a reasonable mind. Further, the Protestants
16 had a full and fair opportunity to present their evidence. Thus, the Engineer's findings were
17 not arbitrary or capricious.

18 **V** 19 **OBJECTIONS MADE BY PROTESTANTS**

20 Virtually all of the Protestants which include Cleveland Ranch (Corp. of the Church of
21 Latter-Day Saints), White Pine, Eureka, Elko, and Nye counties, Nevada, The Confederate
22 Tribes of the Goshute Reservation, Ely and Duckwater Shoshone Tribes and Millard and
23 Juab counties, Utah, object to the Engineer's orders on the basis of the Monitor, Manage and
24 Mitigate Plan (MMM). The Protestants allege that as the plan is currently written it cannot
25 adequately protect existing rights or the environment.

26 Most of the Protestants object to the Orders alleging that any amount of water
27 awarded to SNWA is excessive or should not be granted at all, citing to evidence and
28 arguments presented to the Engineer at the 2011 hearings. Essentially, the objections are
that the award is neither environmentally sound nor in the public interest, pursuant to NRS
533.370. The objections are either relating to the entire Spring Valley Basin and/or Delamar,

1 Cave or Dry Lake Valleys, or localized areas inhabited or used by the Ely, Duckwater and
2 Goshute Native Americans.

3 Other, more specific objections are that NRS 533.3705 (which allows staged
4 development of a water award) is inapplicable to the instant case because the statute is not
5 retroactive to SNWA's 1989 application; and that hydrological knowledge of the respective
6 basins is so incomplete that any water award is premature and; that the perennial yield of
7 Delamar, Dry Lake, and Cave Valley, as part of the White Pine River Flow System is already
8 appropriated in the lower parts of the flow system.
9

10 Some of the Protestants argue that SNWA failed to meet its burden of proving need,
11 good faith intentions to construct the infrastructure, and financial ability to perform the
12 construction. As stated above, this court finds the Engineer's ruling valid regarding need,
13 good faith and financial ability.

14 Regarding the argument that NRS 533.3705, allowing staged development, does not
15 apply retroactively, as interpretation is a matter of law, this court finds that NRS 533.3705
16 does apply in this case. Enacted in 2007 the law states "[u]pon approval of an application to
17 appropriate water, the State Engineer may limit the initial use of water to a quantity that is
18 less than the total amount approved for the application." The applications in question were
19 approved in March, 2012, after the enactment of the statute. See generally PEBP v LVMPD,
20 124 Nev. 138 (2008).
21

22 Millard and Juab counties, Utah, object that Ruling 6164 does not specifically include
23 Snake Valley, Utah in the mitigation process. Snake Valley is specifically to be monitored by
24 six (6) wells and sixteen (16) monitoring sites. ROA 000114-115. Snake Valley, Utah is not
25 specifically mentioned as a mitigation site. Whether the omission was inadvertent or not,
26 Ruling 6164 is remanded to include Snake Valley, Utah in the mitigation plan.
27

28 The Confederated Tribes of the Goshute Reservation argue that pursuant to the
Public Trust Doctrine, the Spring Valley awards must be vacated.

1 If the current law governing the water Engineer does not clearly
2 direct the Engineer to continuously consider in the course of his
3 work the public's interest in Nevada's natural water resources, the
4 law is deficient. It is then appropriate, if not our constitutional
5 duty, to expressly reaffirm the Engineer's continuing responsibility
6 as a public trustee to allocate and supervise water rights so that
7 the appropriations do not substantially impair the public interest in
8 the lands and waters remaining. [The public trust] is an affirmation
of the duty of the state to protect the people's common heritage of
streams, lakes, marshlands, and tidelands, surrendering that right
of protection only in rare cases when the abandonment of that
right is consistent with the purposes of the trust. Our dwindling
natural resources deserve no less.

9 Lawrence v Clark County, 127 Nev. Adv. Op. 32, 254 P.2d. 606, 611 (2011).

10 The Goshute's argument is well taken, but whether Spring Valley groundwater is part
11 of the Public Trust Doctrine or not, Nevada law requires the Engineer to oversee an
12 environmentally sound stewardship of the water, the same goal as the doctrine.

13 VI 14 SPRING VALLEY APPROPRIATIONS

15 A. THE AWARD OF 61,127 AFA VIOLATES THE STATE ENGINEER'S RULES

16 The Engineer relied on substantial evidence, produced from numerous sources, when
17 determining the amount of water available for the Spring Valley appropriation granted to
18 SNWA. ROA 000057-000090. Considering the evidence of evapotranspiration, inter-basin
19 flow and recharge, the Engineer found 84,000 afa available. ROA 000090. Further, he
20 found, "there is no substantial evidence that the proposed use will conflict with protectable
21 interests in existing domestic wells, or that the use will threaten to prove detrimental to the
22 public interest." ROA 000215.

23 The Engineer began his calculation of the Spring Valley appropriation with the
24 "estimated average groundwater evapotranspiration (E.T.)," at 84,100 afa. Thus, the
25 perennial yield of Spring Valley is 84,000 afa. ROA 000214. Existing water rights are 18,873
26 afa and "an additional 4,000 afa is reserved for future growth and development for a total of
27
28

22,873 afa of water committed to the basin. Subtracting 22,873 afa from the perennial yield of 84,000 afa leaves 61,127 afa available for appropriation." ROA 000215.

Perennial yield has been for many years defined by the Engineer as:

The perennial yield of a groundwater reservoir may be defined as the maximum amount of groundwater that can be salvaged each year over the long term without depleting the groundwater reservoir. Perennial yield is ultimately limited to the maximum amount of natural discharge that can be salvaged for beneficial use. The perennial yield cannot be more than the natural recharge to a groundwater basin and in some cases is less.

ROA 000056.

In theory, with enough time the water removed from the system equals the recharge of the system thereby reaching equilibrium. However, reaching equilibrium may take hundreds of years, and "always involves the depletion of water from transitional storage." Engineer Ans. Brief, p.54. If more water comes out of a reservoir than goes into the reservoir, equilibrium can never be reached. This is known as water mining and "[w]hile there is no statute that specifically prevents groundwater mining, the policy of the Engineer for over one hundred (100) years has been to disallow groundwater mining. This policy remains today. Id.

The Engineer defines groundwater mining as pumping exceeding the perennial yield over time such that the system never reaches equilibrium. ROA 56. Natural discharge in Spring Valley is almost exclusively E.T. ROA 000057. E.T. occurs by plants and phreatophytes discharging the groundwater from the basin through use. In Spring Valley, this is the water sought for beneficial use. Of course, to do so, the phreatophytes must be completely eliminated. Engineer Ans. Brief, p.53-54.

Obviously, any water-well cannot capture all of the E.T., and while pumping and E.T. are both occurring, the water table drops. A reasonable lowering of the water table and death of most of the phreatophytes is a trade-off for a beneficial use of the water. "It is a condition of each appropriation of groundwater acquired under this Chapter that the right of

1 the appropriator relates to a specific quantity of water and that the right must allow for a
2 reasonable lowering of the static water level at the appropriator's point of diversion." NRS
3 534.110(4). The Engineer specifically found "there is no provision in Nevada water law that
4 addresses time to capture, and no State Engineer has required that E.T. be captured within a
5 specific period of time. It will often take a long time to reach near equilibrium in large basins .
6 . . and this is no reason to deny water right applications." ROA 000090. The Engineer is
7 correct that the time to reach equilibrium is not a valid reason to deny the grant of water, but
8 it may very well be a reason to limit the appropriation below the calculated E.T.
9

10 Here, there is no valid evidence of when SNWA will capture E.T., if ever. Evidence
11 was submitted at the hearing over many days, the Engineer stated that seventy-five (75) year
12 models of groundwater pumping are appropriate due to "existing data." ROA 000146.
13 However, over seventy-five (75) years becomes less certain. Id. Moreover, the Engineer did
14 not require SNWA to prove that they could capture all of the E.T. SNWA did claim that after
15 two hundred (200) years; their evidence showed that eighty-four (84%) percent of the E.T.
16 would be captured and eighty four percent [is] close to a hundred percent." SNWA Ans. Brief
17 p.288. Simple arithmetic shows that after two hundred (200) years, SNWA pumping and
18 evapotranspiration removes 70,977 afa from the basin with no equilibrium in sight. That is
19 9,780 afa more than SNWA's grant.
20

21 Mr. Stockton, arguing on behalf of the Engineer stated that, "requiring these E.T.
22 salvage projects . . . it's just not appropriate. It can't be done in most basins because the
23 federal government owns the land. They're not going to allow it to be dotted with wells all
24 over the place and the State Engineer found that it wasn't appropriate to require an E.T.
25 salvage project." SE Ans. Brief, Vol. I, p.54. SNWA stated that "[t]he whole question of
26 groundwater mining and E.T. capture and timed equilibrium are not part of the water law and
27 they are not necessary." SNWA Ans. Brief, Vol. I, p.69.
28

1 The Engineer acknowledged that it is unlikely all of the E.T. in a basin will be
2 captured. Additionally, “[i]t is unclear where [Cleveland Ranch] got the impression that
3 groundwater development in Nevada is required to be an E.T. salvage project, which is
4 certainly not contained in statutory law.” Engineer Ans. Brief, p.54. Perhaps Cleveland
5 Ranch and the other Protestants “got the impression” from the Engineer’s definition:
6 “Perennial yield is ultimately limited to the maximum amount of natural discharge that can be
7 salvaged for beneficial use.” ROA 000056. Moreover, in the Engineer’s Ruling 5726 he
8 defined perennial yield as an “assumption that water lost to natural E.T. can be captured by
9 wells and placed to beneficial use.” Cleveland Ranch Opening Brief, App. 1 at 27, citing
10 Ruling 5726. The Nevada Supreme Court stated, “[t]he perennial yield of a hydrological
11 basin is the equilibrium amount or maximum amount of water that can safely be used without
12 depleting the source.” *Pyramid Lake Paiute Tribe of Indians v Ricci*, 126 Nev. Adv. Op. 48;
13 245 P.3d 1146, 1147 (2010).

14
15 The Engineer ‘s finding that equilibrium in Spring Valley water basin will “take a long
16 time” was not based on substantial or reliable evidence, and is incorrect. Indeed, by his own
17 statements – and evidence – equilibrium will never be reached.

18
19 The Engineer has also said that “[d]rawdown of less than 50 feet over a seventy-five
20 year period is generally a reasonable lowering of the static water table.” ROA 000132.
21 However, after two hundred (200) years of pumping the water table is losing 9,780 afa over
22 and above the amount SNWA has been authorized to pump. SNWA’s expert certified that
23 uncaptured E.T. would have to be deducted from the perennial yield. ROA 34928. This, the
24 Engineer did not do.

25
26 This Court finds that the Engineer’s own calculations and findings, show that
27 equilibrium, with SNWA’s present award, will never be reached and that after two hundred
28 (200) years, SNWA will likely capture but eighty-four (84%) of the E.T. Further, this court
finds that losing 9,780 afa from the basin, over and above E.T. after 200 years is unfair to

1 following generations of Nevadans, and is not in the public interest. In violating the
2 Engineer's own standards, the award of 61,127 afa is arbitrary and capricious.

3 This finding by the court requires that this matter be remanded to the State Engineer
4 for an award less than the calculated E.T. for Spring Valley, Nevada, and that the amended
5 award has some prospect of reaching equilibrium in the reservoir.

6
7 **B. THERE ARE NO OBJECTIVE STANDARDS AS TO WHEN THE MITIGATION
8 PART OF THE MONITOR, MANAGE AND MITIGATE PLAN GO INTO EFFECT**

9 SNWA's expert reports make it clear that the hydrology of Spring Valley, as well as
10 Delamar, Dry Lake and Cave Valley, is not completely understood. Much of the data
11 collected over the years is analyzed by computer models and is "significantly" limited in
12 accuracy concerning the hydrological framework, actual precipitation, recharge and other
13 factors. ROA 010704; 010708-9. The experts recognize that inaccuracies exist because of
14 a lack of data collection over vast areas of Spring Valley, Delamar, Dry Lake and Cave
15 Valleys. ROA 010706. For example, 10 years of data collection generally means an
16 accurate predictive model for the next 10 years. ROA 000146. Thus, the Engineer has
17 stated that a 75 year model is a reasonable simulation because there are 75 years of existing
18 data. "Over 75 years becomes less certain." Id. "[U]ncertainty is reduced overtime as more
19 baseline and operational data become available." ROA 013244. "Much is not known about
20 the groundwater-influenced ecosystems in the [initial biological monitoring area] (e.g.,
21 relationship, between groundwater levels and spring-flow: relative dependence of certain
22 vegetation on groundwater versus other sources of water), and the response of these
23 systems to groundwater withdrawal by SNWA." Biological Monitoring Plan Spring Valley
24 Stipu. ROA 020648.

25
26 Recognizing that no one really knows what the impact of pumping water from Spring
27 Valley on such a large scale will be (ROA 000135-6 and 020066), the Engineer found that
28 staged pumping is environmentally sound and will insure no conflicts with existing rights.

1 ROA 000151. Additionally, the Engineer adopted the MMM Plan created by SNWA and the
2 National Park Service, Bureau of Fish and Wildlife, and the Bureau of Indian Affairs. A
3 description of the plan is contained in State Engineer's Order No. 6164. ROA 000103-120.

4 The MMM plan is a stipulation between SNWA and Federal agencies (supra). In
5 summary, SNWA's pumping will be managed to avoid "unreasonable harm to scenic values"
6 in the Great Basin National Park and the "loss of surface vegetation." ROA 020496. The
7 three principal components are:
8

9 *Monitoring Requirements* – including, but not limited to monitoring
10 wells, spring flow measurements, water chemistry analyses,
11 quality control procedures, and reporting requirements; and

12 *Management Requirements* – including, but not limited to the
13 creation of a Technical Review Panel ("TRP") to review
14 information collected under this Plan and advise the Executive
15 Committee (a group consisting of one management-level person
16 from each Party, as described below in Management
17 Requirements), the use of an agreed-upon regional groundwater
18 flow system numerical model(s) to predict effects of groundwater
19 withdrawals by SNWA in the Spring Valley HB, and the
20 establishment of a consensus-based decision-making process;
21 and

22 *Mitigation Requirements* – including, but not limited to the
23 modification relocation or reduction in points of diversion and/or
24 rates and quantities of groundwater withdrawals or the
25 augmentation of Federal Water Rights and/or Federal Resources
26 as well as measures designed and calculated to rehabilitate,
27 repair or replace any and all Federal Water Rights and Resources
28 if necessary to achieve the goals set forth in Recital G of the
Stipulation.

ROA 20791.

23 Similarly, the Biologic Monitoring, Management and Mitigation Plan has been
24 instituted to "determine the appropriate course of action to avoid and/or mitigate any effects
25 to Water-dependent Ecosystems . . . within the Great Basin National Park [and other
26 Federal] 'Areas of Interest.'" ROA 020806. The Biologic monitoring is to "determine potential
27 indicator species and appropriate parameters to monitor for early warning of unreasonable
28 adverse effects and of any effect within the boundaries of Great Basin National Park . . .

1 resulting from SNWA's withdrawal of ground water from the Spring Valley HB." Id. The
2 Mitigation portion of the Plan briefly describes what could possibly be done to mitigate
3 unreasonable effects. Id.

4 Appendix B of NSE Ruling 5726 contains objectives 6, 7, and 8 of the "Plan":

5 6. During the Pre-Withdrawal Phase, establish the range of
6 variation for each indicator (or suite of indicators) that will be
7 considered acceptable.

8 7. Define what constitutes an "unreasonable adverse effect"
9 during the Pre-Withdrawal Phase.

10 8. In coordination with TRP, during the Pre-Withdrawal Phase,
11 establish criteria that will initiate the BWG consultation process as
12 outlined in the Stipulation.

13 The Stipulation directs there be no "unreasonable adverse effect"
14 to groundwater-influenced ecosystems in the IBMA and no
15 adverse effect to GBNP as a result of SNWA's groundwater
16 withdrawal in Spring Valley. In order to meet these requirements,
17 it is imperative that impacts are detected and assessed, and
18 appropriate management actions are initiated, prior to such effect
19 occurring.

20 ROA 020647.

21 As noted above, the Engineer has instituted the MMM Plan as a condition of the
22 SNWA appropriations (ROA 000181), and has been involved in developing the Plan. ROA
23 013243-44. However, the MMM Plan is flawed in several respects, most notably: "Mitigation
24 planning is not part of this plan but will be handled separately when impact location and
25 magnitude are better understood." ROA 020648. Nonetheless, the MMM Plan emphasizes
26 that mitigation will cure any adverse effects and the Engineer has found that the existing,
27 non-Federal rights are sufficiently protected by the Plan. ROA 000215.

28 There are no objective standards to determine when mitigation will be required and
implemented. The Engineer has listed what mitigation efforts can possibly be made, i.e.,
stop pumping, modifying pumping, change location of pumps, drill new wells, or increase or
improve leopard frog populations in a different location from one that suffers an

1 unreasonable impact. ROA 000190. Also, the Engineer has noted that if pumping has an
2 adverse effect on swamp cedars, SNWA could mitigate, ROA 000189. but does not cite
3 objective standards of when mitigation is necessary. The Engineer states: "where
4 unreasonable impacts may occur and how bad the impacts may be is not understood and
5 thus mitigation cannot be part of the plan at the present." Not knowing where or how bad an
6 impact is, is not the same thing as defining what an adverse impact..

7
8 The Engineer has found that it is "premature to attempt to set quantitative standards
9 or triggers for mitigation actions," because "[f]actors such as natural variation in the
10 environmental resources must be understood before any standards or triggers are set." ROA
11 000311. "Selecting specific standards before a full baseline is developed would be
12 premature. It would not lead to sound scientific decisions." ROA 000182-183.

13 While this Court cannot completely disagree with the Engineer's statement above, he
14 has also stated: "The State Engineer finds that the applicant [SNWA,] gathered and
15 presented substantial environmental resource baseline material and that the environmental
16 resource baseline information provides a platform for sound, informed decision making."
17 ROA 00176. Thus, if SNWA, and thereby the Engineer, has enough data to make informed
18 decisions, setting standards and "triggers" is not premature. Curiously, the Engineer has
19 made the finding that a failure to even make "Mitigation" a part of the current MMM plan
20 "demonstrates Applicant's determination to proceed in a scientifically informed,
21 environmentally sound manner." ROA 000183. It seems that if there is enough data to make
22 informed decisions, exactly when an unreasonable impact to either the environment or
23 existing rights occurs, the Engineer or SNWA should recognize it and make the decision to
24 mitigate. If there is not enough data (as shown earlier, no one really knows what will happen
25 with large scale pumping in Spring Valley), granting the appropriation is premature. The
26 ruling is arbitrary and capricious.
27
28

1 Still other flaws with the MMM Plan are evident. The Engineer stated: "the regulation
2 of water rights is in the State Engineer's purview, and the State Engineer proactively
3 monitors impacts to existing rights and the environment." ROA 000183.

4 Also, "[t]he State Engineer finds that the potentially impacted water rights . . . are or will be
5 monitored and that this monitoring will allow for early warning of potential impacts to these
6 water rights . . . and will exercise his authority as needed to protect these existing rights and
7 will require mitigation if needed." ROA 000139-140.

9 The Engineer found that lowering the Spring Valley water table by 50 feet is
10 "reasonable," but has avoided any mention of what is unreasonable. Nor did he state how
11 monitoring will be accomplished, or what constitutes an impact, potential or otherwise. There
12 is no standard to know how much of an impact is unreasonable to leopard frogs, or to swamp
13 cedars, before mitigation is necessary. The Engineer gives a vague statement of how
14 mitigation can be done, but has no real plan or standard of when mitigation would be
15 implemented. Without a stated, objective standard, the ruling is arbitrary and capricious.

17 Regarding monitoring and proactive monitoring by the Engineer, there is no plan.
18 The Federal/SNWA stipulation requires yearly reports to the Engineer, but even a cursory
19 examination of the stipulation reveals that between SNWA, the Federal agencies and
20 existing water right holders, the goals and motivations of each party will certainly conflict.
21 The Engineer finds that he has jurisdiction to oversee the "environmental soundness" of the
22 project "and will do so." ROA 000178. Again, he has not stated how this will be
23 accomplished. If the Engineer believes that his department will monitor the non-Federal
24 rights and environment, he has not said how it will be done. The Engineer pointed out in
25 *Great Basin Water Network v. State Engineer*, 126 Nev. Adv. Op. 20; 234 P.3d 912 (2010),
26 that he is short staffed. There are 172,605 acres in Spring Valley alone. ROA 18788.
27 Without a plan to monitor that large of an area, a statement that the Engineer will monitor the
28 area is also arbitrary and capricious.

Impliedly, the Engineer has ceded the monitoring responsibilities to SNWA. “The State Engineer finds that [SNWA] has the ability to identify impacts of the project through its environmental monitoring plan.” ROA 000193. Yet, the plan has failed to set any standard of how impacts may be recognized. Essentially, the Engineer is simply saying, “we can’t define adverse impacts, but we will know it when we see it.”

Both SNWA and the Engineer have properly referenced the successful MMM plan used at Devil's Hole in the Armagosa Valley. In Devil's Hole, aside from being a small fraction of area compared to Spring Valley, Delamar, Dry Lake and Cave Valley, the MMM plan specifically has a "trigger." When the water level falls 2.7 feet below a copper washer, mitigation must occur. Transcript, Vol. I, p.65. This is an objective and recognizable standard.

The Engineer has stated several times that “under specific conditions” SNWA will be required to modify or curtail pumping. ROA 013248 and 013264. Yet again, there are no specifics stated.

The Engineer rightly recognized his “heavy burden of ensuring” that this water project is environmentally sound. ROA 000173. A heavy burden indeed and one which is not complete. Several of the Protestants noted that the MMM plan is filled with good intentions but lacks objective standards. This Court agrees. Granting water to SNWA is premature without knowing the impacts to existing water right holders and not having a clear standard to identify impacts, conflicts or unreasonable environmental effects so that mitigation may proceed in a timely manner. Based on the above, this matter must be remanded to the State Engineer until objective standards can be established and stated – as to when mitigation must occur.

VII CAVE, DRY LAKE AND DELAMAR VALLEY

A. THE WATER AWARDED TO SNWA IN RULINGS 6165, 6166 AND 6167 IS ALREADY APPROPRIATED IN THE LOWER BASINS

1
2 Cave, Dry Lake, and Delamar Valley (CDD) are contiguous and linear, stretching from
3 White Pine County, Nevada, southerly, into Lincoln County. It is approximately sixty (60)
4 miles from the Northern tip of Cave Valley to the Southern end of Delamar Valley.
5 ROA 020507. Unlike Spring Valley, which is a “closed valley”, the CDD basins are “not
6 closed”. ROA 000599. In closed valleys, natural water discharge is by evapotranspiration
7 (E.T.). In CDD, water is discharged by water flow from one basin into another. “Just like
8 water in streams, groundwater moves from areas of higher hydraulic heads to areas of lower
9 hydraulic heads.” ROA 017407.

11 The Engineer described the CDD basins as part of the White River Flow system,
12 consisting of ten (10) additional hydrographic basins, which discharge primarily into the
13 White River Valley, Pahrnagat Valley, and the Muddy Springs Area. ROA 000599.
14 Approximately 2,000 afa flow into Dry Lake Valley from Pahroc. ROA 010588. “There is no
15 groundwater E.T. in Dry Lake Valley, (ROA 017415) so all groundwater in Dry Lake Valley
16 flows down gradient to the south to Delamar Valley.” Id. and continues from Delamar to
17 northern Coyote Springs Valley. Id.

19 The Protestants allege that the CDD water allocation to SNWA, has been previously
20 appropriated. The awarding SNWA water from the higher gradient of the White River Flow
21 allows SNWA to take the water before it recharges the lower basins, which conflicts with
22 earlier established water rights. In other words, the same water has been awarded twice,
23 once in the upper basins, and again in the lower basins.

24 The Engineer tacitly acknowledges the double appropriation of the same water but
25 rationalizes it in two different ways. First, he refers to the rights in Coyote Springs as “paper
26 water rights.” Oral Arg. Trans., Vol. II, p.255. Exactly what the Engineer means by “paper
27 water rights” is unclear, but this Court takes it to mean: valid, existing rights. If the rights
28 were invalid, there would be no over appropriation. Second, the Engineer states that “up-

1 gradient use will not, if at all, measurably affect down-gradient supply for hundreds of years.”
2 ROA 000599-600. Further, he found that “if no measurable impacts to existing rights occur
3 within hundreds of years, then the statutory requirement of not conflicting with existing water
4 rights is satisfied.” ROA 000600.

5 Considering that models which project water disbursement longer than seventy-five
6 (75) years are uncertain (ROA 020061) – and giving some deference to the Engineer’s
7 ruling, (see *Town of Eureka*, 108 Nev. 163 (1992)), this Court cannot agree with the
8 Engineer’s interpretation of NRS 533.370 (2). The statute is unequivocal, if there is a conflict
9 with existing rights, the applications “shall” be rejected.
10

11 Moreover, it is also unseemly to this court, that one transitory individual may simply
12 defer serious water problems and conflict to later generations, whether in seventy-five (75)
13 years or “hundreds,” especially when the “hundreds” of years is only a *hoped* for resolution.
14

15 There may be water from the CDD basins which could properly be appropriated
16 without conflicting with down-gradient rights. The current orders do not contain such a
17 calculation. For this reason, rather than an outright reversal of the appropriations from Cave,
18 Dry Lake and Delamar Valleys, the matter is remanded to the Engineer for recalculation of
19 possibly unappropriated water.

20 **B. LIKE SPRING VALLEY, THE MONITOR, MANAGE AND MITIGATION**
21 **PLAN REQUIRES SPECIFIC STANDARDS TO BE AN EFFECTIVE**
22 **PLAN**

23 The analysis of the MMM Plan and the requirement for standards to be applied to
24 determine when mitigation is necessary in the Cave, Dry Lake and Delamar Valleys is much
25 the same as in Spring Valley. There is still a great deal of uncertainty regarding the
26 hydrology of CDD. ROA 000671. Because of the unknowns, the Engineer has adopted the
27 MMM Plan in the CDD valleys:

28 The State Engineer finds an effective management program that
includes monitoring activities, management tools and mitigation
options is critical to the determination that the Applications will not

1 conflict with existing water rights or with protectable interests in
2 existing domestic wells.

3 ROA 000632.

4 The Engineer has also found that a drawdown of less than fifty (50) feet over a
5 seventy-five (75) year period is a reasonable lowering of the static water table "made on a
6 case-by-case basis". ROA 000653. He has presumably accepted testimony of SNWA's
7 expert predicting one (1%) percent to seventeen (17%) percent spring flow reductions in the
8 White River and Pahrnagat Valleys and has determined a seventeen (17%) percent flow
9 reduction is reasonable.

10 Additionally, he found that "Federal and state laws, including the National
11 Environmental Policy Act ("NEPA"), the [Environmental Species Act (ESA)], the Clean Water
12 Act ("CWA") and Nevada water law, require environmental protection through comprehensive
13 permitting and regulatory process." ROA 000683. "The ESA imposes strict substantive
14 protections, in the form of reasonable and prudent alternatives, that include minimization and
15 mitigation measures that prevent jeopardy to listed species or their critical habitat." ROA
16 000684. Further, "non-listed" species will also be protected – "resulting in an even greater
17 breadth of coverage." Id. Notwithstanding the Federal involvement, the Engineer states that
18 he still has the jurisdiction and responsibility to determine environmental soundness
19 independently of other agencies – "and will do so." ROA 000684.

20 The Engineer has, in effect, relinquished his responsibilities to others. Again, the
21 Engineer has failed to state under what specific conditions he will require mitigation. The
22 Engineer also recognizes that SNWA will extensively monitor springs and sensitive sites in
23 the CDD valleys and finds that the Applicants' monitoring plan will be effective. ROA
24 000636-000640.

25 Like the Spring Valley Plan, the Engineer finds that it is premature to set standards
26 and/or triggers because there is not enough "baseline" data. ROA 000641. Yet, the
27
28

1 Engineer has also made the specific finding “that the Applicant gathered and presented
2 substantial environmental resource baseline material and that the environmental resource
3 baseline information provides a platform for sound, informed decision-making.” ROA
4 000683. Whether this is contradictory or not (sufficient baseline data v. insufficient baseline
5 data), standards, triggers or thresholds, however phrased, must be objective to provide
6 notice of when and where mitigation is necessary. Without standards, any decision to
7 mitigate is subjective and thus, arbitrary and capricious.
8

9 Stated differently, the Engineer decided that because the final configuration of the
10 wells and locations of wells within the valleys is unknown at the present, setting quantitative
11 standards, “or triggers” for mitigation is pre-mature because it must be known how the
12 aquifer responds to pumping. ROA 000641. It seems that when and where unreasonable
13 effects occur, is not the same as recognizing an unreasonable effect, wherever or whenever
14 it appears. Paraphrasing Samuel Clemens, show me a man who knows what’s reasonable
15 and I’ll show you a man who knows what isn’t.
16

17 Further, the Engineer found that “natural variability in the system must be
18 documented to determine if observed changes are due to pumping, rather than natural
19 fluctuations due to seasonal recharge or other factors.” ROA 000641. The Engineer has
20 already found that SNWA has gathered and presented enough baseline data to make sound
21 and informed decisions, not to mention that SNWA has been studying the basins and valleys
22 for at least twenty-five (25) years and likely longer. In short, without standards, triggers or
23 thresholds the MMM Plan is not a “comprehensive” plan, “critical to the determination that the
24 Applications will not conflict with existing water rights or with protectable interests in existing
25 domestic wells”. ROA 000632.
26

27 This Court is charged with “determining whether there is substantial evidence in the
28 record to support the [Engineer’s] decision.” *Revert v. Ray*, 95 Nev. 782, 786 (1979). Here,
the Engineer said, however not quite consistently, that there is not enough evidence to

1 implement, what he has characterized as "critical," the MMM Plan. Thus, if there is
2 insubstantial evidence and it is premature to set triggers and thresholds, it is premature to
3 grant water rights.

4 As stated in the Plan, a definition of an unreasonable adverse effect, i.e. a trigger, a
5 standard, a threshold must be defined. ROA 020647. Absent a thorough plan and
6 comprehensive standards for mitigation, any mitigation, (or lack thereof) is subjective,
7 unscientific, arbitrary and capricious. This matter must be remanded to the Engineer so that
8 objective standards may be established.
9

10 VIII 11 CONCLUSION

12 After an in-depth review of the record this Court will not disturb the findings of the
13 Engineer save those findings that are the subject of this Order. This Court remands orders
14 6164, 6165, 6166 and 6167 for:

- 15 1. The addition of Millard and Juab counties, Utah in the mitigation plan so far as
16 water basins in Utah are affected by pumping of water from Spring Valley Basin,
Nevada;
- 17 2. A recalculation of water available for appropriation from Spring Valley assuring
18 that the basin will reach equilibrium between discharge and recharge in a
reasonable time;
- 19 3. Define standards, thresholds or triggers so that mitigation of unreasonable
20 effects from pumping of water are neither arbitrary nor capricious in Spring
21 Valley, Cave Valley, Dry Lake Valley and Delamar Valley, and;
- 22 4. Recalculate the appropriations from Cave Valley, Dry Lake and Delamar Valley
to avoid over appropriations or conflicts with down-gradient, existing water rights.

23 DATED this 10th day of December, 2013.

24
25 
26 ROBERT E. ESTES
27 SENIOR DISTRICT JUDGE
28