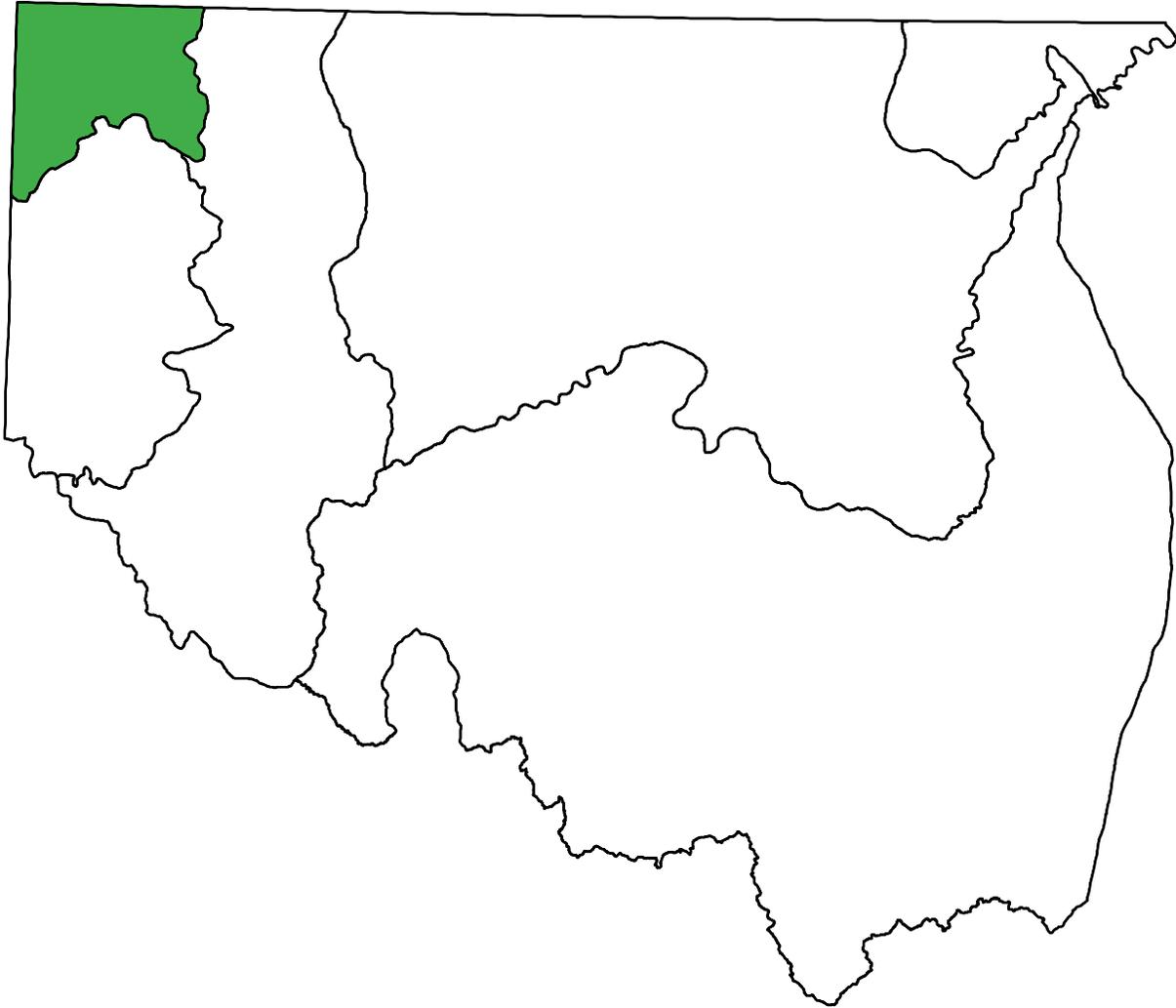


Section 6.6

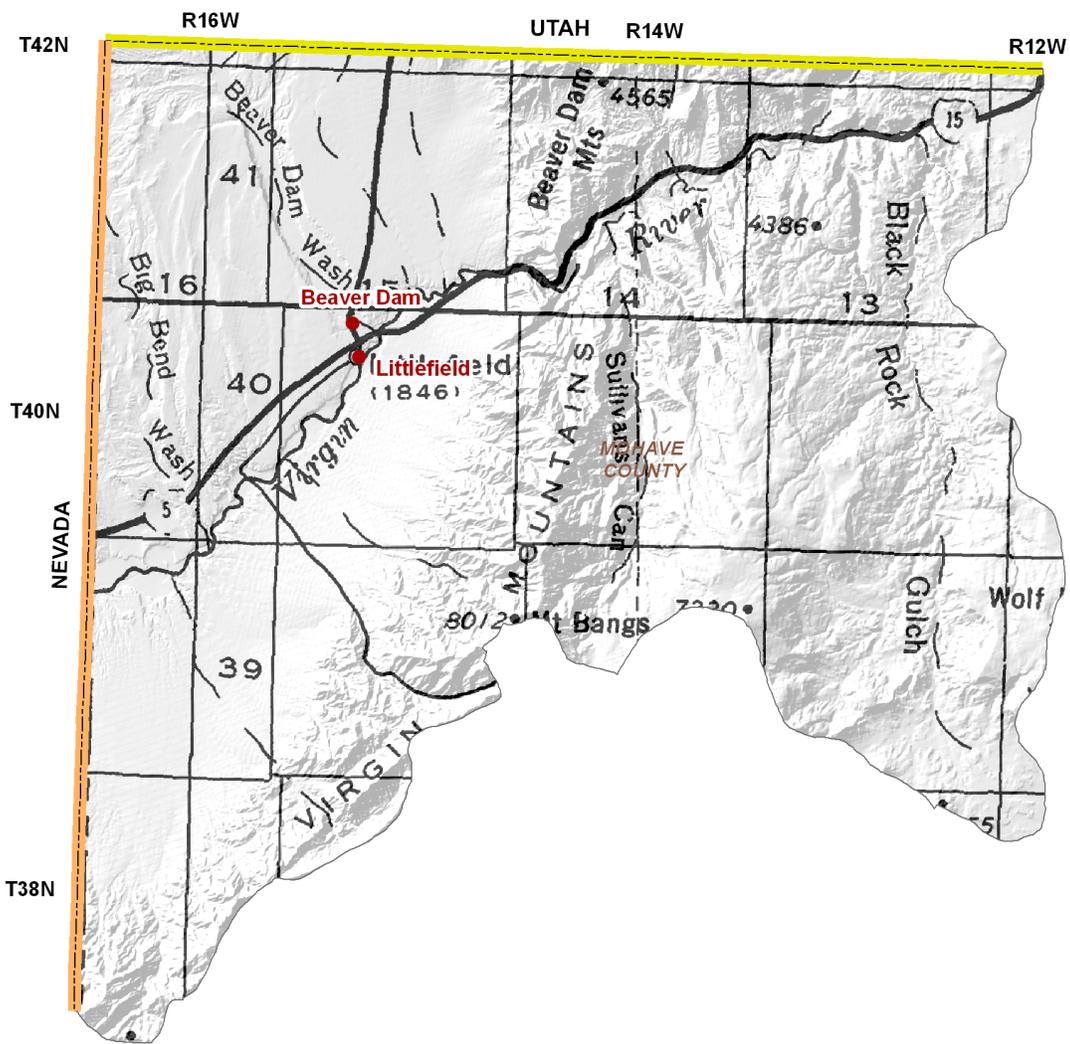
Virgin River Basin



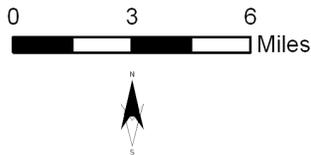
6.6.1 Geography of the Virgin River Basin

The Virgin River Basin, located in the northwestern-most part of the planning area is 434 square miles in area. Geographic features and principal communities are shown on Figure 6.6-1. The basin is characterized by mountains and a broad valley west of the mountains. Vegetation is primarily Mohave desertscrub with smaller areas of Great Basin desertscrub, Great Basin conifer woodland, interior chaparral and a small area of Rocky Mountain montane conifer forest. (See Figure 6.0-9) Riparian vegetation along the Virgin River is predominantly tamarisk.

- Principal geographic features shown on Figure 6.6-1 are:
 - Principal basin communities of Beaver Dam and Littlefield
 - The Virgin River running from the northeast to southwest of the basin
 - Virgin and Beaver Dam Mountains in the center of the basin
 - Mt. Bangs on the southern basin boundary, the highest point in the basin at 8,012 feet



Base Map: USGS 1:500,000, 1981



Nevada State Boundary
Utah State Boundary
City, Town or Place



Figure 6.6-1
Virgin River Basin
Geographic Features

6.6.2 Land Ownership in the Virgin River Basin

Land ownership, including the percentage of ownership by category, for the Virgin River Basin is shown in Figure 6.6-2. The principal feature of land ownership in this basin is the large portion of land managed by the U.S. Bureau of Land Management. A description of land ownership data sources and methods is found in Volume 1, Section 1.3.8. Land ownership categories are discussed below in the order of percentage from largest to smallest in the basin.

U.S. Bureau of Land Management (BLM)

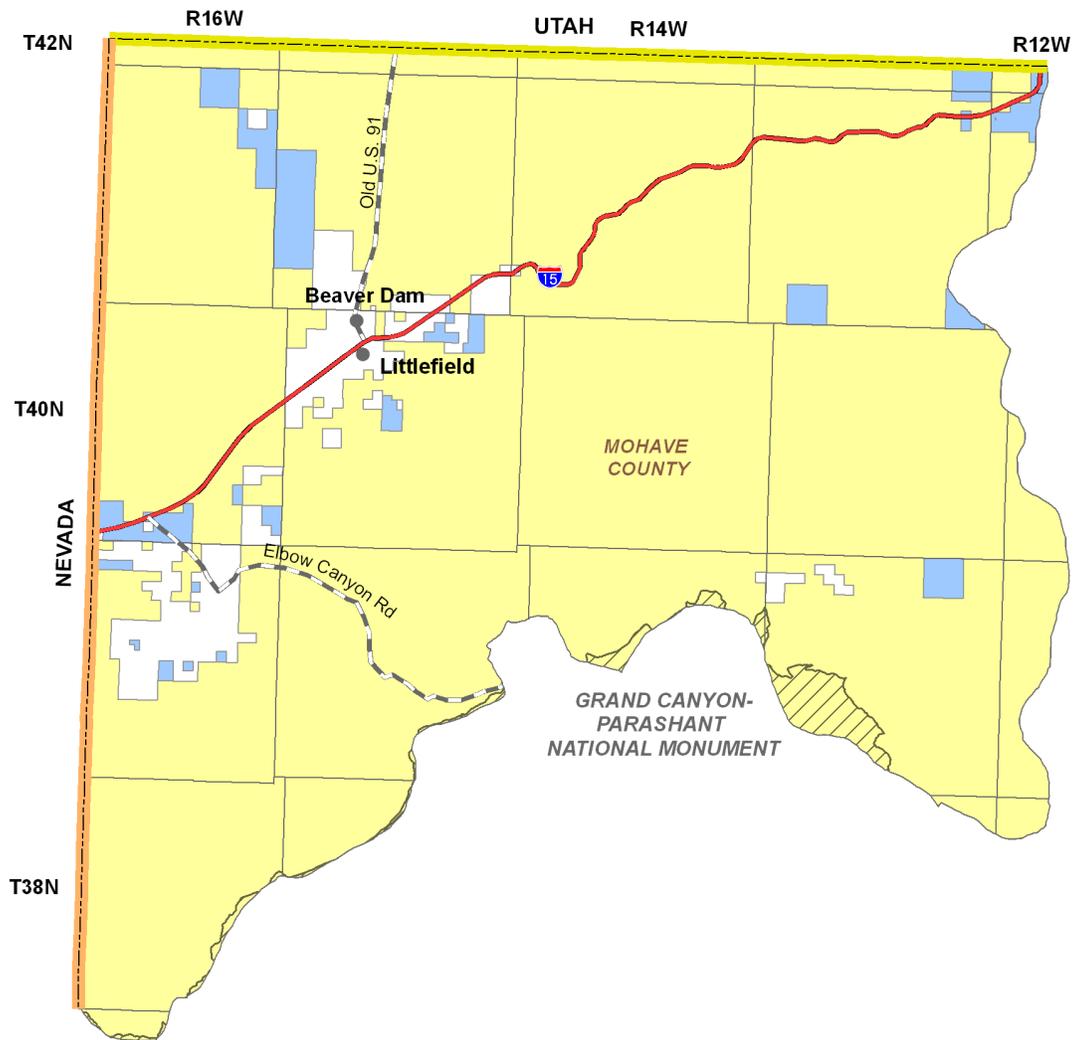
- 91.7% of the land is federally owned and managed by the Arizona Strip Field Office of the Bureau of Land Management.
- A small portion of BLM land is managed as the Grand Canyon-Parashant National Monument. The basin includes the 19,600 acre Beaver Dam Mountains Wilderness and a portion of the 87,900 acre Paiute Wilderness, located in the eastern portion of the basin.
- Primary land use is recreation, resource conservation and grazing.

Private

- 5.0% of the land is private.
- The majority of the private land is in the vicinity of Beaver Dam/Littlefield and west of Elbow Canyon Road in an area known as “Scenic.”
- Land uses include domestic, commercial and agriculture.

State Trust Land

- 3.3% of the land is held in trust for the public schools under the State Trust Land system.
- State land is located throughout most of the basin and is interspersed with BLM and private lands.
- Primary land use is grazing.

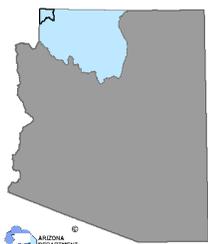


**Land Ownership
(Percentage in Basin)**

- U.S. Bureau of Land Management (91.7%) 
- Private (5.0%) 
- State Trust (3.3%) 
- National Monument 
- Nevada State Boundary 
- Utah State Boundary 
- Interstate Highway 
- Major Road 
- City, Town or Place 



**Figure 6.6-2
Virgin River Basin
Land Ownership**



Source: ALRIS, 2004
Bureau of Land management, 1999 & 2000

6.6.3 Climate of the Virgin River Basin

Climate data from NOAA/NWS Co-op Network stations are compiled in Table 6.6-1 and the locations are shown on Figure 6.6-3. Figure 6.6-3 also shows precipitation contour data from the Spatial Climate Analysis Service (SCAS) at Oregon State University. The Virgin River Basin does not contain Evaporation Pan, AZMET or SNOTEL/Snowcourse stations. A description of the climate data sources and methods is found in Volume 1, Section 1.3.3.

NOAA/NWS Co-op Network

- Refer to Table 6.6-1A
- Temperatures at the one NOAA/NWS Co-op Network station range from an average annual high of 89.5°F to an average annual low of 45.5°F.
- The highest average seasonal rainfall occurs in the winter season (January-March) when 40% of the annual rainfall occurs. Average annual rainfall is 7.59 inches.

SCAS Precipitation Data

- See Figure 6.6-3
- Additional precipitation data shows average annual rainfall as high as 16 inches in the eastern portion of the basin and as low as four inches in the western portion of the basin.

Table 6.6-1 Climate Data for the Virgin River Basin

A. NOAA/NWS Co-op Network:

Station Name	Elevation (in feet)	Period of Record Used for Averages	Average Temperature Range (in F)		Average Precipitation (in inches)				
			Max/Month	Min/Month	Winter	Spring	Summer	Fall	Annual
Beaver Dam	1,880	1971-2000	89.5/Jul	45.5/Jan	3.05	0.89	1.68	1.97	7.59

Source: WRCC, 2003

B. Evaporation Pan:

Station Name	Elevation (in feet)	Period of Record Used for Averages	Avg. Annual Evap (in inches)
None			

Source: WRCC, 2003.

C. AZMET:

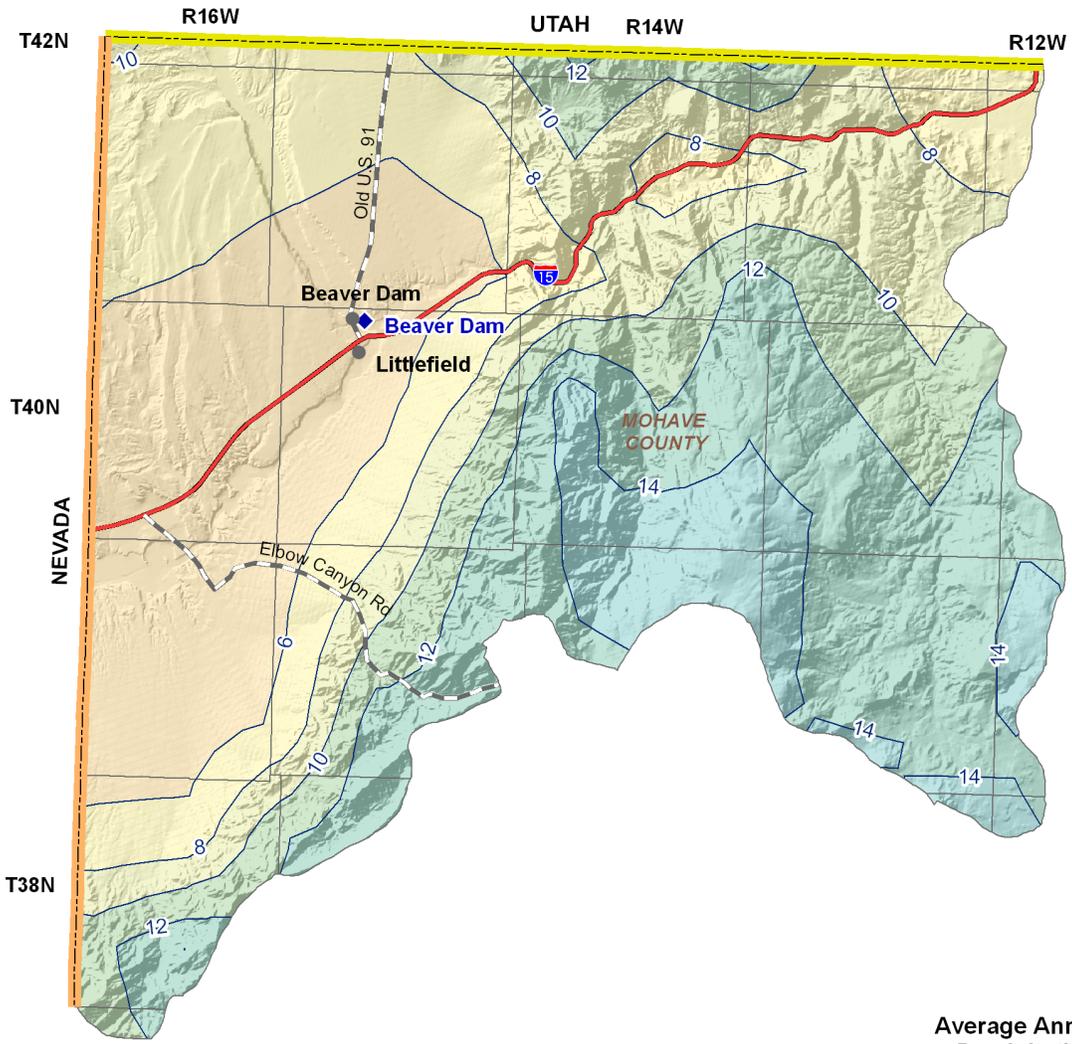
Station Name	Elevation (in feet)	Period of Record Used for Averages	Average Annual Reference Evapotranspiration, in inches (Number of years to calculate averages)
None			

Source: Arizona Meteorological Network, 2005

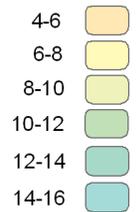
D. SNOTEL/Snowcourse:

Station Name	Elevation (in feet)	Period of Record Used for Averages	Average Snowpack, at Beginning of the Month, as Inches Snow Water Content (Number of measurements to calculate average)					
			Jan.	Feb.	March	April	May	June
None								

Source: NRCS, 2005



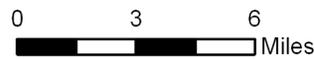
**Average Annual
Precipitation
(1961-1990)
inches per year**



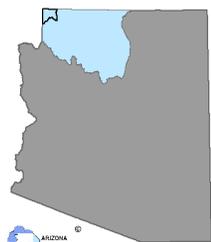
Meteorological Stations

NOAA/NWS

- Precipitation Contour
- Nevada State Boundary
- Utah State Boundary
- Interstate Highway
- Major Road
- City, Town or Place



**Figure 6.6-3
Virgin River Basin
Meteorological Stations
and Annual Precipitation**



Precipitation Data Source: Oregon State University, 1998

6.6.4 Surface Water Conditions in the Virgin River Basin

Streamflow data, including average seasonal flow, average annual flow and other information are shown in Table 6.6-2. Flood ALERT equipment in the basin is shown in Table 6.6-3. Reservoir and stockpond data, including maximum storage or maximum surface area, are shown in Table 6.6-4. The location of streamflow gages identified by USGS number, flood ALERT equipment, USGS runoff contours and large reservoirs are shown on Figure 6.6-5. A description of stream data sources and methods is found in Volume 1, Section 1.3.16. A description of reservoir data sources and methods is found in Volume 1, Section 1.3.11. A description of stockpond data sources and methods is found in Volume 1, Section 1.3.15.

Streamflow Data

- Refer to Table 6.6-2.
- Data from three stations located at two watercourses are shown in the table and on Figure 6.6-5. Two stations are real-time stations and all are currently operating.
- In general, average seasonal flow is highest in the winter (January-March) when between 31% and 42% of the average annual flow occurs.
- The maximum annual flow was 506,912 acre-feet in 1983 at the Virgin River at Littlefield station with a contributing drainage area of 5,090 square miles. Data shown on the table is through the 2002-2003 water year. In 2005, the annual flow at this station was 566,225 acre-feet or approximately four times greater than the median annual flow.
- Figure 6.6-4 shows the periodic flood events in the Virgin River recorded at the Littlefield gage from 1930-2006.

Flood ALERT Equipment

- Refer to Table 6.6-3.
- As of October 2005 there was one weather station in the basin located at Beaver Dam.

Reservoirs and Stockponds

- Refer to Table 6.6-4.
- There are no large reservoirs and one small reservoir with a total surface area of six acres.
- There are 45 registered stockponds in the basin.

Runoff Contour

- Refer to Figure 6.6-5.
- Average annual runoff is highest, 0.5 inches per year or 27 acre-feet per square mile, at the southeastern tip of the basin and decreases to 0.1 inches, or five acre-feet per square mile, to the north and west.

Figure 6.6-4 Annual Flows (acre-feet) Virgin River at Littlefield, Arizona, water years 1930-2006 (Station # 9415000)

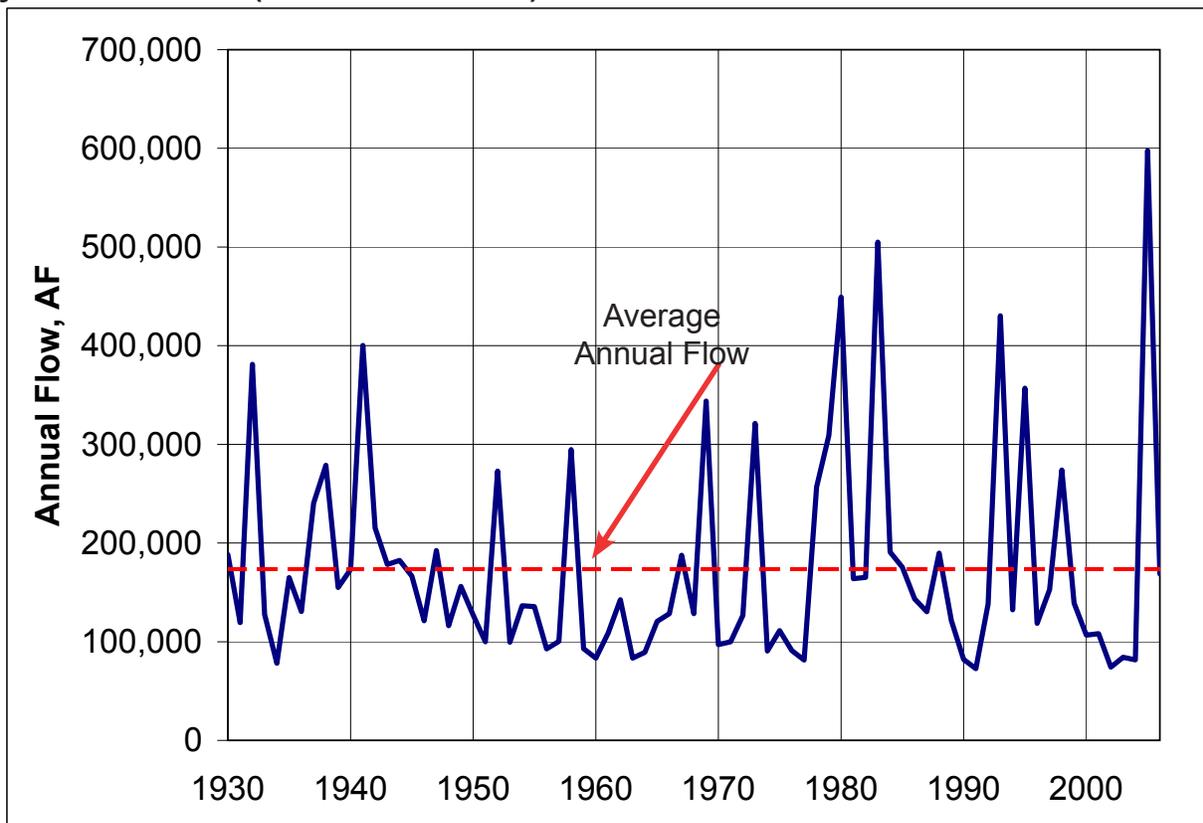


Table 6.6-2 Streamflow Data for the Virgin River Basin

Station Number	USGS Station Name	Drainage Area (in mi ²)	Mean Basin Elevation (in feet)	Period of Record	Average Seasonal Flow (% of annual flow)				Annual Flow (in acre-feet/year)				Years of Record
					Winter	Spring	Summer	Fall	Minimum	Median	Mean	Maximum	
9413700	Virgin River above the Narrows near Littlefield	4,415	NA	6/1998-current (real time)	31	21	19	29	68,506 (2000)	71,764	92,644	137,663 (2001)	3
9414900	Beaver Dam Wash at Beaver Dam	575	NA	2/1993-current (real time)	42	21	17	20	1,151 (2002)	1,709	1,572	1,947 (1996)	5
9415000	Virgin River at Littlefield	5,090	5,500	10/1929-current	32	33	15	20	73,140 (1977)	141,935	174,502	506,912 (1983)	72

Sources: USGS NWIS, USGS 1998 and USGS 2003.

Notes:

NA = Not available

Statistics based on Calendar Year

Annual Flow statistics based on monthly values

Summation of Average Annual Flows may not equal 100 due to rounding.

Period of record may not equal Year of Record used for annual Flow/Year statistics due to only using years with a 12 month record

Table 6.6-3 Flood ALERT Equipment in the Virgin River Basin

Station ID	Station Name	Station Type	Install Date	Responsibility
7570	Beaver Dam	Weather Station	NA	Mohave County FCD

Notes:
 FCD = Flood Control District
 NA = Not available at this time

Table 6.6-4 Reservoirs and Stockponds in the Virgin River Basin

A. Large Reservoirs (500 acre-feet capacity and greater)

MAP KEY	RESERVOIR/LAKE NAME <i>(Name of dam, if different)</i>	OWNER/OPERATOR	MAXIMUM STORAGE (AF)	USE	JURISDICTION
None identified by ADWR at this time					

B. Other Large Reservoirs (50 acre surface area or greater)¹

MAP KEY	RESERVOIR/LAKE NAME <i>(Name of dam, if different)</i>	OWNER/OPERATOR	MAXIMUM SURFACE AREA (acres)	USE	JURISDICTION
None identified by ADWR at this time					

C. Small Reservoirs (greater than 15 acre-feet and less than 500 acre-feet capacity)

Total number: 0

Total maximum storage: 0 acre-feet

D. Other Small Reservoirs (between 5 and 50 acres surface area)¹

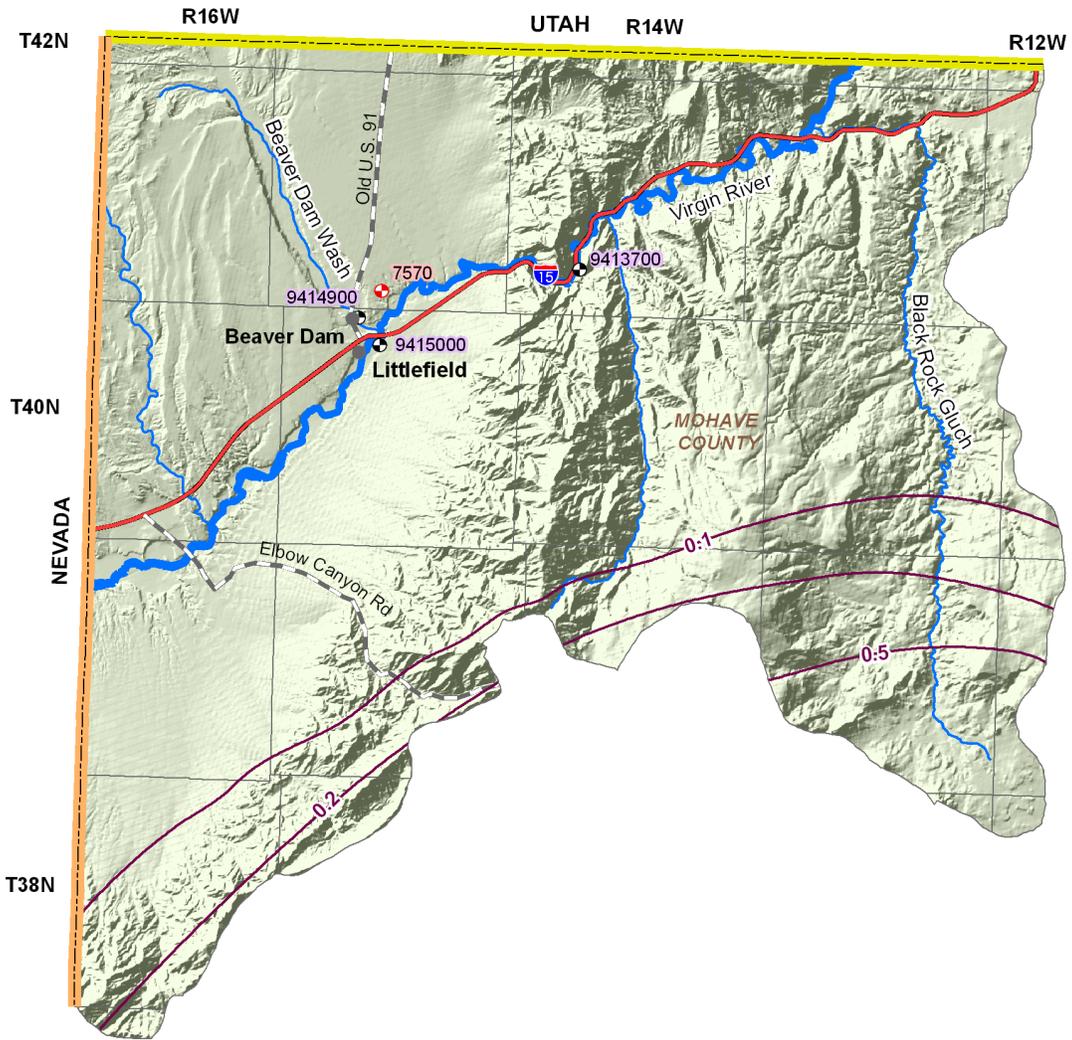
Total number: 1

Total surface area: 6 acres

E. Stockponds (up to 15 acre-feet capacity)

Total number: 45

¹ Capacity data not available to ADWR



Stream Data Source: ALRIS, 2005

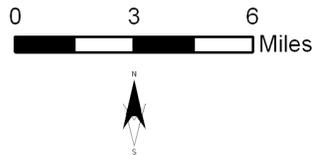


Figure 6.6-5
Virgin River Basin
Surface Water Conditions

USGS Annual Runoff Contour
for 1951-1980 (in inches)

Stream Channel (width of line
reflects stream order)

USGS Gage and Station ID

Flood ALERT Equip. & Station ID

Nevada State Boundary

Utah State Boundary

Interstate Highway

Major Road

City, Town or Place



6.6.5 Perennial/Intermittent Streams and Major Springs in the Virgin River Basin

Major springs with discharge rates and date of measurement and the total number of springs in the basin are shown in Table 6.6-5. The locations of major springs and perennial streams are shown on Figure 6.6-6. A description of data sources and methods for intermittent and perennial reaches is found in Volume 1, Section 1.3.16. A description of spring data sources and methods is found in Volume 1, Section 1.3.14.

- There are no intermittent streams and the only perennial stream is the Virgin River.
- There are a series of major springs in the basin with a combined discharge rate of 50 gallons per minute (gpm). The largest discharge is in the vicinity of Littlefield, where the total discharge for eight springs is between 8,980 gpm and 22,400 gpm.
- There are no minor springs in the basin.
- The total number of springs, regardless of discharge, identified by the USGS varies from 23 to 25, depending on the database reference.

Table 6.6-5 Springs in the Virgin River Basin

A. Major Springs (10 gpm or greater):

Map Key	Name	Location		Discharge (in gpm) ¹	Date Discharge Measured
		Latitude	Longitude		
1	Littlefield (multiple)	365539	1134950	8,980 - 22,400 ²	During or before 2000
2	Beaver Dam Wash (multiple)	365411	1135615	1,120 ³	During or before 1997

B. Minor Springs (1 to 10 gpm):

Name	Location		Discharge (in gpm) ²	Date Discharge Measured
	Latitude	Longitude		
None identified by ADWR at this time				

C. Total number of springs, regardless of discharge, identified by USGS (see ALRIS, 2005 and NHD, 2006): 23 to 25

Notes:

¹ Most recent measurement identified by ADWR

² Discharge of 8 springs in a 7 mile reach from the Narrows to the Littlefield gage

³ Estimation of discharge along Beaver Dam Wash above Littlefield gage

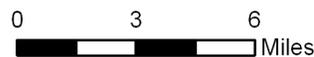
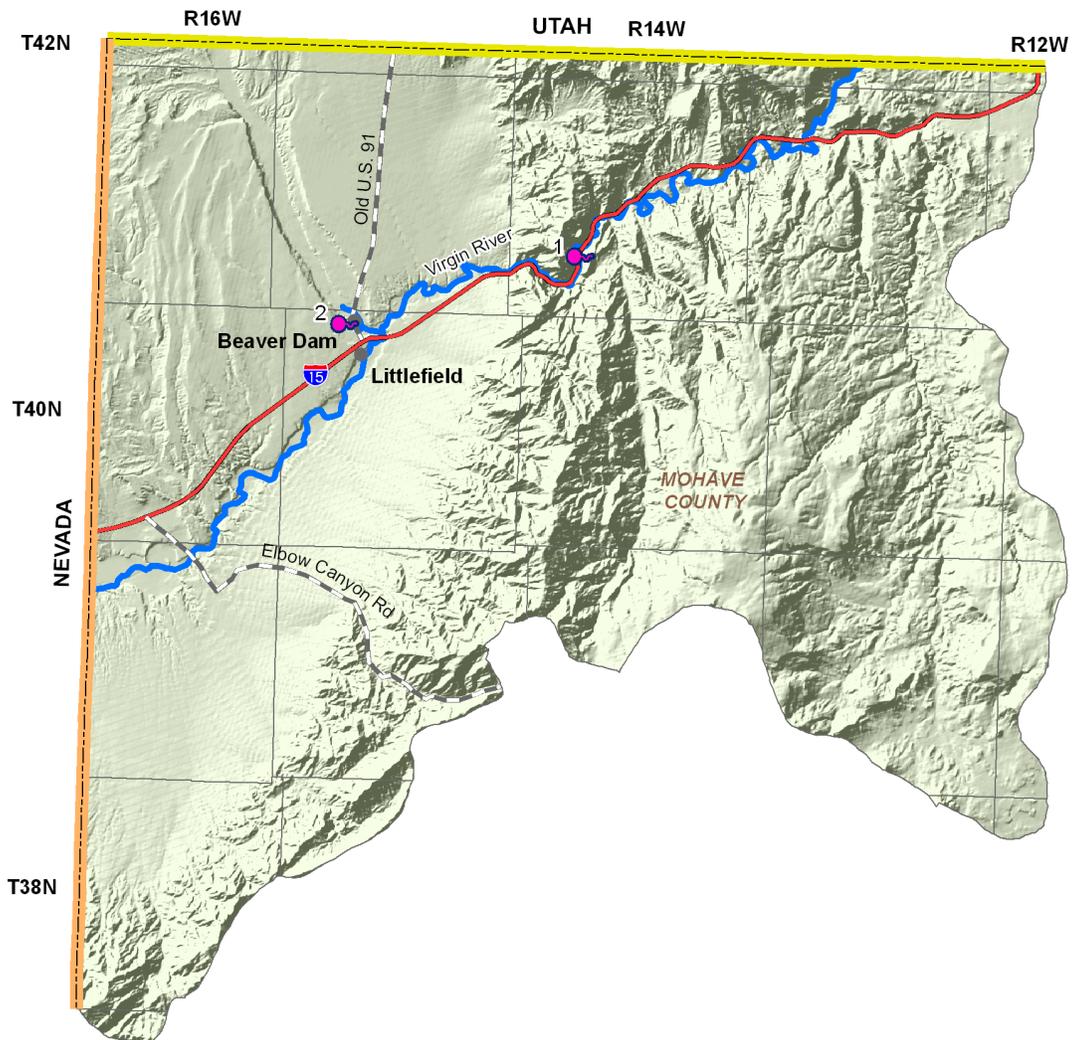


Figure 6.6-6
Virgin River Basin
Perennial/Intermittent Streams
and Major (>10 gpm) Springs

- Spring
- Perennial Stream
- Nevada State Boundary
- Utah State Boundary
- Interstate Highway
- Major Road
- City, Town or Place



Stream Data Source: AGFD, 1993 & 1997

6.6.6 Groundwater Conditions of the Virgin River Basin

Major aquifers, well yields, estimated natural recharge, estimated water in storage, number of index wells and date of last water-level sweep are shown in Table 6.6-6. Figure 6.6-7 shows aquifer flow direction and water-level change between 1990-1991 and 2003-2004. Figure 6.6-8 contains hydrographs for selected wells shown on Figure 6.6-7. Figure 6.6-9 shows well yields in five yield categories. A description of aquifer data sources and methods is found in Volume 1, Section 1.3.2. A description of well data sources and methods, including water-level changes and well yields, is found in Volume 1, Section 1.3.19.

Major Aquifers

- Refer to Table 6.6-6 and Figure 6.6-7.
- Major aquifers in the basin include basin fill and sedimentary rock (Muddy Creek Formation).
- Basin geology in the western portion of the basin consists of unconsolidated sediments.
- Flow direction is generally toward the west following Beaver Dam Wash and the Virgin River.

Well Yields

- Refer to Table 6.6-6 and Figure 6.6-9.
- As shown on Figure 6.6-9, well yields in this basin range from less than 100 gallons per minute (gpm) to greater than 2,000 gpm.
- One source of well yield information, based on 53 reported wells, indicates that the median well yield in this basin is 650 gpm.

Natural Recharge

- Refer to Table 6.6-6.
- The natural recharge estimate for this basin is greater than 30,000 acre-feet per year.

Water in Storage

- Refer to Table 6.6-6.
- According to the one estimate of water in storage for this basin, from a 1994 ADWR study, there is 1.7 million acre-feet of water in storage to a depth of 1,200 feet.

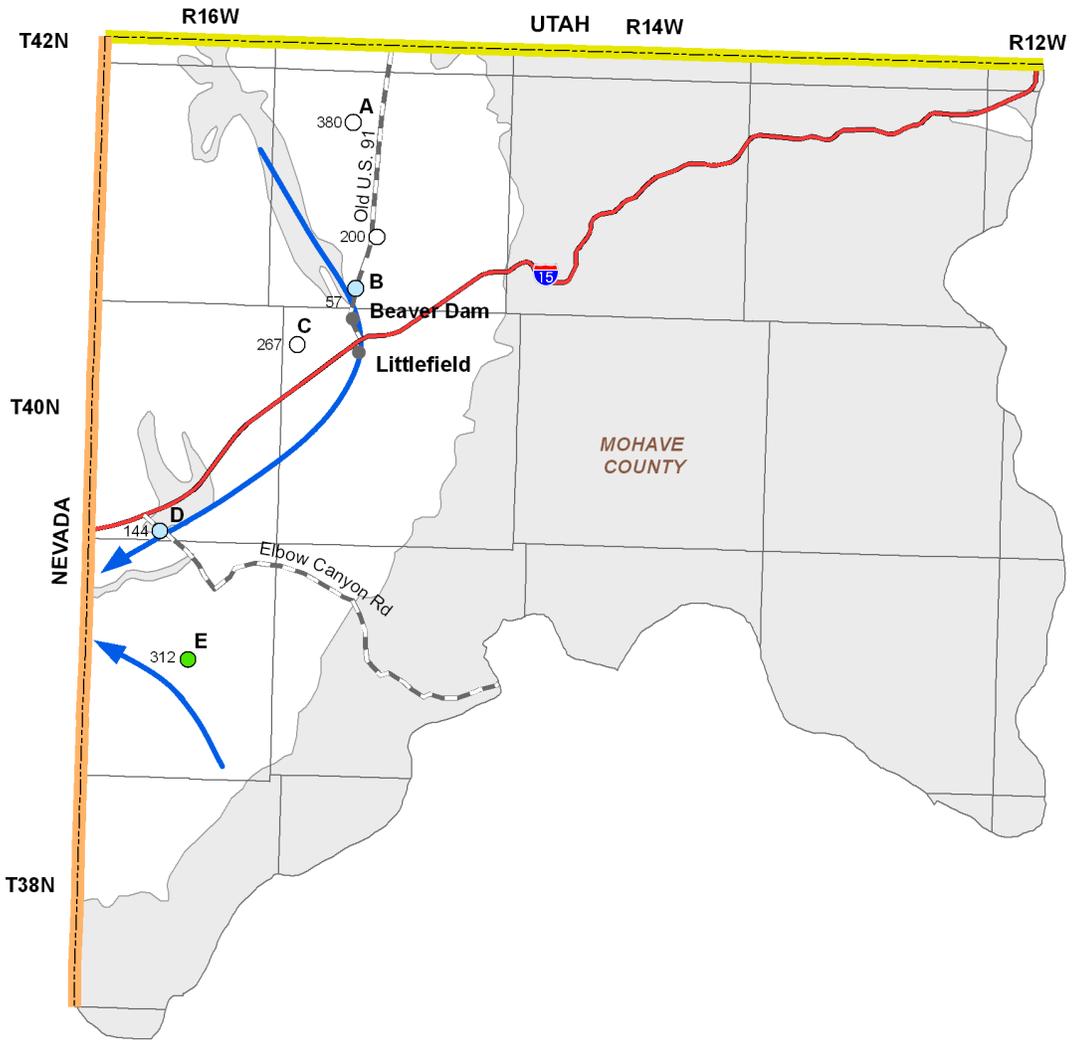
Water Level

- Refer to Figure 6.6-7. Water levels are shown for wells measured in 2003-2004.
- The Department annually measures six index wells in this basin. Depth to water and hydrographs for five of the six index wells are shown in Figure 6.6-7 and Figure 6.6-8.
- The deepest recorded water level in the basin is 380 feet in the northern portion of the basin and the shallowest is 57 feet north of Beaver Dam.
- There is one ADWR automated groundwater level monitoring device located near Littlefield, not shown on the map.

Table 6.6-6 Groundwater Data for the Virgin River Basin

Basin Area, in square miles: 434		
Major Aquifer(s):	Name and/or Geologic Units	
	Basin Fill	
	Sedimentary Rock (Muddy Creek Formation)	
Well Yields, in gal/min:	N/A	Measured by ADWR and/or USGS
	Range 3-5,500 Median 650 (53 wells reported)	Reported on registration forms for large (> 10-inch) diameter wells
	Range 0-2,000	ADWR (1990 and 1994)
	Range 0-2,500	USGS (1994)
Estimated Natural Recharge, in acre-feet/year:	>30,000	Virgin Valley Water District (2005)
Estimated Water Currently in Storage, in acre-feet:	1,700,000 (to 1,200 ft)	ADWR (1994)
	N/A	Arizona Water Commission (1975)
Current Number of Index Wells: 6		
Date of Last Water-level Sweep: 1991 (65 wells measured)		

N/A = Not Available



Water-level change in feet between 1990-1991 and 2003-2004

H = number is depth to water in feet during 2003-2004; letter is hydrograph

Between -1 and +1 ● (green)

Between +1 and +15 ○ (blue)

Change Data Not Available ○ (white)

Generalized Flow Direction → (blue arrow)

Consolidated Crystalline & Sedimentary Rocks [grey box]

Unconsolidated Sediments [white box]

Nevada State Boundary - - - (orange)

Utah State Boundary - - - (yellow)

Interstate Highway [red line]

Major Road [black dashed line]

City, Town or Place ● (black dot)

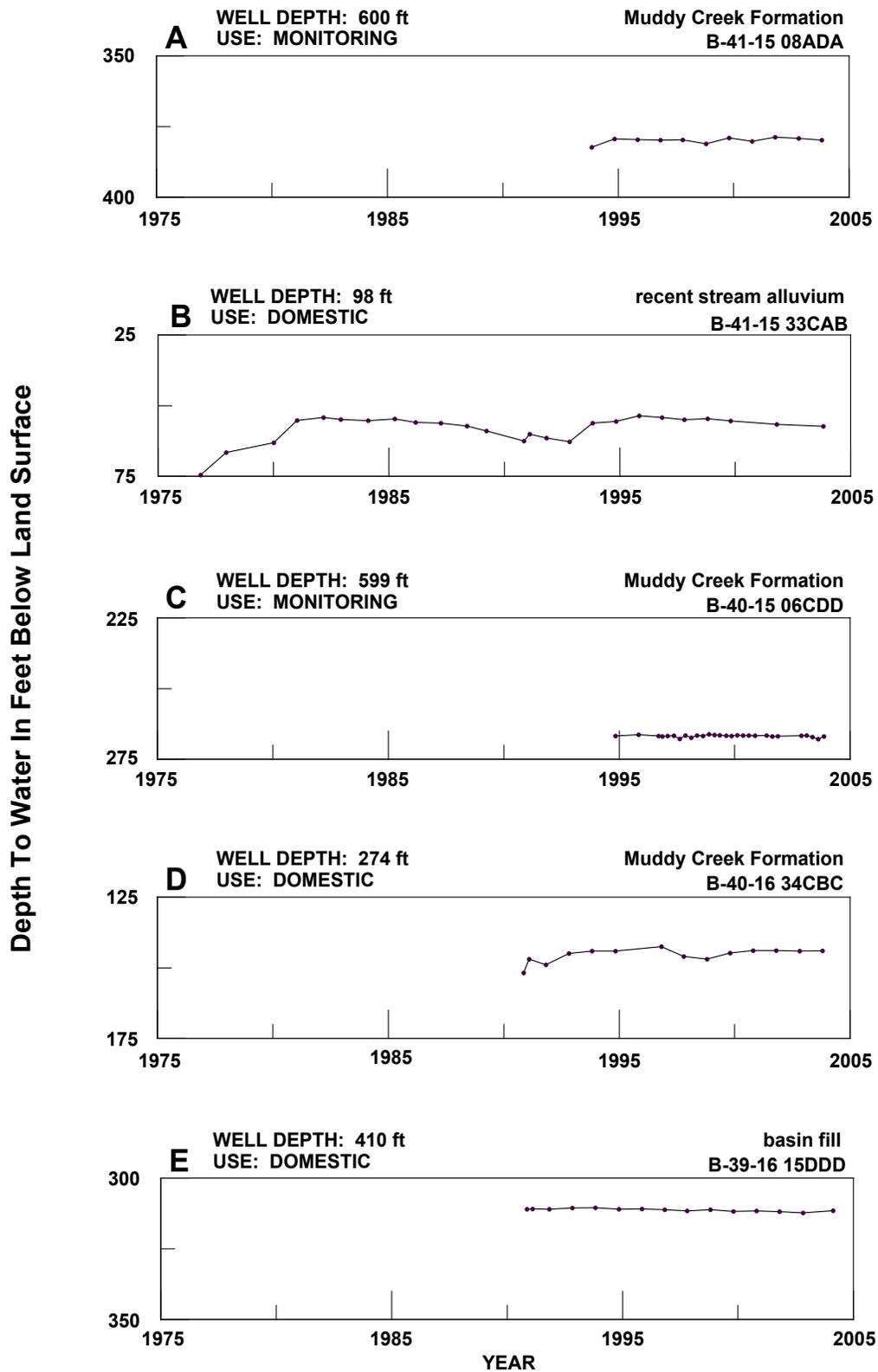


Figure 6.6-7
Virgin River Basin
Groundwater Conditions



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OF WATER
RESOURCES

Figure 6.6-8
Virgin River Basin
Hydrographs Showing Depth to Water in Selected Wells



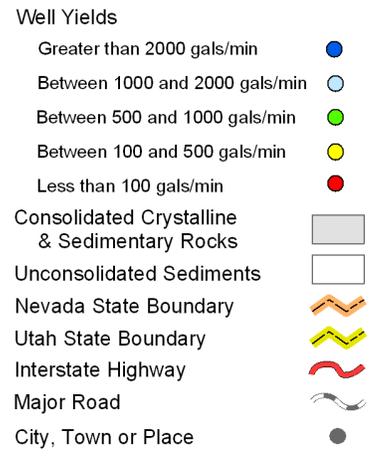
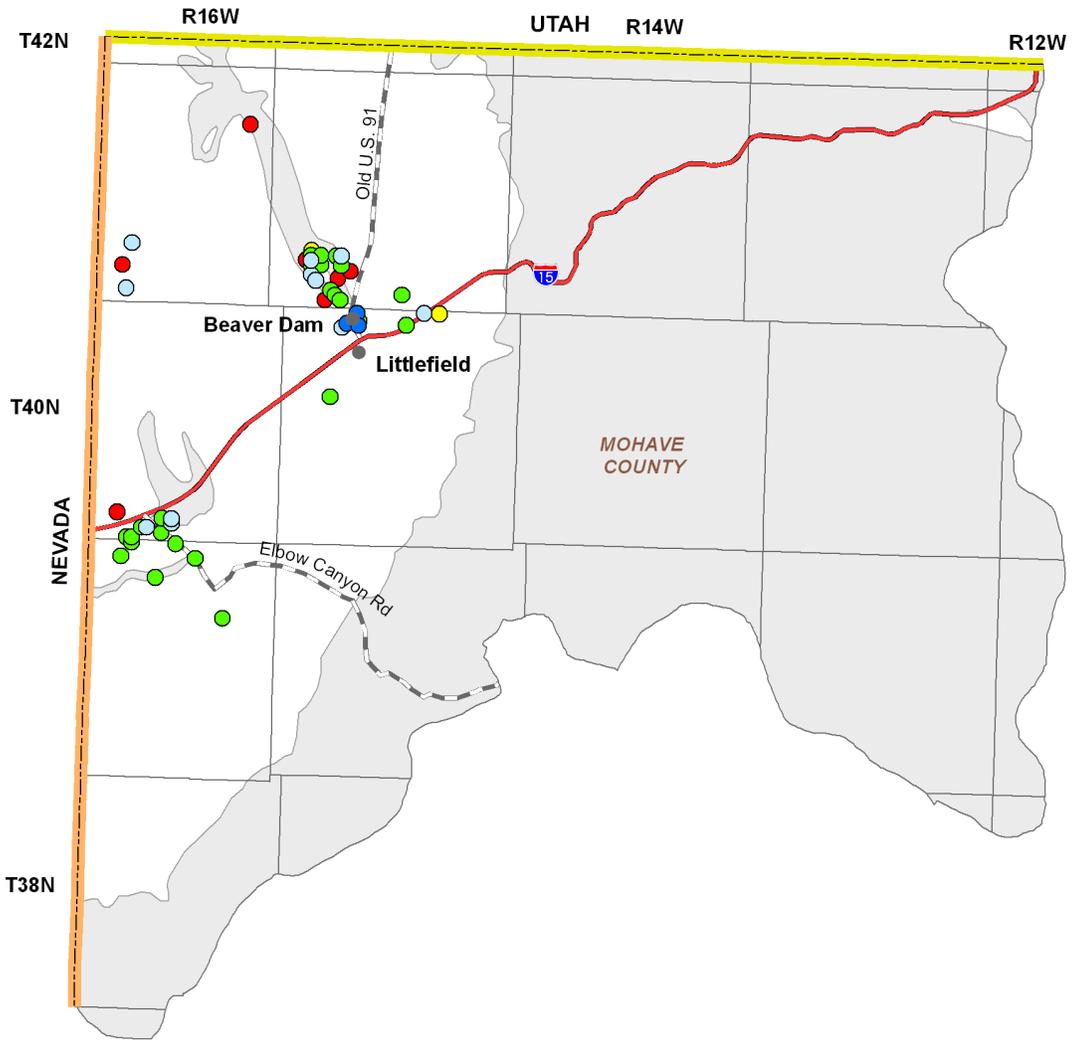


Figure 6.6-9
Virgin River Basin
Well Yields



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OF WATER
RESOURCES

6.6.7 Water Quality of the Virgin River Basin

Wells, springs and mine sites with parameter concentrations that have equaled or exceeded drinking water standard(s), including location and parameter(s) are shown in Table 6.6-7A. Impaired lakes and streams with site type, name, length of impaired reach, area of impaired lake, designated use standard and parameter(s) exceeded is shown in Table 6.6-7B. Figure 6.6-10 shows the location of water quality occurrences keyed to Table 6.6-7. A description of water quality data sources and methods is found in Volume 1, Section 1.3.18. Not all parameters were measured at all sites; selective sampling for particular constituents is common.

Wells, Springs and Mines

- Refer to Table 6.6-7A.
- Thirteen wells have parameter concentrations that have equaled or exceeded drinking water standards.
- The most common standard equaled or exceeded was arsenic.
- Other standards equaled or exceeded were radionuclides, nitrates and lead.

Lakes and Streams

- Refer to Table 6.6-7B.
- Water quality standards were exceeded in one 10-mile stream reach, the Virgin River from Beaver Dam Wash to Big Bend Wash.
- The parameters exceeded were suspended sediment concentration and selenium.
- This reach is not part of the ADEQ water quality improvement effort called the Total Maximum Daily Load (TMDL) Program at this time.

Table 6.6-7 Water Quality Exceedences in the Virgin River Basin¹

A. Wells, Springs and Mines

Map Key	Site Type	Site Location			Parameter(s) Concentration has Equaled or Exceeded Drinking Water Standard (DWS) ²
		Township	Range	Section	
1	Well	41 North	15 West	32	As
2	Well	41 North	15 West	32	As
3	Well	40 North	15 West	3	As, Rad
4	Well	40 North	15 West	3	As
5	Well	40 North	15 West	3	As
6	Well	40 North	15 West	4	As
7	Well	40 North	15 West	5	As
8	Well	40 North	15 West	5	As
9	Well	40 North	16 West	33	NO3
10	Well	39 North	16 West	3	Pb
11	Well	39 North	16 West	11	As
12	Well	39 North	16 West	11	As
13	Well	39 North	16 West	15	As

B. Lakes and Streams

Map Key	Site Type	Site Name	Length of Impaired Stream Reach (in miles)	Area of Impaired Lake (in acres)	Designated Use Standard ³	Parameter(s) Exceeding Use Standard ²
a	Stream	Virgin River (Beaver Dam Wash to Big Bend Wash)	10	NA	A&W	Se, SSC

Notes:

NA = Not Applicable

¹ Water quality samples collected between 1997 and 2002.

² As = Arsenic

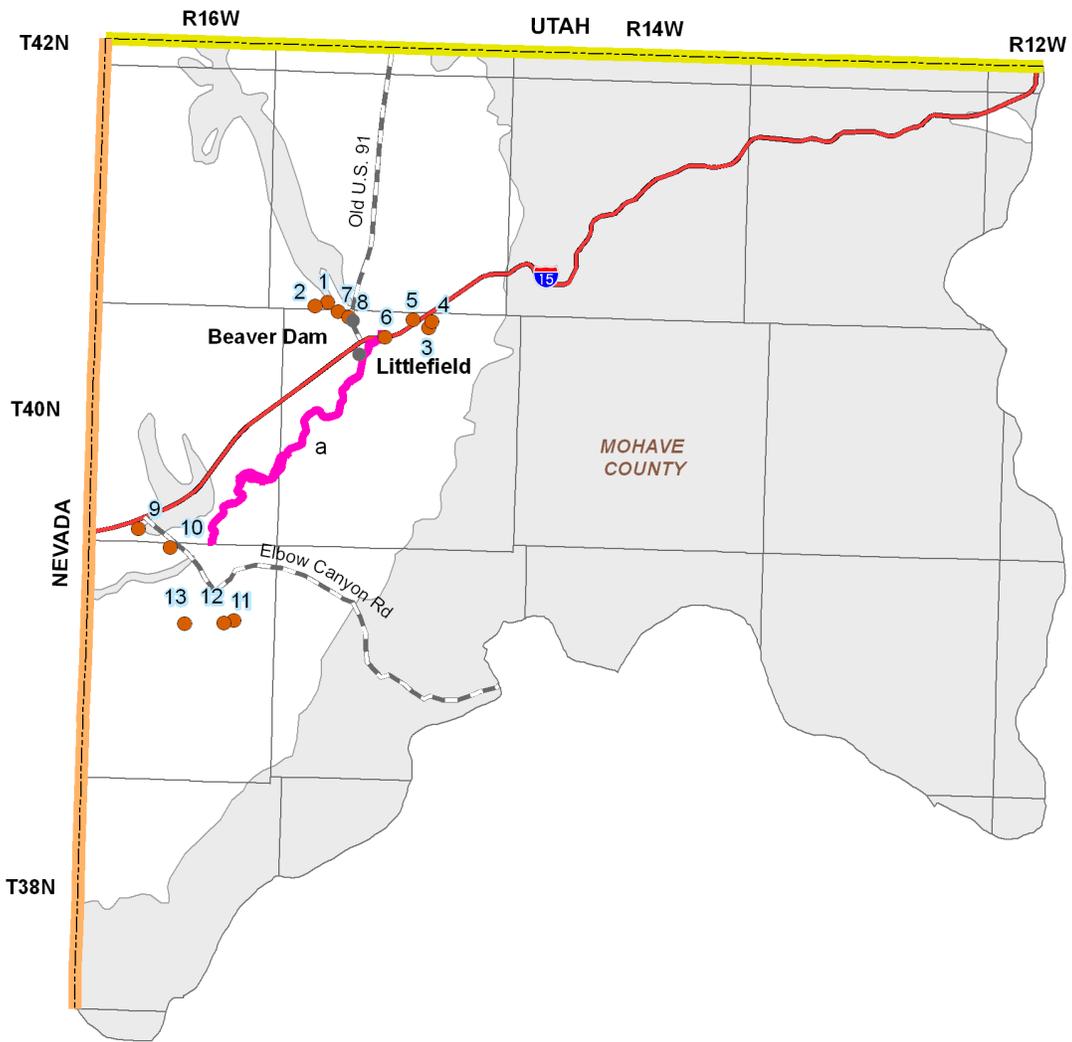
NO3 = Nitrate/ Nitrite

Rad = One or more of the following radionuclides - Gross Alpha, Gross Beta, Radium, and Uranium

Se = Selenium

SSC = Suspended Sediment Concentration

³ A&W = Aquatic and Wildlife



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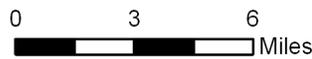


Figure 6.6-10
Virgin River Basin
Water Quality Conditions

- Well, Spring or Mine Site that has Equaled or Exceeded DWS ● 1
- Impaired Stream or Lake ~ a
- Consolidated Crystalline & Sedimentary Rocks
- Unconsolidated Sediments
- Nevada State Boundary
- Utah State Boundary
- Interstate Highway =
- Major Road -
- City, Town or Place ●

6.6.8 Cultural Water Demands in the Virgin River Basin

Cultural water demand data including population, number of wells and the average well pumpage and surface water diversions by the municipal, industrial and agricultural sectors are shown in Table 6.6-8. Effluent generation including facility ownership, location, population served and not served, volume treated, disposal method and treatment level is shown in Table 6.6-9. Figure 6.6-11 shows the location of demand centers. A description of cultural water demand data sources and methods is found in Volume 1, Section 1.3.5. More detailed information on cultural water demands is found in Section 6.0.7.

Cultural Water Demands

- Refer to Table 6.6-8 and Figure 6.6-11.
- Population in this basin increased from 99 in 1980 to 1,532 in 2000 and is projected to reach 5,508 by 2050.
- Groundwater demand increased from 5,000 acre-feet per year on average in 1971-1975 to approximately 9,150 acre-feet per year on average from 1996-2000. In 2001-2003 groundwater demand was 2,950 acre-feet per year on average.
- Surface water demand was 3,000 acre-feet on average from 1971-1990 and increased to approximately 6,350 acre-feet in 1996-2000. In 2001-2003 surface water use was approximately 1,650 acre-feet per year on average due to declining agricultural demand.
- Most basin demand for both surface water and groundwater is for irrigation. Agricultural demand centers are found in the vicinity of Beaver Dam/Littlefield and Elbow Canyon Road. Flooding in January 2005 destroyed some of the agricultural fields in this basin.
- All recorded industrial demand in the basin is for two golf courses.
- There are two sand and gravel operations in the basin in the vicinity of Scenic and Beaver Dam, their water use was not available.
- As of 2003 there were 258 registered wells with a pumping capacity of less than or equal to 35 gallons per minute and 82 wells with a pumping capacity of more than 35 gallons per minute.

Effluent Generation

- Refer to Table 6.6-9.
- There are four wastewater treatment facilities in this basin.
- Information on population served, effluent generation and disposal method is available only for the Beaver Dam Sewer Company Wastewater Treatment Plant. This plant serves 119 people, generates 6.2 acre-feet of effluent and discharges to a watercourse.

Table 6.6-8 Cultural Water Demands in the Virgin River Basin¹

Year	Recent (Census) and Projected (DES) Population	Number of Registered Water Supply Wells Drilled		Average Annual Demand (in acre-feet)						Data Source
				Well Pumpage			Surface-Water Diversions			
		Q ≤ 35 gpm	Q > 35 gpm	Municipal	Industrial	Irrigation	Municipal	Industrial	Irrigation	
1971		37 ²	51 ²	5,000			3,000			ADWR (1994)
1972										
1973										
1974										
1975										
1976										
1977										
1978		6,000			3,000					
1979										
1980	99									
1981	109									
1982	119	9	11	6,000			3,000			
1983	129									
1984	139									
1985	150									
1986	160									
1987	170	48	10	7,000			3,000			
1988	180									
1989	190									
1990	200									
1991	333									
1992	466	72	6	<300	700	7,800	NR	<300	5,800	USGS (2005)
1993	600									
1994	733									
1995	866									
1996	999									
1997	1,133	43	3	<300	700	8,300	NR	<300	6,200	
1998	1,266									
1999	1,399									
2000	1,532									
2001	1,580									
2002	1,628	14	1	<300	700	2,000	NR	<300	1,500	
2003	1,676									
2010	1,855									
2020	2,435									
2030	3,196									
2040	4,196									
2050	5,508									

ADDITIONAL WELLS:³

35

WELL TOTALS:

258

82

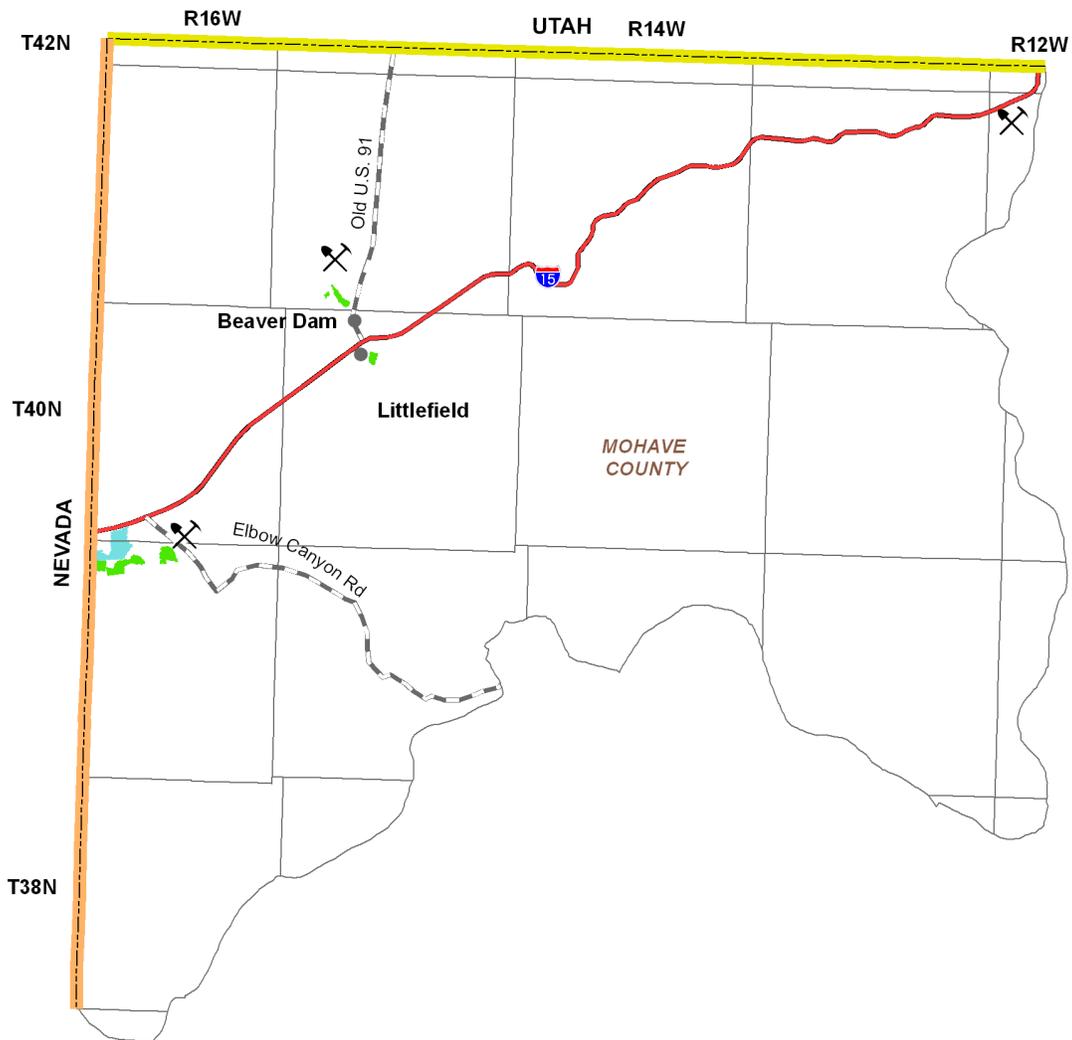
¹ Does not include evaporation losses from stockponds and reservoirs.

² Includes all wells through 1980.

³ Other water-supply wells are listed in the ADWR Well Registry for this basin, but they do not have completion dates. These wells are summed here.
NR - Not reported

Table 6.6-9 Effluent Generation in the Virgin River Basin

Facility Name	Ownership	City/Location Served	Population Served	Volume Treated/Generated (acre-feet)	Disposal Method						Current Treatment Level	Population Not Served	Year of Record	
					Water-course	Evaporation Pond	Irrigation	Golf Course	Municipal Reuse	Wildlife Area				Discharged to Another Facility
Beaver Dam Sewer Co. WWTP	Virgin River ID	Beaver Dam	119	6.2	X							Secondary	NA	2002
Biasi WWTP	Private	Beaver Dam												
Shadow Ridge WWTP	NA	Littlefield												
Virgin Acres WWTP	NA	Beaver Dam												



Primary Data Source: USGS National
Gap Analysis Program, 2004
ADWR, 2007

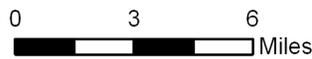


Figure 6.6-11
Virgin River Basin
Cultural Water Demand

- Demand Centers**
- Agriculture
 - M&I - Low Intensity
 - Small Mine\Quarry
 - Nevada State Boundary
 - Utah State Boundary
 - Interstate Highway
 - Major Road
 - City, Town or Place

6.6.9 Water Adequacy Determinations in the Virgin River Basin

Water adequacy determination information including the subdivision name, location, number of lots, adequacy determination, reason for the inadequacy determination, date of determination and subdivision water provider are shown in Table 6.6-10. Figure 6.6-12 shows the locations of subdivisions keyed to the Table. A description of the Water Adequacy Program is found in Volume 1, Appendix A. Adequacy determination data sources and methods are found in Volume 1, Sections 1.3.1.

Water Adequacy Reports

- See Table 6.6-10
- Nine of the ten water adequacy determinations made for 627 lots total in this basin through May, 2005 were determined to be adequate.
- The one determination of inadequacy was for 26 lots in Mohave County near the boundary with Nevada. The determination of inadequacy was because the applicant chose not to submit the necessary information, and/or the available hydrologic data was insufficient to make a determination.

Table 6.6-10. Adequacy Determinations in the Virgin River Basin¹

Map Key	Subdivision Name	County	Location			ADWR File No. ²	ADWR Adequacy Determination	Reason(s) for Inadequacy Determination ³	Date of Determination	Water Provider at the Time of Application
			Township	Range	Section					
1	Beaver Dam Estates	Mohave	41 North	15 West	32		Adequate	05/06/92	Beaver Dam East Domestic W.I.D.	
2	Beaver Dam Oasis	Mohave	41 North	15 West	33		Adequate	01/23/92	Dry Lot Subdivision	
3	Beaver Dam Resort, Inc.	Mohave	40 North	15 West	4, 5	NA	Adequate	10/01/87	Beaver Dam Water Company	
4	Beaver Dam Virgin Acres # 1	Mohave	41 North	15 West	32	22-300115	Adequate	07/10/96	Beaver Dam Water Company	
5	Blasi Ranch Estates	Mohave	41 North	15 West	29	22-401814	Adequate	09/08/05	Blasi Water Company	
6	Desert Springs Ranchos	Mohave	40 North	15 West	3		Adequate	01/13/94	Dry Lot Subdivision	
7	Fairview Mobile Home Estates	Mohave	40 North	16 West	32		Inadequate	11/30/87	Mesquite Farmstead Water Association	
8	Virgin Acres	Mohave	41 North	15 West	29		Adequate	9/25/1995	Blasi Water Company	
9	Virgin Acres - B	Mohave	41 North	15 West	32	22-300568	Adequate	12/04/98	Beaver Dam Water Company	
10	Virgin Village I & II	Mohave	41 North	15 West	32	22-300507	Adequate	10/07/98	Blasi Water Company	

Notes:

¹Each determination of the adequacy of water supplies available to a subdivision is based on the information available to ADWR and the standards of review and policies in effect at the time the determination was made.

²In some cases, ADWR might make a different determination if a similar application were submitted today, based on the hydrologic data and other information currently available, as well as current rules and policies.

³ Prior to February 1995, ADWR did not assign file numbers to applications for adequacy determination.

A. Physical/Continuous

1) Insufficient Data (applicant chose not to submit necessary information, and/or available hydrologic data insufficient to make determination)

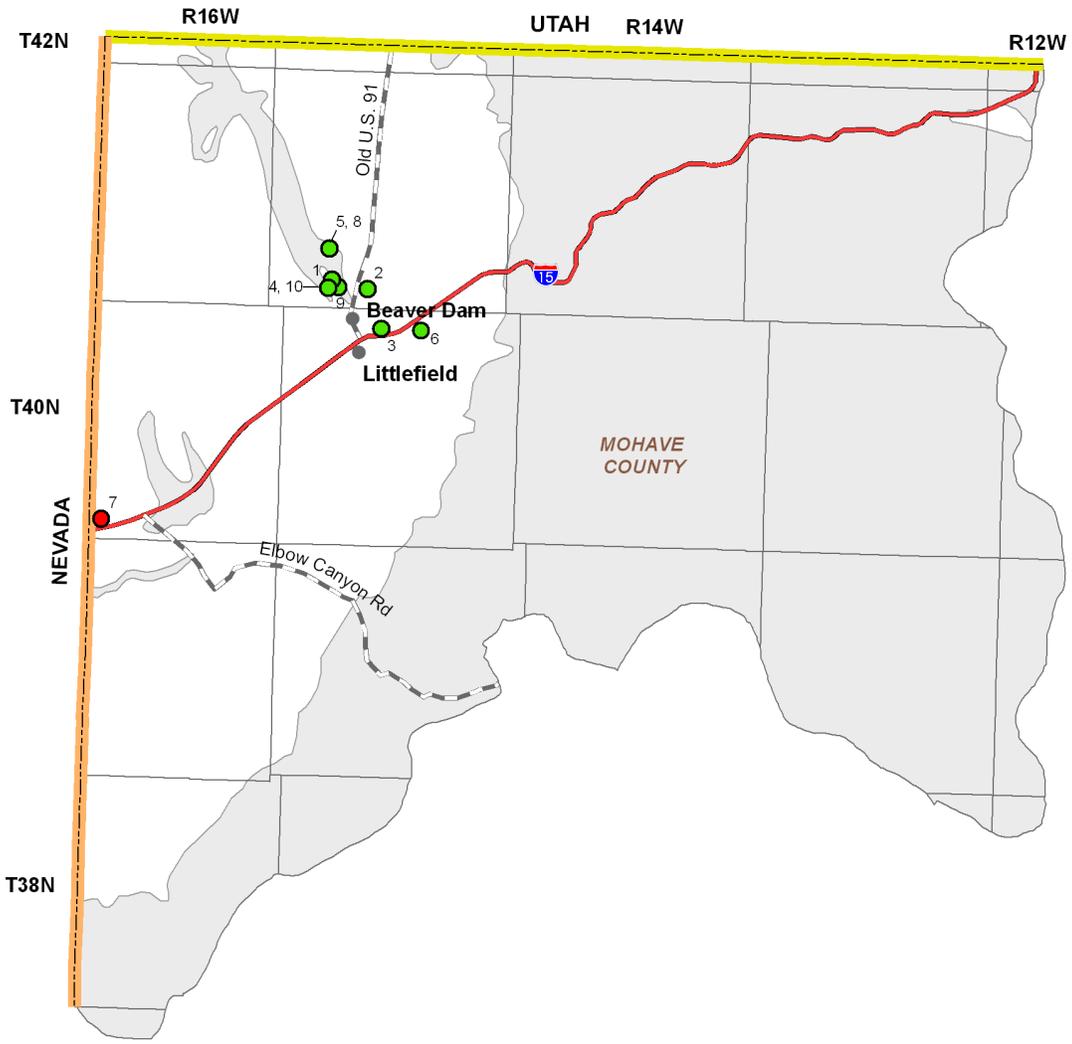
2) Insufficient Supply (existing water supply unreliable or physically unavailable; for groundwater, depth-to-water exceeds criteria)

3) Insufficient Infrastructure (distribution system is insufficient to meet demands or applicant proposed water hauling)

B. Legal (applicant failed to demonstrate a legal right to use the water or failed to demonstrate the provider's legal authority to serve the subdivision)

C. Water Quality

D. Unable to locate records



Adequacy Determinations

- Adequate ●
- Inadequate ●
- Consolidated Crystalline & Sedimentary Rocks
- Unconsolidated Sediments
- Nevada State Boundary — — — — —
- Utah State Boundary — — — — —
- Interstate Highway ~ ~ ~ ~ ~
- Major Road - - - - -
- City, Town or Place ●



Figure 6.6-12
Virgin River Basin
Adequacy Determinations

Virgin River Basin

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