

**MUNICIPAL AND INDUSTRIAL
WATER SUPPLY AND USES
in the
WEBER RIVER BASIN**

(Data Collected for Calendar Year 1992)

Prepared by

**Utah Department of Natural Resources
Division of Water Resources**

July 1996

(Revised December 2000)

ACKNOWLEDGMENTS

This water study was conducted under the direction of Paul L. Gillette, deputy director, and supervised by Lloyd H. Austin, chief, Resource Inventories and Special Studies Section, Utah State Division of Water Resources. Staff members assisting in the preparation of this report and/or in the data collection and analysis were Eric K. Klotz and Lee Sporleder. Water demand model data was provided by Todd Adams.

Appreciation is expressed to Marvin E. Allen and Kent C. Staheli of Hansen, Allen and Luce, Inc. for their efforts in acquiring data and information for this report. Special appreciation is also expressed to the various water suppliers and the Division of Water Rights for supplying information for this report.

D. Larry Anderson, Director

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EXECUTIVE SUMMARY

The total municipal and industrial (M&I) water supplies and uses for the Weber River Basin are computed by compiling the results of the four separate areas given in this report. These areas are Summit County, Morgan County, Ogden Valley, and the Wasatch Front (Davis County and the western part of Weber County). Summit and Morgan Counties and Ogden Valley data were compiled by meeting and surveying each of the individual public community and non-community systems while the Wasatch Front area data were compiled using the Wasatch Front Water Demand Model. All of the data was compiled for the 1992 calendar year. The reliable M&I water supply under present conditions for the Weber River Basin is 263,226 acre-feet (184,962 acre-feet potable, 78,226 acre-feet non-potable). Table *i* presents this data.

The total potable Weber River Basin M&I water use is 91,530 acre-feet. Public Community Systems account for about 84,000 acre-feet of this use. Non-potable M&I water use for the Weber Basin is 78,264 acre-feet. Therefore, the total M&I (potable and non-potable) water use in the Weber River Basin is 169,794 acre-feet (about 20 percent of total basin water diversions). Table *ii* presents total municipal and industrial water use data for various categories. The table shows that the residential category accounts for 64 percent, commercial and institutional accounts for 21 percent, and industrial accounts for 15 percent of the total M&I water use (potable and non-potable) in the Weber Basin.

Residential per capita M&I water use for public community systems in the Weber River Basin using 1992 water use and population data is 114 gallons per capita per day (gpcd) for potable (culinary) use and 231 gpcd when non-potable secondary residential use is added. Overall Weber Basin per capita use including potable and non-potable residential, commercial, institutional and industrial use for public community systems is 330 gpcd.

Table i. Weber River Basin Municipal and Industrial 1992 Water Supplies.

| COUNTY | RELIABLE WATER SUPPLIES ² | | |
|--|--------------------------------------|--------------------------|----------------------------|
| | (Ac-Ft/Yr.) | | |
| | POTABLE | NON-POTABLE ³ | TOTAL |
| SUMMIT COUNTY | | | |
| (25) Public Community Systems ¹ | 6,950 | 1,773 | 8,723 |
| (28) Public Non-Community Systems ³ | 50 | 0 | 50 |
| (3) Self-Supplied Industries ³ | 0 | 15 | 15 |
| Private Domestic Systems ³ | 30 | 0 | 30 |
| MORGAN COUNTY | | | |
| (12) Public Community Systems ¹ | 1,955 | 176 | 2,131 |
| (10) Public Non-Community Systems ³ | 233 | 206 | 439 |
| (2) Self-Supplied Industries ³ | 827 | 0 | 827 |
| Private Domestic Systems ³ | 641 | 0 | 641 |
| WEBER COUNTY (OGDEN VALLEY PORTION) | | | |
| (12) Public Community Systems ¹ | 1,143 | 1,197 | 2,340 |
| (22) Public Non-Community Systems ³ | 64 | 0 | 64 |
| (0) Self-Supplied Industries ³ | 0 | 0 | 0 |
| Private Domestic Systems ³ | 85 | 0 | 85 |
| WEBER COUNTY (WASATCH FRONT PORTION) | | | |
| (12) Public Community System ¹ | 28,859 | 26,238 | 55,097 |
| (2) Self-Supplied Industries ³ | 312 | 19,848 | 20,160 |
| Private Domestic Systems ³ | 853 | 0 | 853 |
| DAVIS COUNTY | | | |
| (17) Public Community Systems ¹ | 33,578 | 28,519 | 62,097 |
| (4) Self-Supplied Industries ³ | 1,882 | 292 | 2,174 |
| Private Domestic Systems ³ | 1,500 | 0 | 1,500 |
| WEBER BASIN WATER CONS. DISTRICT | 106,000 | N/A | 106,000 |
| WEBER BASIN TOTAL | 184,962 | 78,264 | 263,226⁴ |

¹ The reliable system source capacity use is calculated for each public community system using the maximum water supply available under present conditions and the estimated peak day demand and represents the volume of water which, when divided by the average annual water per capita use, gives that population that can be reliably served by the system under peak day demand conditions.

² Reliable water supply available for this category is assumed equal to current water use.

³ Non-potable water supply was assumed to be equal to current non-potable water use. This is mostly from secondary (dual) irrigation systems but also contains industrial saltwater use.

⁴ Although hydrologic conditions may allow some systems to withdraw the maximum water supply available under present conditions, the hydrologic conditions will limit all systems collectively from withdrawing this quantity as presented.

Table ii. Weber River Basin Municipal and Industrial 1992 Water Use.

| CATEGORY | POTABLE (Ac-Ft) | NON- POTABLE (Ac-Ft) | TOTAL (Ac-Ft) |
|---|----------------------------|-------------------------------------|--------------------------|
| SUMMIT COUNTY | | | |
| Residential | 4,871 | 1,039 | 5,910 |
| Commercial & Institutional | 1,163 | 734 | 1,897 |
| Industrial | 60 | 15 | 75 |
| MORGAN COUNTY | | | |
| Residential | 1,681 | 176 | 1,857 |
| Commercial & Institutional | 316 | 206 | 522 |
| Industrial | 840 | 0 | 840 |
| WEBER COUNTY (OGDEN VALLEY PORTION) | | | |
| Residential | 570 | 717 | 1,287 |
| Commercial & Institutional | 74 | 480 | 554 |
| Industrial | 7 | 0 | 7 |
| WEBER COUNTY (WASATCH FRONT PORTION) | | | |
| Residential | 21,272 | 23,238 | 44,510 |
| Commercial & Institutional | 15,415 | 3,000 | 18,415 |
| Industrial | 1,607 | 19,848 | 21,455 |
| DAVIS COUNTY | | | |
| Residential | 24,253 | 25,519 | 49,772 |
| Commercial & Institutional | 16,212 | 3,000 | 19,212 |
| Industrial | 3,189 | 292 | 3,481 |
| <hr/> | | | |
| TOTAL | 91,530 | 79,264 | 169,794 |
| <hr/> | | | |

INTRODUCTION

Authority

The Utah Division of Water Resources has overall responsibility for completing studies, investigations, and plans directed at the responsible development and utilization of the water resources of the state of Utah. The State Water Plan, prepared and distributed in early 1990, provided the foundation and overall direction to establish and implement the state policy framework of water management. As part of the state water planning process, detailed plans are prepared for each of the 11 hydrologic basins in the state. The Weber River Basin is one of these basins. This basin plan will identify potential conservation and development projects and describe alternatives to satisfy the problems, needs, and demands.

As part of this effort, several separate reports have been completed in the Weber River Basin, including a water-related land use report, a water budget report and a municipal and industrial water supply model for the Wasatch Front portion of Weber County. The subject of this report is a determination of present Municipal and Industrial (M&I) water supplies and uses within the Weber River Basin. The data presented in these reports will also be used in the State Water Plan, Weber River Basin Plan as well as other division reports and studies.

Scope

The principal objective of this effort is to document the present M&I water supplies and uses in the Weber River drainage basin. The study area is shown in Figure 1. Information considered includes related investigations recently completed by the Division of Water Resources, the Division of Water Rights, the Wasatch Front Water Demand Model and new data obtained during this study.

Data Collection

This study was begun in February 1994 in a joint effort by Hansen, Allen, & Luce, Inc., under contract with the Division of Water Resources. The *1993 Municipal and Industrial Water Use Forms*, distributed by the Division of Water Rights, in cooperation with the Division of Water Resources and the Division of Drinking Water, were not yet available, so 1992 calendar year data was used in this

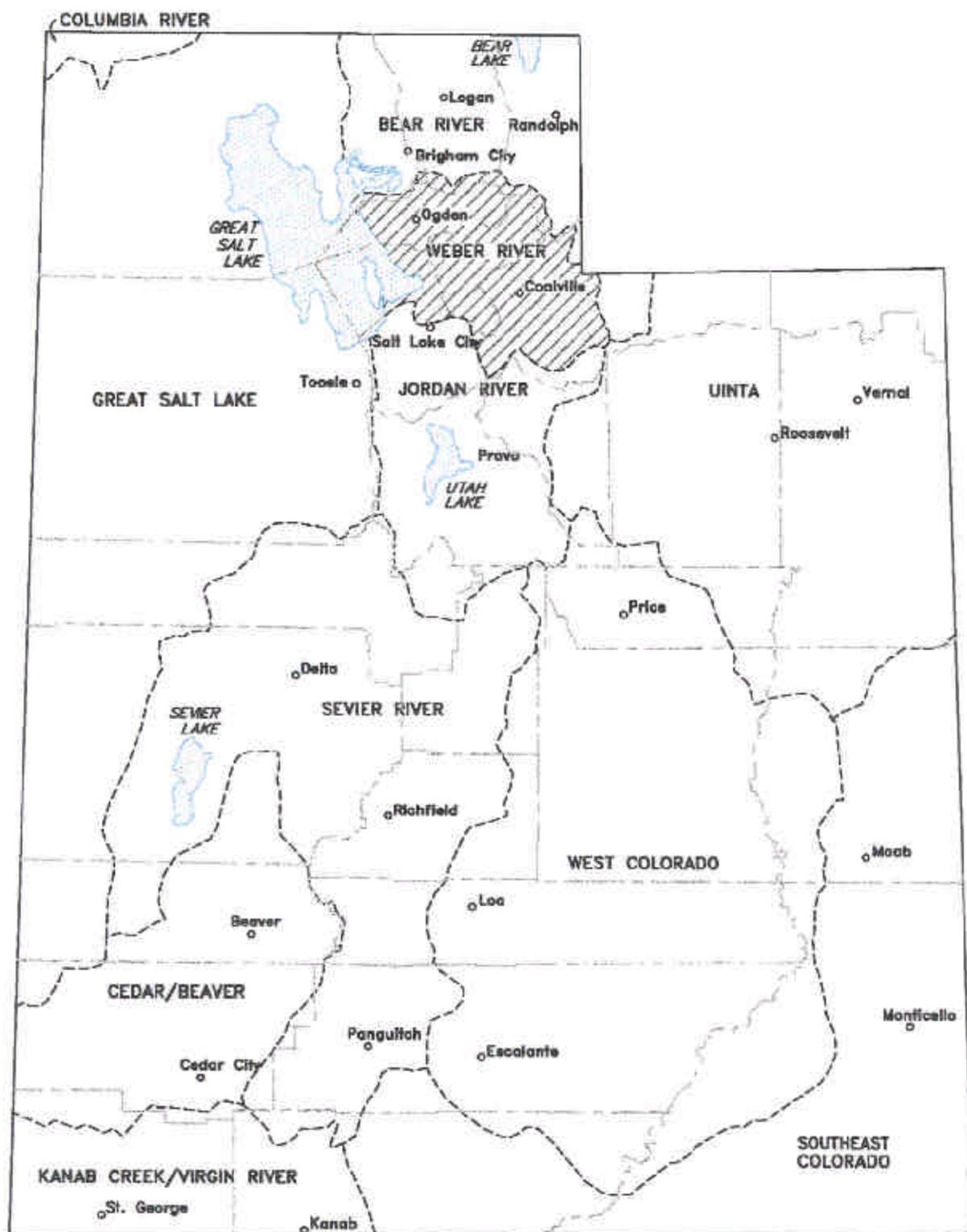


Figure 1. Location of Study Area.

study and is presented as *Present Water Use and Supply*. Hansen, Allen & Luce, Inc., completed the data collection for Summit County while the Division of Water Resources staff completed the remainder of the basin. The Wasatch Front Water Demand Model was run for the 1992 calendar year and used to provide data for the Wasatch Front portion of the basin (Davis County and western Weber County). In the other counties (Summit, Morgan and the Ogden Valley portion of Weber County), the data collection process is as described in the following section, *Water Supply and Use Methodology*. Water rights discussions presented herein were prepared based on conversations with John Mann, Weber River Area Engineer from the State Engineer's Office.

General Description of the Basin.

The Weber River Basin is comprised of approximately 1,955 square miles (1,251,200 acres) of land, including the Upper Ogden River watershed, above Pineview Reservoir. The study area extends from the Great Salt Lake at its western edge to the Uinta Mountains in the east. Morgan, much of Summit, Weber, and Davis Counties are included in the drainage basin. The rugged Wasatch Mountains, rising in some places to 11,200 feet, run nearly north to south, while the Uintas run east to west. (The average elevation of the valleys is about 5,000 feet). Figure 2 shows a detailed map of the Weber River Basin.

The principal river system in the Weber River Basin is the Weber River. The Weber River begins its 130 mile journey high on the northwestern slopes of the Uinta Mountains (elevation 10,000 feet) and ends at Ogden Bay in the Great Salt Lake (4,200 feet elevation). Major tributaries to the Weber River are Beaver Creek, Chalk Creek, and Echo Creek in Summit County; East Canyon Creek and Lost Creek in Morgan County' and the Ogden River (along with its tributaries of North Fork, Middle Fork, South Fork, and Wheeler Creek) in Weber County.

There are eight major reservoirs in the Weber River Basin. These include Smith and Morehouse, Rockport, and Echo Reservoirs in Summit County in the Upper Weber River Basin. Lost Creek and East Canyon Reservoirs are located in Morgan County. Two reservoirs, Causey and Pineview, are located in the Ogden River drainage in Weber County. Willard Bay Reservoir is actually located in Box Elder County (Bear River Basin), but it is a storage facility for the Weber River system.

There are currently 78 public community water systems in the Weber Basin. These systems serve approximately 387,000 people (about 97 percent of the total population within the Weber Basin). About 50

percent of their supplies comes from groundwater sources, with the other half of their supplies are treated and untreated (secondary) surface water. All of this surface water is stored upstream in one of the previously mentioned eight reservoirs.

Also within the Weber Basin are over 60 public non-community systems. These systems serve small summer home areas, campgrounds, isolated commercial establishments, recreation areas, as well as some very small subdivisions. These systems get most of their supplies from groundwater sources.

In terms of municipal and industrial water use, the Weber Basin is experiencing rapid growth, with agricultural land being slowly replaced by new residential areas. This is very evident along the Wasatch Front portion of the Weber Basin, but is also occurring to some degree in other rural areas of the basin such as the Morgan, Kamas and Park City areas. This residential growth is likely to occur at present levels well into the next century.

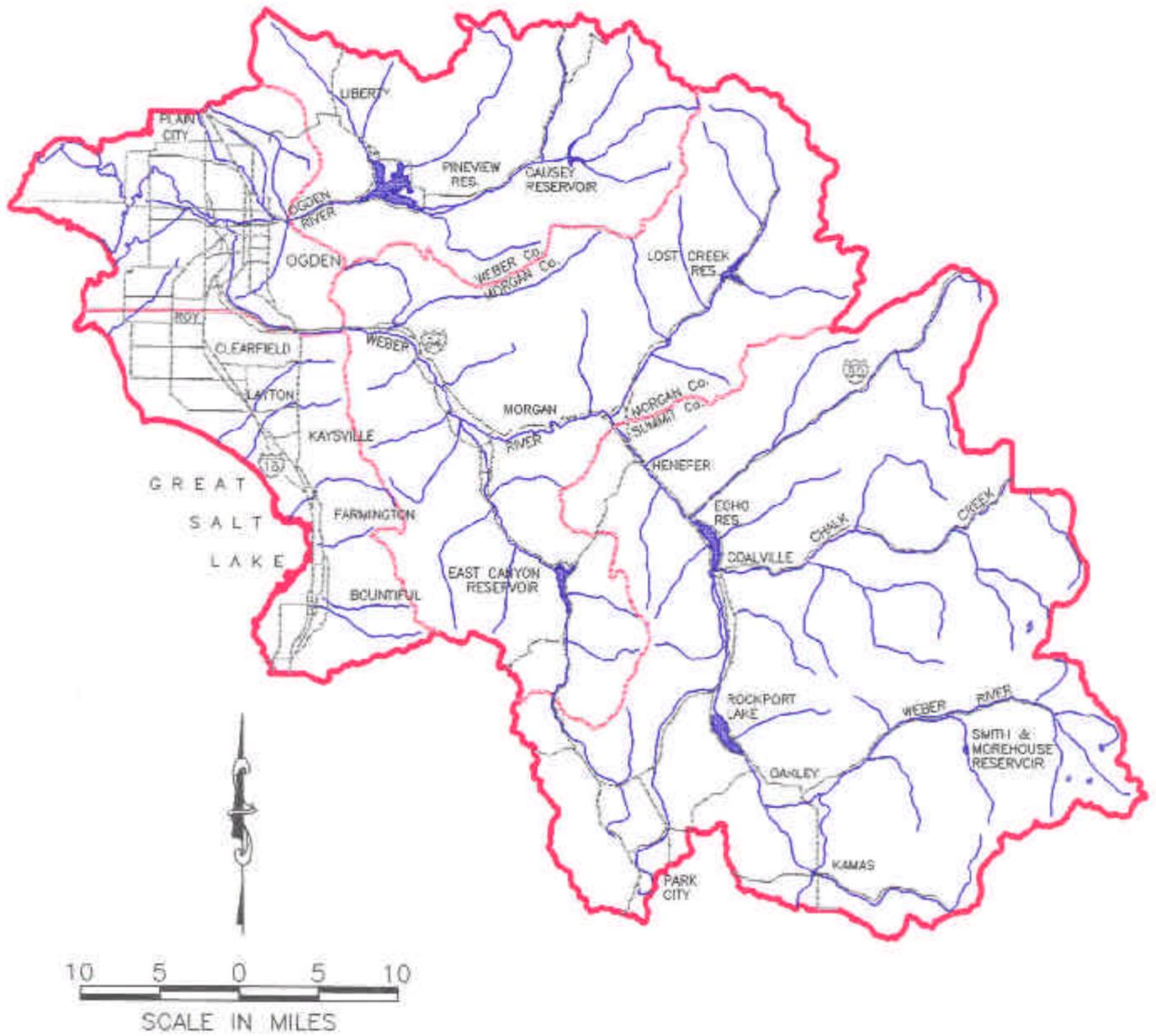


Figure 2. Weber River Drainage Area.

WATER SUPPLY AND USE METHODOLOGY

Background

The methodology used by the Division of Water Resources over the past 25 years in collecting municipal and industrial (M&I) water use has varied with regard to the procedures used and the amount of detail. In the 1960s when the division began serious water planning studies (which included mostly data collection of water supplies and uses within the state), it was felt that M&I water use was not a very significant portion of the total water use. At that time, M&I water use accounted for about five percent of the state total water demands. Agricultural water use was the most significant, and most of the emphasis on water uses at that time were directed at gathering agricultural water supplies and uses. M&I water use was calculated by using available or estimated per capita rates and multiplied by the census population data.

In the early 1980s the Division of Water Rights began a program of surveying major public water suppliers by sending a form out to them and asking them a series of questions about their sources of supply. The Division of Water Resources started to use some of this information in its planning studies of the late 1980s. The United States Geological Survey also was conducting M&I water use studies during this time, and some of their information was also used in the division water planning reports.

In the early 1979 the division felt that more detailed M&I water use information was needed for input into its water planning efforts. M&I uses had grown to include approximately 15 percent of the statewide total water use, and it was felt that the Division of Water Rights' program was not providing all of the data needed for basin planning reports. Two steps were taken. The first was to add information and questions on the Division of Water Rights Water Use Survey Form to get more of the data that was needed. The second step taken to get better data was to assure through field-checking the data was reliable and as accurate as possible. The new process for collecting M&I data is slightly different for the four water supplier categories. These water supplier categories include community water systems, non-community water systems, self-supplied industrial water systems, and private domestic water systems.

Present Methodology for Community Water Systems

Basically the methodology used for collecting water data for community water systems is to take the latest calendar year Water Use Form (shown on following three pages) received by the Division of Water Rights and meet with the system operator or manager. Each part of the form is reviewed with division staff and the operator. Many times the operator omits information, and staff attempts to get that data by explaining in detail what is needed. It has been found that by doing this in person most of the data can be obtained or estimated and the division staff gets a better understanding of the water system. For community systems that do not receive a form or never complete one, a new form is taken to them and the same process is used to gather the necessary data. This methodology has been used since 1994, and all of the community water systems for the various basins studied have provided the necessary M&I water supply and use data.

The first step in the data collection process is to determine the system's water supply. Water supply to municipal and industrial users is defined as the water resource which is presently developed. It is limited by either a mechanical constraint (such as pump capacity or pipe size), a hydrologic constraint (such as reliable streamflow or groundwater safe yield) or a legal constraint (such as a water right or contract). The lesser amount of these three constraints is considered in this study as the maximum water supply available under present conditions. To find this value for each community water system, questions are asked to determine pump capacities of wells, estimates of spring flows, treatment plant capacities, and water right information. The staff also looks up water right information from the State Engineer's Office for each system and tries to find any reports that can help in determining hydrologic constraints such as United States Geologic Survey groundwater studies and other water resource related documents. It should be noted here that due to the complexity of water rights, contracts, exchanges, etc., a detailed search of water right limitations associated with each entity is not in the scope of this study. Data provided by system operators is generally considered most reliable and is generally used; however, when data provided appears questionable or is not available, the other sources of information are used in determining water supplies.

Water supply information is desirable for determining future conditions for each community system. Although future water projections are not addressed in this study, the data provided here are used in the state water plans which the Division of Water Resources is formulating for each major hydrologic basin in the state. These basin plans deal with considerable detail about future water demands and supplies.

UTILITY WATER USE DATA FORM
DATA FOR 1992

System Name: Morgan City Corporation
Address: 48 West Young Street, P.O. Box 1025
Morgan, JT 84050

Contact Person: V.A. Smith, Water Supt.
Form filled out by: V. Arnold Smith

Population Served: 2100
Total No. Connections: 694
Dual Irrigation (Y or N) (if yes, what %)
Phone Number: (801)829-3383
Phone Number: 829-3461

MUL # : 1170

RECEIVED

FEB 24 1993

STORAGE INVENTORY: Total storage capacity: 1,000,000 Gallons, Million Gallons, 1000 Gallons, Acre-foot

SOURCE INVENTORY:

1 Source Name: Robinson Springs
Method of Measurement: Master Meter, Individual Meters, Estimate, Other
Units: Gallons, 1000 Gallons, Million Gallons, Acre-foot Do you chlorinate this source? Yes, No
Type: SP Location: Sec 25, 14N, R2E, S18&M WR Number: 35-8256, 35-8257

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEARLY TOTAL |
|---|------------|------------|-----------|------------|------------|------------|------------|------------|------------|------------|-----------|-----------|--------------|
| (If spring(s) are metered, do totals include overflow from storage tank(s): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 11,015,000 | 10,479,000 | 9,239,000 | 12,252,000 | 12,286,000 | 11,280,000 | 11,122,000 | 10,345,000 | 11,510,000 | 12,711,000 | 7,573,000 | 9,272,000 | 129,084,000 |

(If spring(s) are metered, do totals include overflow from storage tank(s): Yes No

2 Source Name: Brent Springs
Method of Measurement: Master Meter, Individual Meters, Estimate, Other
Units: Gallons, 1000 Gallons, Million Gallons, Acre-foot Do you chlorinate this source? Yes, No
Type: SP Location: Sec 1, 3N, R2E, S18&M WR Number: 35-8342

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEARLY TOTAL |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------------|
| (If spring(s) are metered, do totals include overflow from storage tank(s): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 512,000 | 480,000 | 492,000 | 392,000 | 460,000 | 377,000 | 419,000 | 339,000 | 313,000 | 394,000 | 393,000 | 396,000 | 4,967,000 |

(If spring(s) are metered, do totals include overflow from storage tank(s): Yes No

3 Source Name: N. Morgan Springs
Method of Measurement: Master Meter, Individual Meters, Estimate, Other
Units: Gallons, 1000 Gallons, Million Gallons, Acre-foot Do you chlorinate this source? Yes, No
Type: SP Location: WR Number:

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEARLY TOTAL |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------------|
| (If spring(s) are metered, do totals include overflow from storage tank(s): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 2,984,000 | 2,900,000 | 3,061,000 | 3,971,000 | 4,444,000 | 4,484,000 | 4,942,000 | 5,766,000 | 3,834,000 | 3,266,000 | 2,868,000 | 4,158,000 | 46,678,000 |

(If spring(s) are metered, do totals include overflow from storage tank(s): Yes No

4 Source Name: Well no.1 (8")
Method of Measurement: Master Meter, Individual Meters, Estimate, Other
Units: Gallons, 1000 Gallons, Million Gallons, Acre-foot Do you chlorinate this source? Yes, No
Type: WE Location: Sec 36, T4N, R2E, S18&M WR Number: 35-1C7, 35-2122, EX-1649

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEARLY TOTAL |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|
| (If spring(s) are metered, do totals include overflow from storage tank(s): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | | | | | | | | | | | | |

5. Source Name: No. 1 No. 2 (12")
 Method of Measurement: [] Master Meter, [] Individual Meters, [] Estimated, [] Other
 Units: [] Gallons, [] 1000 Gallons, [] Million Gallons, [] Acre-Feet Do you chlorinate this source? [] Yes, [] No

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEARLY TOTAL |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|
| | | | | | | | | | | | | |

6. Source Name: No. 3 (10")
 Method of Measurement: [] Master Meter, [] Individual Meters, [] Estimated, [] Other
 Units: [] Gallons, [] 1000 Gallons, [] Million Gallons, [] Acre-Feet Do you chlorinate this source? [] Yes, [] No

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEARLY TOTAL |
|-----|-----|-----|-----------|------------|------------|------------|------------|-----------|-----------|-----|-----|--------------|
| | | | 5,527,000 | 11,311,000 | 16,676,000 | 18,580,000 | 24,993,000 | 9,267,000 | 1,829,000 | | | 88,183,000 |

** If you are using other sources which are not shown above, please enter the appropriate data in the space provided below. **

7. Source Name:
 Method of Measurement: [] Master Meter, [] Individual Meters, [] Estimated, [] Other
 Units: [] Gallons, [] 1000 Gallons, [] Million Gallons, [] Acre-Feet Do you chlorinate this source? [] Yes, [] No

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEARLY TOTAL |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|
| | | | | | | | | | | | | |

8. Source Name:
 Method of Measurement: [] Master Meter, [] Individual Meters, [] Estimated, [] Other
 Units: [] Gallons, [] 1000 Gallons, [] Million Gallons, [] Acre-Feet Do you chlorinate this source? [] Yes, [] No

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEARLY TOTAL |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|
| | | | | | | | | | | | | |

9. Source Name:
 Method of Measurement: [] Master Meter, [] Individual Meters, [] Estimated, [] Other
 Units: [] Gallons, [] 1000 Gallons, [] Million Gallons, [] Acre-Feet Do you chlorinate this source? [] Yes, [] No

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEARLY TOTAL |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|
| | | | | | | | | | | | | |

SOURCE COMMENTS:

Total water used 268,912,000 gals. 223 Homes have the ability to irrigate from ditches or 36% of total connections in 1992. An error was made on the total No connection on the 1991 report it should have been 677 rather than 777 also the irrigation % should have been 35%

WATER USE BREAKDOWN:

Units: [] Gallons, [] 1000 Gallons, [] Million Gallons, [] Acre-Fect, [] Individual connections [] Estimated
 Domestic: Annual quantity of water used for individual household purposes - 17,976,000 Total number of domestic connections 620
 Commercial: Annual quantity of water used for commercial purposes - 32,269,000 Total number of commercial connections 74
 Industrial: Annual quantity of water used for industrial purposes _____ Total number of industrial connections _____
 Irrigation: Annual quantity of water used for irrigation purposes 121,527,000 Total number of irrigation connections 620
 Other Uses: Annual quantity of water used for other purposes _____ Total number of other connections _____

Describe other uses 37,140,000 gals unaccounted for water: leaks, use for parks, Fire hydrant use etc.
 Do you provide more than 25,000 gallons of water per day to any single user? If so please list.

Name: _____ Estimated Use (daily or yearly): _____

WASTEWATER TREATMENT: Is your service area/system served by a sewer system? [] Yes, [] No. If yes, please provide the following data.

Facility Name: Morgan Wastewater Treatment Lagoons Facility Supervisor: V. Arnold Smith
 Population Served: 2100 Number of connections: 657 Address: 950 N. Riverbed Lane Morgan, UT 84050

Type of treatment: [] Primary, [] Secondary, [] Tertiary
 Method of Measurement: [] Master Meter, [] Weir/Flume, [] Estimate, [] Other
 Units: [] Gallons, [] 1000 Gallons, [] Million Gallons, [] Acre-Fect

| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | YEARLY TOTAL |
|------|------|------|------|------|-----------|-----------|------|------|-----------|-----------|-----------|-----------|--------------|
| None | None | None | None | None | 3,270,000 | 3,615,000 | None | None | 3,126,000 | 3,467,000 | 4,539,000 | 3,372,000 | 21,384,000 |

Is the water discharged to a stream or lake? [] Yes, [] No. If yes, name of stream or lake _____

COMMENTS:

An error was made on the number of wastewater connections it should have read 650 rather than 682.

It is felt that the maximum water supply described earlier is good indication of each system source capacity. However, as each system grows and begins to utilize more of its source capacity, the hydrologic conditions that exist in the basin will probably limit all of the systems collectively in the basin from withdrawing their maximum water supplies. Also, the maximum supply deals with an average annual amount of water. Since many water supply components in M&I systems (treatment plants, storage facilities, pump motors, etc.) are sized using demand during a peak 24-hour period, the relationship between average day and peak day demand is important. It is for these two reasons that a more reliable system source capacity is determined to accurately reflect future M&I water conditions in the basin. The relationship that is used is as follows: $P_D = -49.4 + 2.5 A_D$, where P_D is peak day demand and A_D is average daily demand. For each community system, the average per capita use (described later) is used in the relationship above to determine a peak factor, and the maximum water supply available under present conditions is used to determine a peak day supply. These two values are then used in calculating the reliable system source capacity. This value represents the system maximum water supply's ability to meet the peak day demand conditions and the volume of water, which when divided by the average annual water per capita use gives the population that can be reliably served by the present system sources. The reliable system source capacity is valuable in determining future water capacities of the particular community water system sources (wells, springs, etc.); however, any water bought additionally from a wholesaler is added to this value to accurately reflect the presently available reliable water supplies.

The last part of the data collection process is to determine the present water use for each community water system. Present water use, as defined herein, includes the developed water which is actually diverted into the distribution system from surface water or withdrawn from the groundwater aquifer. The data collected represents the latest available complete calendar year from when the study is started. Because the Division of Water Resources uses M&I water use information in its water planning efforts (especially in the development of water budgets and basin plans), it has been decided to break down M&I culinary water use information into four categories: residential, commercial, institutional and industrial. These categories correlate very well with the United States Geological Survey (USGS) categories of domestic, commercial, industrial, and mining. The division's residential category is exactly equivalent to the USGS domestic category and includes water used in residential homes for inside and outside uses. The USGS commercial category is equivalent to the division's combined commercial and institutional categories. The commercial category includes water use for industrial and mining and includes a wide variety of water uses associated with businesses that produce a specific product.

Residential Use:

From the system operator, the staff collects data about the number of residential connections and the amount of water used by those connections. Water use in this category is divided into three subcategories: culinary-outside, culinary-inside, and secondary outside use. The first step in calculating the amount of water used in each of these subcategories is determining the amount of outside irrigation. Because very few entities meter outside water use, a series of questions is asked by staff to find out the acreage that is actually irrigated by homeowners. Average lot size, percent irrigated, percent of residences that are supplied by separate secondary (pressurized and ditch) irrigation systems, water-duty rates in the area, and other related information are used to estimate outside water use for each entity. For some rural water systems, this can be difficult because the division staff attempts not to include farmland irrigation in this residential outside water use category. In some communities, there is not much distinction between the lawn and garden portions of the yards and the actual irrigated farm fields. In this case, the division's land use mapping program is utilized to determine what areas of the community are included as irrigated farmland and therefore not included in this category of residential outside water use. Nonetheless, it can be a difficult task in determining residential outside water use, which is why each community system is looked at and analyzed separately.

Once residential outside water use is determined, this amount of water is subtracted from the total residential water usage given by the systems operator. This amount becomes the residential inside water use. When available, indoor water use can be estimated by looking at several residences' winter water bills and meter readings. When either of these methods yield an unreasonable value, then the staff uses a general range of between 90 and 120 gallons per capita per day (gpcd) for inside use and back-calculates outside water use from the total given.

Commercial Use:

For some water entities, the system operator can separate metered commercial water use data from the total water use. Thus this data is used in determining the commercial water use category; but in cases where this data is not available or is extremely difficult to obtain, the division staff attempts to estimate commercial water use by inventorying commercial businesses in the area and using available published commercial water use estimates. These publications come from the Division of Drinking Water and from reports published by

the Utah State Water Lab in the 1970s. Phone books and the Utah Directory of Businesses and Industries are used to inventory the commercial establishments served by the local water system. In some rural communities where there is a relatively small number of commercial connections, the businesses are visited by division staff and asked about their water use.

Institutional Use:

Institutional water use (sometimes referred to as municipal use) is water used for city, county, state and federal government facilities, parks, golf courses, schools, churches, military facilities, fire hydrant testing and municipal losses in the water system. Because this water use is rarely metered, the process to acquire this data is a difficult one. Again, the system operator is asked to provide information about city facilities such as number and size of parks, schools, churches, and golf courses. The majority of water used in this category is in these large irrigated areas. Water duty rates for the area are used to calculate the amount of water these areas use. Also, estimates are made of leakage and testing of water system facilities and included in this category.

Industrial Use:

Industrial use within community water systems is acquired with the same process used to obtain commercial water use data discussed earlier. Industrial water use is defined as water used in the production of a product. Therefore, such commercial establishments as dairies and mink farms are included in this category, provided a community system serves them.

Present Methodology for Non-Community Water Systems

The methodology used to collect water use data for non-community systems is similar to that which is used for community systems except the data is acquired by phone rather than personal visits. Non-community systems rarely meter their water use, so estimates are made by division staff as to their actual annual water use. Questions are asked to determine type of facility, population served, water source information, irrigation of outside areas, etc. This data is used along with the publications listed under commercial use section of community system methodology to determine an approximation of water use. Water supply for these systems when not available is assumed to be equal to their water use.

Present Methodology for Self-Supplied Industrial Water Systems

For self-supplied industries, water use is acquired by using data given on the Division of Water Rights Industrial Water Use Form. The Division of Water Rights collects annual water use data from most of the major self-supplied industrial water users in the state. This data is confidential, so the data presented in this M&I water use report is only given as county totals rather than by individual and industrial user. Water supply is subdivided between groundwater, surface water and saline water and is assumed to be equal to the total water use.

Present Methodology for Private Domestic Water Systems

The final water supplier category dealt with in this report is private domestic water systems. These are residences that are not connected to any public community or non-community water system so therefore have their own wells. The water use data for this category is acquired by taking the State Office of Budget county population data and subtracting the population served by community water systems. The remainder is the population that is served by private domestic systems. A reasonable per capita rate (usually determined from the residential per capita rates from nearby community systems) is applied to this population to determine the total water use by private domestic systems. Again, water supply is assumed to be equal to water use in this category.

DEFINITIONS OF WATER TERMS

Some water terms peculiar to the water industry are briefly defined in order to better understand the information presented.

Water Supply Terms

Water is supplied by a variety of systems for many users. The general term supply is defined as the amount of water available. Most water supply systems are owned by a municipality, but in some cases the owner/operator is a private company or a state or federal agency. Thus, a "public" water supply may be either publicly or privately owned. Also, systems may supply treated or untreated water.

Maximum Water Supply Available Under Present Conditions

The volume of water which is the lesser of the physical capacity of the water source and the use allowed by the water right.

Municipal Water Supply

A supply that provides potable (culinary) water for residential, commercial, institutional, and light industrial uses. The terms municipal, community and city are often used interchangeably.

Municipal and Industrial Water Supply

Includes all water (potable and non-potable) supplied for residential, commercial, institutional, light industry, and large self-supplied industries.

Potable Water Supply

Water meeting all applicable safe drinking water requirements for residential, commercial and municipal uses. Sometimes referred to as culinary water supply.

Non -Potable Water Supply

Water not meeting safe drinking water requirements. Secondary and industrial water suppliers are included in this category. Sometimes referred to as non-culinary water supply.

Public Community Water Supply

Includes potable culinary water supplied by either privately or publicly owned community systems which serve at least 15 service connections or 25 individuals occupied year round. Water from public community supplies may be used for residential, commercial, municipal and industrial purposes, including irrigation of publicly and privately owned open areas.

Public Non-Community Water Supply

Includes potable culinary water supplied by either privately or publicly owned systems which serve at least 25 non-resident individuals for 60 days or more per year. Examples of this type include summer home subdivisions, campgrounds, restaurants, and commercial establishments which have their own wells or springs.

Secondary Water Supply

Pressurized or open ditch water supply systems that supply untreated water for irrigation of privately and publicly owned lawns, gardens, parks, cemeteries, golf courses and other open areas. These systems, sometimes called "dual" water systems, are installed to provide an outdoor water supply in addition to the culinary supply.

Self Supplied Industrial Supply

Includes potable or non-potable water supplied by individual privately owned industries usually from their own wells or springs.

Reliable System Source Capacity

The actual quantity of the maximum reliable source capacity that is available to meet peak demands. When this number is divided by the average per capita usage, the resulting number represents the maximum population that the water source can serve.

Water Use Terms

Water is used in a variety of ways and for many purposes. Water is often said to be "used" when it is diverted, demanded, withdrawn, depleted or consumed. But it is also "used" in place for such things as fish and wildlife habitat, recreation and hydropower production. The word *use* can be inserted where the word

supply is written in the previous water supply terms to define the current demand associated with those definitions. Some additional water use terms are as follows:

Commercial Use

Uses normally associated with small business operations which may include drinking water, food preparation, personal sanitation, facility cleaning and maintenance and irrigation of facility landscapes.

Industrial Use

Use associated with the manufacturing or production of products which may include the same basic uses as commercial business. However, the volume of water used by industrial businesses can be considerably greater than water used by commercial businesses.

Institutional Use

Uses normally associated with general operation of various public agencies and institutions including drinking water, personal sanitation, facility cleaning and maintenance and irrigation of parks, cemeteries, playgrounds, recreational areas, golf courses, and other facilities.

Municipal and Industrial (M&I) Use

This term is commonly used to include residential, commercial, institutional, and industrial uses. It is sometimes used interchangeably with the term "public water use."

Private-Domestic Use

Includes water from private wells or springs for use in individual homes, usually in rural areas not accessible to public water supply systems.

Residential Use

Water use associated with residential cooking; drinking water; washing clothes; miscellaneous cleaning; personal grooming and sanitation; irrigation of lawns, gardens and landscapes and washing automobiles, driveways and other outside facilities.

Other Water Terms

Consumption

Water evaporated, transpired or irreversibly bound in either a physical, chemical or biological process.

Consumptive Use

Incidental losses of water brought about by human endeavors when used for residential, commercial, municipal, industrial, agricultural, power generation, and recreation. Naturally occurring vegetation and fish and wildlife also consumptively use water.

Depletion

Water lost or made unavailable for return to a given designated area, river system or basin. It is intended to represent the net loss to a system. The terms consumption and depletion are often used interchangeably but are not the same. For example, water exported from a basin is depletion to the basin system but is not consumed in the basin. Therefore, the exported water is available for use in another system. Water diverted to irrigated crops in a given system, but not returned for later use, is depletion. Precipitation that falls on irrigated crops is not considered a part of the supply like surface water and groundwater diversions. For this reason, precipitation falling on and consumed by irrigated crops is not considered as being a depletion to the system.

Diversion

Water diverted from supply sources such as streams, lakes, reservoirs or groundwater for a variety of uses including cropland irrigation, residential, commercial, municipal and industrial. The terms diversion and withdrawal are often used interchangeably.

Withdrawal

Water withdrawn from supply sources such as lakes, streams, reservoirs or groundwater. This term is normally used in association with groundwater withdrawal.

WATER RIGHTS IN THE WEBER RIVER BASIN

A water supply and use study would not be complete without a discussion on the current water right regulations in the area. The following discussion was obtained from the Division of Water Rights, Weber River office. It explains the current general water right regulations in the Weber River Basin with regards to M&I uses.

Areas Above the Mouth of Weber Canyon

New appropriations for any use (other than non-consumptive uses) have not been approved above the mouth of the canyon (essentially Morgan and Summit Counties) since generally the 1960s. It has been held that all of those waters are fully appropriated and new uses of water are obtained by filing change or exchange applications with the State Engineer. These applications are acted on based upon the individual merits of the application. Typically, individuals seeking to drill a well to supply domestic needs in areas that have no municipal services enters a contract with Weber Basin Water Conservancy District or utilizes stock in the Weber River Water Users Association (Echo Reservoir) and then uses that water as a basis for filing an application to divert a like amount of water from a well.

Snyderville Basin Area

The Snyderville Basin has been growing rapidly for several years. Much of the area is not served by any public water system and in order to provide water for development, many applications for individual wells have been filed. In the late 1980s, the State Engineer became concerned that the number of applications to withdraw water from the aquifers of the Basin were in excess of the water physically available in the aquifers. It was estimated that about 70,000 acre-feet of water was either approved to be developed or had already been developed and that an additional 48,000 acre-feet in unapproved applications had been filed. After public meetings were held in 1987, a moratorium on new filings which exceed one acre-foot was imposed by the State Engineer in 1988. This moratorium essentially states that change applications which are filed on existing rights within the Basin would be considered on their merits in accordance with Section 73-3-3 of the Utah Code. Change applications filed which are based on downstream storage rights or other rights outside of the Basin would not be acted upon until it was determined that adequate water is available within the Basin for all prior rights and the new filing. The geographic boundary of the area affected by the moratorium is any land

which is surface tributary to East Canyon Creek and Silver Creek upstream from the sewage treatment plants on those streams.

Areas Along Beaver Creek Above Kamas

The State Engineer has typically only approved change applications which are based on shares of stock in the Beaver and Shingle Creek Irrigation Company.

East Shore Area

The Bountiful Subarea is closed to new applications to appropriate water, except for isolated wells in non-subdivisions where water is not available from a public water system. Wells in this subarea shall be spaced so that they do not cause more than 15 feet of drawdown on any existing well.

Applications to appropriate water in the Weber Delta Subarea for single family domestic wells shall be limited to diversions of one acre-foot annually and must be located in areas not served by a public water system. No new applications to appropriate water will be approved in these areas where the historical water level declines are determined to be critical. Also, there are restricted areas around Hill Air Force Base that are closed to new appropriations.

Miscellaneous

Applications for changing storage rights into wells on individual drainages not near the main stem of the body of water which conveys the storage water to its place of use (i.e. the Weber River, Silver Creek, Smith & Morehouse Creek, Lost Creek or East Canyon Creek) may be rejected by the State Engineer if it appears that impairment of prior established rights could occur as a result of change.

SUMMIT COUNTY M&I WATER SUPPLIES AND USES

General

The Weber River drainage portion of Summit County includes the communities of Synderville, Park City, Kamas, Marion, Oakley, Peoa, Wanship, Hoytsville, Coalville, Upton, Echo and Henefer. Within this area are 25 public community systems, 28 public non-community systems and two self supplied industries. Location of the public community systems are shown in Figure 3. A water supply and use analysis for these systems is given in Tables 1 and 4. Appendix A contains a detailed description of each of these public community and non-community systems.

Municipal & Industrial Water Supply

Sources of M&I supply for Summit County are presented in two categories: groundwater and surface water. Water supply is defined as a resource which is currently developed or potentially developable. It is further defined as limited by either a mechanical constraint such as pump capacity or pipe size, a hydrologic constraint such as reliable stream flow or groundwater safe yield, or a legal constraint such as water rights and contracts.

Groundwater

Groundwater is an important source of M&I water supply in Summit County. Data collected for this study indicates that wells and springs serving municipalities through public water supply systems have a reliable system source capacity of 6,950 acre-feet per year. These are tabulated for each public community water supplier in Summit County in Table 1 and are taken from analysis presented in Table 4.

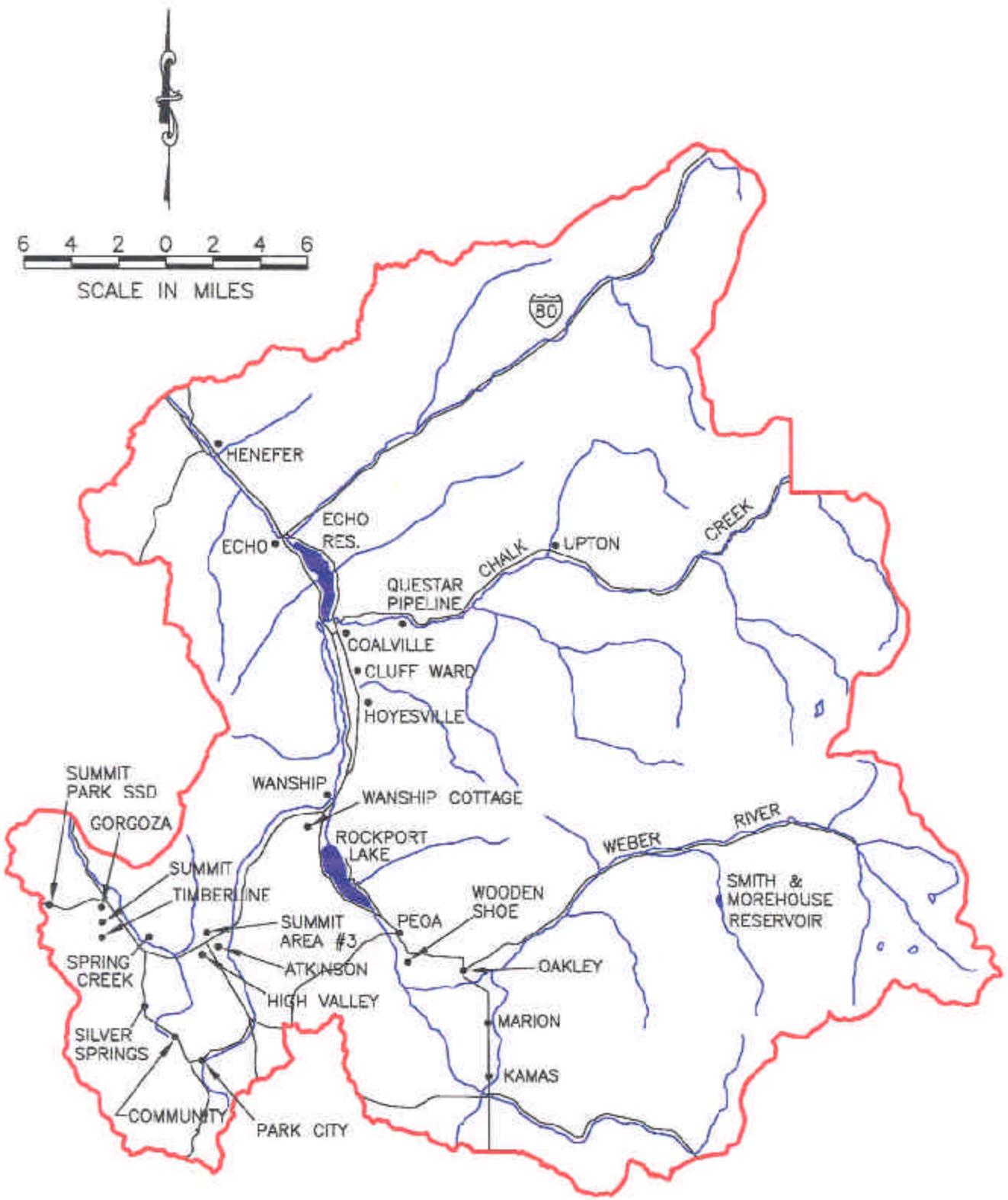


Figure 3. Summit County Water Suppliers.

Table 1. Maximum Groundwater Supply Available Under Present Conditions for Public Community Water Suppliers in Summit County.

| PUBLIC COMMUNITY WATER SUPPLIERS | RELIABLE SYSTEM SOURCE CAPACITY ¹ (Ac-Ft/Yr) | MAXIMUM SOURCE CAPACITY ² (Ac-Ft/Yr) | | |
|-----------------------------------|---|---|--------------------------|---------------------------------------|
| | | POTABLE | NON-POTABLE ³ | POTABLE PLUS NON-POTABLE ³ |
| COALVILLE AREA | | | | |
| Cluff Ward Pipeline Co. | 21 ⁴ | 45 | 0 | 45 |
| Coalville Culinary Water | 309 ⁴ | 634 | 0 | 634 |
| Hoytsville Culinary Water | 241 | 540 | 0 | 540 |
| Questar Pipeline Co. | 5 | 10 | 0 | 10 |
| ECHO | | | | |
| Echo Mutual Water Co. | 8 ⁴ | 17 | 0 | 17 |
| HENEFER | | | | |
| Henefer Pipeline Co. | 73 ⁴ | 108 | 0 | 108 |
| KAMAS | | | | |
| Kamas Culinary Water System | 699 ⁴ | 1,429 | 0 | 1,429 |
| MARION | | | | |
| Marion Waterworks Co. | 63 ⁴ | 137 | 0 | 32 |
| OAKLEY | | | | |
| Oakley Culinary Water | 194 ⁴ | 455 | 0 | 455 |
| PARK CITY AREA | | | | |
| Atkinson Special Improv. Dist. | 60 | 129 | 0 | 129 |
| Community Water Co. | 224 ⁴ | 378 | 0 | 378 |
| Gorgoza Mutual Water Co. | 555 | 1,166 | 0 | 1,166 |
| High Valley Water Co. | 128 ⁴ | 292 | 0 | 292 |
| Park City Culinary Water | 2,657 ⁴ | 5,472 | 0 | 472 |
| Silver Springs Water, Inc. | 313 | 687 | 0 | 687 |
| Spring Creek Water Co. | 222 | 452 | 0 | 452 |
| Summit County Service Area #3 | 44 | 97 | 0 | 97 |
| Summit Park Special Service Dist. | 144 ⁴ | 250 | 0 | 250 |
| Summit Water District | 658 ⁴ | 1,084 | 0 | 1,024 |
| Timberline Special Service Dist. | 36 | 67 | 0 | 67 |
| PEOA AREA | | | | |
| Peoa Pipeline Co. | 179 | 361 | 0 | 361 |
| Wooden Shoe Water Co. | 5 ⁴ | 11 | 0 | 11 |
| UPTON | | | | |
| Upton Water Works | 21 | 44 | 0 | 44 |
| WANSHIP | | | | |
| Wanship Mutual Water Co. | 67 | 151 | 0 | 151 |
| Wanship Cottage Sites | 24 | 39 | 0 | 39 |
| TOTAL GROUNDWATER SUPPLY | 6,950 | 14,055⁵ | 0 | 14,055⁵ |

¹The reliable system supply capacity was calculated for each public community system using the maximum source capacity and the estimated peak demand for each entity. See Table 4 for the calculation of these values.

²Water was classified as potable or non-potable according to the system that delivered the water rather than the physical characteristics of the water.

³Non-potable water is supplied by secondary systems. Secondary water system capacities are assumed to be equal to secondary water use.

⁴Use is equal to current supply.

⁵Although hydrologic conditions may allow some systems to withdraw the maximum water supply available under present conditions, the hydrologic conditions will limit all systems collectively from withdrawing this quantity.

Public non-community systems, private domestic wells, and self supplied industries are assumed to have water supply equal to their present uses. The public non-community groundwater supply is 54 acre-feet per year. The estimated presently developed groundwater supply from private domestic wells is 30 acre-feet per year. The two self supplied industries are mining related and their supply and use is 15 acre-feet per year. The total reliable M&I groundwater supply for Summit County is estimated to be 7,045 acre-feet per year.

Surface Water

Surface water sources to Summit County include the Weber River, East Canyon Creek, Silver Creek, Beaver Creek, Chalk Creek and several small tributaries. Extensive development of the Weber River has been accomplished through a number of reservoir projects, namely High Uinta storage reservoirs, Rockport Reservoir and Echo Reservoir, all located in Summit County. No Public Community Systems in Summit County use treated surface water but secondary water supply is estimated to be 1,773 acre-feet per year.

Total reliable surface and groundwater supplies for municipal and industrial purposes within Summit County is estimated at 8,818 acre-feet per year. Municipal and industrial water supplies for Summit County are tabulated in Table 2, on the following page.

Present Municipal & Industrial Water Use

The previously presented water supply includes the reliable developable water which could be used for municipal and industrial purposes within Summit County. The present M&I water use includes the developed water which is actually diverted from surface water or withdrawn from groundwater. Total M&I water use in Summit County is 7,882 acre-feet per year. An estimate of the present water use by source of supply and use category in Summit County is presented in Table 3. Culinary (potable) and secondary water uses by individual public community systems are presented in Tables 4 and 5. Culinary (potable) water use by non-community systems and self supplied industries is presented in Table 6.

Table 2. Presently Developed Municipal and Industrial Water Supplies In Summit County.

| SOURCE | RELIABLE WATER SUPPLY ^{1,2} (Ac-Ft/Yr) | | |
|------------------------------|---|--------------------------|-----------------------------|
| | POTABLE | NON-POTABLE | POTABLE PLUS NON-POTABLE |
| GROUNDWATER | | | |
| Public Community Systems | 6,950 | 0 | 6,950 |
| Public Non-Community Systems | 50 | 0 | 50 |
| Self-Supplied Industries | 0 | 15 | 15 |
| Private Domestic Systems | 30 | 0 | 30 |
| GROUNDWATER TOTAL | 7,030 | 15 | 7,045 |
| SURFACE WATER | | | |
| Public Community Systems | 0 | 1,773 ³ | 1,773 ³ |
| Public Non-Community Systems | 0 | 0 | 0 |
| SURFACE WATER TOTAL | 0 | 1,773³ | 1,773³ |
| TOTAL WATER SUPPLY | 7,030 | 1,788³ | 8,818³ |

¹ Water was classified as potable or non-potable based on the system delivering the water rather than the characteristics of the water. Thus, all water supplied to secondary irrigation systems or self-supplied industries was classified as non-potable.

² Water supplies for secondary water systems, self-supplied industries, public non-community systems, and private domestic water systems are assumed to be equal to use.

³ This amount includes non-potable water supplied by irrigation companies to customers of public community systems. (Secondary water is often supplied to customers of public community systems by irrigation companies that are separate entities from the potable water supplier.)

Table 3. Summit County Present Municipal & Industrial Water Use by Source and Category.

| SOURCE | WATER USE ¹ (Ac-Ft/Yr) | | |
|--------------------------------------|-----------------------------------|--------------------------|-----------------------------|
| | POTABLE | NON-POTABLE | POTABLE PLUS NON-POTABLE |
| GROUNDWATER: | | | |
| Residential: | | | |
| Public Community Systems | 4,837 | 0 | 4,837 |
| Public Non-Community Systems | 4 | 0 | 4 |
| Private Domestic Systems | 30 | 0 | 30 |
| Commercial and Institutional: | | | |
| Public Community Systems | 1,117 | 0 | 1,117 |
| Public Non-Community Systems | 46 | 0 | 46 |
| Industrial: | | | |
| Public Community Systems | 60 | 0 | 60 |
| Self-Supplied Industries | 0 | 15 | 15 |
| GROUNDWATER TOTAL | 6,094 | 15 | 6,109 |
| SURFACE WATER: | | | |
| Residential: | | | |
| Public Community Systems | 0 | 1,039 ² | 1,039 ² |
| Public Non-Community Systems | 0 | 0 | 0 |
| Commercial and Institutional: | | | |
| Public Community Systems | 0 | 734 ² | 1,721 ² |
| Public Non-Community Systems | 0 | 0 | 0 |
| SURFACE WATER TOTAL | 0 | 1,773² | 1,773² |
| TOTAL WATER USE | 6,094 | 1,788² | 7,882² |

¹ Water was classified as potable or non-potable based on the system delivering the water rather than the characteristics of the water. Thus, all water supplied to secondary irrigation systems or self-supplied industries was classified as non-potable.

² This amount includes non-potable water supplied by irrigation companies to customers of public community systems. (Secondary water is often supplied to customers of public systems by irrigation companies that are separate entities from the potable water supplier.)

**TABLE 4
SUMMIT COUNTY
WATER USE AND SUPPLY FOR PUBLIC COMMUNITY SYSTEMS**

| WATER SUPPLIER | POTABLE USAGE | | | | | Secondary Residential, Institutional & Commercial Outdoor Use (Ac-Ft/Yr) | Secondary Residential & Institutional Outdoor Use Plus Total Potable M & I Use (Ac-Ft/Yr) | POTABLE PER CAPITA USAGE | | | Maximum Water Supply Available Under Present Conditions (Ac-Ft/Yr) | POTABLE ESTIMATED PEAK DAY VALUES | | | | Reliable System Source Capacity (Ac-Ft/Yr) |
|---------------------------------------|-----------------------------------|------------------------------------|---|---------------------------|----------------------------|--|---|--------------------------|---|--------------------------------------|--|-----------------------------------|-----------------------|-----------------------|-----------------------------------|--|
| | Residential Indoor Use (Ac-Ft/Yr) | Residential Outdoor Use (Ac-Ft/Yr) | Commercial and Institutional Use (Ac-Ft/Yr) | Industrial Use (Ac-Ft/Yr) | TOTAL M & I Use (Ac-Ft/Yr) | | | Population | Average Per Capita Water Use (Ac-Ft/Yr) | Average Per Capita Water Use (GPCPD) | | Assumed Peaking Factor (PD/AD) | Peak Day Supply (MGD) | Peak Day Demand (MGD) | Peak Day Supply Over Demand (MGD) | |
| COALVILLE AREA | | | | | | | | | | | | | | | | |
| Cluff Ward Pipeline Co. | 18.1 | 0.0 | 0.0 | 3.1 | 21.3 | 39.0 | 60.3 | 148 | 0.144 | 128.2 | 45 | 2.1148 | 0.0401 | 0.0401 | 0.0000 | 21 |
| Coalville Culinary Water | 131.2 | 99.0 | 40.0 | 38.4 | 308.6 | 267.3 | 575.9 | 1,065 | 0.290 | 258.6 | 634 | 2.3090 | 0.6360 | 0.6360 | 0.0000 | 309 |
| Hoytsville Culinary Water | 42.5 | 24.3 | 0.0 | 6.1 | 72.9 | 71.3 | 144.2 | 345 | 0.211 | 188.7 | 540 | 2.2382 | 0.4824 | 0.1457 | 0.3367 | 241 |
| Wanship Cottage Sites | 1.4 | 0.4 | 0.0 | 0.0 | 1.8 | 8.4 | 10.2 | 28 | 0.064 | 57.1 | 39 | 1.6344 | 0.0346 | 0.0026 | 0.0319 | 24 |
| Questar Pipeline Co. | 2.1 | 0.7 | 1.1 | 0.0 | 3.9 | 0.0 | 3.9 | 17 | 0.226 | 202.2 | 10 | 2.2556 | 0.0092 | 0.0078 | 0.0015 | 5 |
| ECHO | | | | | | | | | | | | | | | | |
| Echo Mutual Water Co. | 6.4 | 0.0 | 1.5 | 0.0 | 7.9 | 28.5 | 36.4 | 52 | 0.152 | 135.3 | 17 | 2.1348 | 0.0150 | 0.0150 | 0.0000 | 8 |
| HENEFER | | | | | | | | | | | | | | | | |
| Henefer Pipeline Co. | 70.2 | 0.0 | 2.5 | 0.0 | 72.7 | 203.0 | 275.7 | 570 | 0.128 | 113.9 | 108 | 2.0661 | 0.1341 | 0.1341 | 0.0000 | 73 |
| KAMAS | | | | | | | | | | | | | | | | |
| Kamas Culinary Water System | 130.7 | 485.9 | 82.3 | 0.0 | 698.9 | 56.6 | 755.5 | 1,061 | 0.659 | 588.0 | 1,429 | 2.4160 | 1.5073 | 1.5073 | 0.0000 | 699 |
| MARION | | | | | | | | | | | | | | | | |
| Marion Waterworks Co. | 43.1 | 12.1 | 1.2 | 6.1 | 62.6 | 17.8 | 80.4 | 350 | 0.179 | 159.7 | 137 | 2.1907 | 0.1225 | 0.1225 | 0.0000 | 63 |
| OAKLEY | | | | | | | | | | | | | | | | |
| Oakley Culinary Water | 67.8 | 120.1 | 6.1 | 0.0 | 194.0 | 217.8 | 411.8 | 550 | 0.353 | 314.9 | 455 | 2.3431 | 0.4059 | 0.4059 | 0.0000 | 194 |
| PARK CITY AREA | | | | | | | | | | | | | | | | |
| Atkinson Special Improvement District | 27.8 | 21.3 | 0.0 | 4.5 | 53.6 | 0.0 | 53.6 | 350 | 0.153 | 136.7 | 129 | 2.1386 | 0.1152 | 0.1023 | 0.0129 | 60 |
| Community Water Co. | 127.3 | 72.1 | 24.6 | 0.0 | 224.1 | 0.0 | 224.1 | 1,000 | 0.224 | 200.0 | 378 | 2.2530 | 0.4507 | 0.4507 | 0.0000 | 224 |
| Gorgoza Mutual Water Co. | 191.8 | 134.0 | 9.2 | 0.0 | 334.9 | 0.0 | 334.9 | 2,420 | 0.138 | 123.5 | 1,166 | 2.1001 | 1.0405 | 0.6279 | 0.4126 | 555 |
| High Valley Water Co. | 64.1 | 64.1 | 0.0 | 0.0 | 128.2 | 0.0 | 128.2 | 520 | 0.246 | 220.0 | 292 | 2.2755 | 0.2603 | 0.2603 | 0.0000 | 128 |
| Park City Culinary Water | 1,433.1 | 370.6 | 853.5 | 0.0 | 2,657.2 | 510.0 | 3,167.2 | 5,500 | 0.483 | 431.3 | 5,472 | 2.3855 | 5.6585 | 5.6585 | 0.0000 | 2,657 |
| Silver Springs Water, Inc. | 126.4 | 124.1 | 0.7 | 0.0 | 251.2 | 0.0 | 251.2 | 1,388 | 0.181 | 161.6 | 687 | 2.1943 | 0.6134 | 0.4921 | 0.1213 | 313 |
| Spring Creek Water Co. | 6.9 | 6.9 | 0.5 | 0.0 | 14.2 | 0.0 | 14.2 | 120 | 0.118 | 105.6 | 452 | 2.0323 | 0.4032 | 0.0258 | 0.3774 | 222 |
| Summit County Service Area #3 | 13.3 | 6.9 | 0.0 | 0.0 | 20.2 | 0.0 | 20.2 | 108 | 0.187 | 167.3 | 97 | 2.2047 | 0.0864 | 0.0398 | 0.0466 | 44 |
| Summit Park Special Service District | 143.2 | 0.0 | 0.9 | 0.0 | 144.1 | 0.0 | 144.1 | 1,500 | 0.096 | 85.7 | 250 | 1.9238 | 0.2474 | 0.2474 | 0.0000 | 144 |
| Summit Water District | 258.8 | 309.2 | 90.2 | 0.0 | 658.2 | 224.0 | 882.2 | 2,100 | 0.313 | 279.8 | 1,084 | 2.3234 | 1.3651 | 1.3651 | 0.0000 | 658 |
| Timberline Special Service District | 11.5 | 0.0 | 0.0 | 0.0 | 11.5 | 0.0 | 11.5 | 134 | 0.086 | 76.7 | 67 | 1.8557 | 0.0599 | 0.0191 | 0.0408 | 36 |
| PEOA AREA | | | | | | | | | | | | | | | | |
| Peoa Pipeline Co. | 23.0 | 0.0 | 0.0 | 1.5 | 24.6 | 47.5 | 72.1 | 215 | 0.114 | 101.9 | 361 | 2.0154 | 0.3226 | 0.0442 | 0.2784 | 179 |
| Wooden Shoe Water Co. | 5.2 | 0.0 | 0.0 | 0.0 | 5.2 | 15.8 | 21.0 | 42 | 0.123 | 110.1 | 11 | 2.0513 | 0.0095 | 0.0095 | 0.0000 | 5 |
| UPTON | | | | | | | | | | | | | | | | |
| Upton Water Works | 1.2 | 0.0 | 0.1 | 0.0 | 1.4 | 4.0 | 5.3 | 10 | 0.135 | 120.5 | 44 | 2.0901 | 0.0389 | 0.0025 | 0.0364 | 21 |
| WANSHIP | | | | | | | | | | | | | | | | |
| Wanship Mutual Water Co. | 22.7 | 15.1 | 3.1 | 0.0 | 40.9 | 62.4 | 103.3 | 184 | 0.222 | 198.3 | 151 | 2.2509 | 0.1346 | 0.0821 | 0.0525 | 67 |
| SUMMIT COUNTY TOTALS | 2,970.0 | 1,866.8 | 1,117.3 | 59.7 | 6,013.9 | 1,773.3 | 7,787.2 | 19,777 | 0.304 | 271.4 | 14,055 | 2.3180 | 12.5464 | 12.4442 | 0.1022 | 6,950 |
| A | B | C | E | F | G | H | I | J | K | L | M | N | O | P | Q | R |

*Peak Day Demand exceeds the calculated Peak Day Supply. Per DWR, an assumption was made that in these cases the Peak Day Supply has been exactly met and should be set equal to the Peak Day Demand.

Note: Although hydrologic conditions may allow some systems to withdraw the maximum water supply available under present conditions, the hydrologic conditions will probably limit all systems collectively from withdrawing this quantity as presented.

A, B, C, E, F, I, K, and N are all input data

G=B+C+E+F

I=G+H

K=G/J

L=K*892.682; (converts from Ac-Ft/Yr to GPD)

N=(2.5*L-49.4)/L

O=M*892.682/1000000; (except as provided in the note above)

P=J*L*N/1000000

Q=O-P

R=(O/(N*L))*L*1120.22; (1120.22 converts from MGD to Ac-Ft/Yr)

This value represents only Potable M&I Water Use.

This value represents Secondary Water Use combined with Potable M&I Water Use.

Average per capita water use based only on use of potable water.

The factor which when multiplied to the average per capita water use represents water use during peak demands.

Peak Day Supply of potable water based on maximum reliable source capacity converted to MGD). Where the calculated Peak Day Supply of potable water is less than the Peak Day Demand of Potable Water, this value was set equal to the Peak Day Demand of potable water.

Peak Day Demand on potable water based on the total potable M&I water use multiplied by the peaking factor

The amount of Peak Day Supply of potable water above the amount of the Peak Day Demand of potable water.

Reliable system source capacity represents that volume of water, which when divided by the average annual water per capita use, gives that population that can be reliably served by the system sources under peak day demand conditions.

Table 5. Secondary Water Use by Customers of Public Community Water Systems in Summit County

| PUBLIC COMMUNITY WATER SUPPLIERS | SECONDARY WATER USE ^{1,2} (Ac-Ft/Yr) | | |
|-------------------------------------|---|------------------|--------------|
| | GROUND- WATER | SURFACE WATER | TOTAL |
| COALVILLE | | | |
| Cluff Ward Pipeline Co. | 0 | 39 | 39 |
| Coalville Culinary Water | 0 | 267 | 267 |
| Hoytsville Culinary Water | 0 | 71 | 71 |
| Questar Pipeline Company | 0 | 0 | 0 |
| ECHO | | | |
| Echo Mutual Water Company | 0 | 28 | 28 |
| HENEFER | | | |
| Henefer Pipeline Company | 0 | 203 | 203 |
| KAMAS | | | |
| Kamas Culinary Water System | 0 | 57 | 57 |
| MARION | | | |
| Marion Waterworks Company | 0 | 18 | 18 |
| OAKLEY | | | |
| Oakley Culinary Water | 0 | 218 | 218 |
| PARK CITY | | | |
| Atkinson Special Improv. Dist. | 0 | 0 | 0 |
| Community Water Company | 0 | 0 | 0 |
| Gorgoza Mutual Water Company | 0 | 0 | 0 |
| High Valley Water Company | 0 | 0 | 0 |
| Park City Culinary Water | 0 | 510 | 510 |
| Silver Springs Water, Inc. | 0 | 0 | 0 |
| Spring Creek Water Company | 0 | 0 | 0 |
| Summit County Service Area #3 | 0 | 0 | 0 |
| Summit Park Special Service | 0 | 0 | 0 |
| Summit Water District | 0 | 224 | 224 |
| Timberline Special Service Dist. | 0 | 0 | 0 |
| PEOA | | | |
| Peoa Pipeline Company | 0 | 48 | 48 |
| Wooden Shoe Water Company | 0 | 16 | 16 |
| UPTON | | | |
| Upton Water Works | 0 | 4 | 4 |
| WANSHIP | | | |
| Wanship Mutual Water Company | 0 | 62 | 62 |
| Wanship Cottage Sites | 0 | 8 | 8 |
| TOTAL SECONDARY WATER USE | 0 | 1,773 | 1,773 |

¹ Secondary water use for non-metered sources was estimated by using the irrigation duty of three acre-feet per irrigated acre.

² These amounts include non-potable water supplied by irrigation companies to customers of public community systems. (Secondary water is often supplied to customers of public community systems by irrigation companies that are separate entities from the potable water supplier.)

**Table 6. Summit County Public Non-Community and Industrial Water Suppliers
- 1992 Supplies and Usage Within the Weber River Basin.**

| WATER SUPPLIER | WATER USE (Acre-ft/Yr) | | | | TOTAL |
|---|-------------------------------|--|-------------------|-------------------|--------------|
| | Residential | Recreational & Commercial | Irrigation | Industrial | |
| Aspen Mountain Water Co. | 0.0 | 3.4 | 0.0 | 0.0 | 3.4 |
| Beaver Knoll Service District | 0.0 | 0.6 | 0.0 | 0.0 | 0.6 |
| Butko Chevron Service | 0.0 | 0.6 | 0.0 | 0.0 | 0.6 |
| Camperworld Echo Island Ranch | 0.0 | 2.5 | 0.0 | 0.0 | 2.5 |
| Camp Pinecliff | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 |
| Canyon Rim Service District | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 |
| Cool Springs Mutual Water Co. | 1.1 | 4.8 | 0.0 | 0.0 | 5.9 |
| Echo Resort | 0.0 | 1.1 | 0.0 | 0.0 | 1.1 |
| Echo State Hwy Rest Stop | 0.0 | 3.0 | 9.0 | 0.0 | 12.0 |
| Hidden Haven Campground | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 |
| Hidden Lake Association | 0.3 | 2.1 | 0.0 | 0.0 | 2.4 |
| Kids Kampus | 0.0 | 0.7 | 0.0 | 0.0 | 0.7 |
| Kimball State Hwy Rest Stop | 0.0 | 1.4 | 4.2 | 0.0 | 5.6 |
| Lake Rockport Estates | 0.0 | 0.7 | 0.0 | 0.0 | 0.7 |
| Ledgefork Campground | 0.0 | 0.3 | 0.0 | 0.0 | 0.3 |
| Ma Bells Gas & Groceries | 0.0 | 1.2 | 0.0 | 0.0 | 1.2 |
| Pine Meadow Special Service Dist. | 0.0 | 2.1 | 0.0 | 0.0 | 2.1 |
| Pine Mountain Culinary | 0.8 | 1.3 | 0.0 | 0.0 | 2.1 |
| Pine Ranch | 0.0 | 0.4 | 0.0 | 0.0 | 0.4 |
| Rockport State Park | 0.7 | 2.8 | 0.0 | 0.0 | 3.5 |
| Smith-Morehouse Campground | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 |
| Wanship Well Water System | 0.4 | 0.0 | 0.0 | 0.0 | 0.4 |
| Weber-Meadow View Ranch | 0.3 | 0.4 | 0.0 | 0.0 | 0.7 |
| Weber Wild Water Companies | 0.7 | 1.2 | 0.0 | 0.0 | 1.9 |
| SUMMIT COUNTY INDUSTRIES¹ | 0.0 | 0.0 | 0.0 | 14.5 | 14.5 |
| SUMMIT COUNTY SUMMARY | 4.4 | 33.2 | 13.2 | 14.5 | 65.3 |

¹ Park City Consolidated Mines, Union Pacific Resources, and Park City Mines

Per Capita Municipal & Industrial Water Usage

Average per capita M&I water use in Summit County was calculated using the water use amounts for 1992. The 1992 population totals for areas supplied by public systems were provided by the individual water supply entities. The 1992 population served by private domestic water systems was estimated population estimates by the Utah Office of Planning and Budget, and subtracting the populations given by the various water supply entities. Per capita water use for several categories of water use are presented in Table 7.

Table 7. Average Per Capita Municipal and Industrial Water Use in Summit County.

| CATEGORY | AVERAGE PER CAPITA USE (Ac-Ft/Cap/Yr) | AVERAGE PER CAPITA USE (Gal/Cap/Day) |
|--|--|---|
| Residential Potable Use ¹ | 0.25 | 218.8 |
| Residential Potable Plus Secondary Use ¹ | 0.30 | 265.4 |
| Public Community Systems Potable Use ² | 0.30 | 271.4 |
| Public Community Systems Potable Plus Secondary Use ² | 0.39 | 351.5 |

¹ Based on Weber River portion of Summit County population of 19,877.

² Based on population of 19,777 within Public Community Suppliers.

MORGAN COUNTY M&I WATER SUPPLIES AND USES

General

Morgan County includes the communities of Croyden, Morgan, Richville, Porterville, Littleton, Milton, Peterson, Enterprise, and Mountain Green. Within the county are twelve public community systems, ten public non-community systems and two self-supplied industries. Location of the public community systems are shown in Figure 4. A water supply and use analysis for these systems is given in Tables 8 and 11. Appendix B contains a detailed description of each of these public community and non-community systems.

Municipal and Industrial Water Supply

Sources of M&I supply for Morgan County are presented in two categories: groundwater and surface water. Presently developed water supply is defined as a resource which is currently developed. It is further defined as limited by either a mechanical constraint such as pump capacity or pipe size, a hydrologic constraint such as reliable stream flow or groundwater safe yield, or a legal constraint such as water rights and contracts.

Groundwater

As in the other counties, groundwater is an important source of M&I water supply in Morgan County. Data collected for this study indicates that wells and springs serving municipalities through public water supply systems have a reliable system source capacity of 1,955 acre-feet per year. These are tabulated for each public community water supplier in Morgan County in Table 8 and are taken from analysis presented in Table 11.



Figure 4. Morgan County Water Suppliers.

Table 8. Maximum Groundwater Supply Available Under Present Conditions for Public Community Water Suppliers in Morgan County.

| PUBLIC COMMUNITY WATER SUPPLIERS | RELIABLE SYSTEM SOURCE CAPACITY ¹ (Ac-Ft/Yr) | MAXIMUM SOURCE CAPACITY ² (Ac-Ft/Yr) | | |
|--------------------------------------|--|--|------------------------------|--|
| | | POTABLE | NON- POTABLE ³ | POTABLE PLUS NON- POTABLE ³ |
| MOUNTAIN GREEN AREA | | | | |
| Highlands Water Company | 182 | 361 | 0 | 361 |
| Monte Verde Water Association | 34 ⁴ | 36 | 0 | 36 |
| Mountain Green Subdiv. Water Assoc. | 37 | 84 | 0 | 84 |
| Wilkinson Water Co. | 270 | 619 | 0 | 619 |
| PETERSON/ENTERPRISE AREA | | | | |
| Peterson Pipeline Company | 137 | 312 | 0 | 312 |
| V.P. Enterprise Estates Water Assoc. | 17 | 35 | 0 | 35 |
| West Enterprise Water Assoc. | 19 | 39 | 0 | 39 |
| MORGAN AREA | | | | |
| Morgan City Corporation | 1,154 | 2,703 | 0 | 2,703 |
| Richville Pipeline Company | 33 | 77 | 0 | 77 |
| South Littleton Water Company | 7 | 16 | 0 | 16 |
| South Robinson Spring Water Users | 16 ⁴ | 38 | 0 | 38 |
| CROYDEN | | | | |
| Croyden Pipeline Company | 49 | 110 | 0 | 110 |
| TOTAL GROUNDWATER SUPPLIES | 1,955 | 4,430⁵ | 0 | 4,430⁵ |

¹ The potable water supply available in the pattern of use was calculated for each public community system using the source capacity and the estimated peak demand for each entity. See Table 11 for the calculation of these values.

² Water was classified as potable or non-potable according to the system that delivered the water rather than the physical characteristics of the water.

³ Non-Potable water is supplied by secondary systems. Secondary water system capacities are assumed to be equal to secondary water use.

⁴ Current supply available is equal to current use.

⁵ Although hydrologic conditions may allow some systems to withdraw the maximum water supply available under present conditions, the hydrologic conditions will limit all systems collectively from withdrawing this quantity.

Public non-community systems, private domestic wells, and self supplied industries are assumed to have capacities equal to their present uses. Public non-community groundwater supply is 233 acre-feet per year. The estimated presently developed groundwater supply from private domestic wells is 641 acre-feet per year. An arms manufacturer, a natural spring water bottling company, and a cement factory make up the three self-supplied industries and their supply and use is 827 acre-feet per year. The total reliable groundwater supply for Morgan County is estimated to be 3,656 acre-feet per year.

Surface Water

Surface water sources to Morgan County include the Weber River, East Canyon Creek, and several small tributaries. Extensive development of the Weber River has been accomplished through a number of reservoir and aqueduct projects. Secondary water supply within the county is estimated to be 382 acre-feet per year.

Total reliable surface and groundwater supplies for municipal and industrial purposes within Morgan County is estimated at 4,038 acre-feet per year. Total municipal and industrial water supplies for Morgan County are tabulated in Table 9, on the following page.

Present Municipal and Industrial Water Use

The previously presented water supply includes the developed water which could be used for municipal and industrial purposes within Morgan County. The present M&I water use includes the developed water which is actually diverted from surface water or withdrawn from groundwater. Total M&I water use in Morgan County is 3,219 acre-feet per year. An estimate of the present water use by source of supply and use category in Morgan County is presented in Table 10. Culinary (potable) and secondary water uses by individual public community systems are presented in Tables 11 and 12. Culinary (potable) water use by non-community systems and self supplied industries is presented in Table 13.

Table 9. Presently Developed Municipal and Industrial Water Supplies in Morgan County.

| SOURCE | RELIABLE WATER SUPPLY ^{1,2} (Ac-Ft/Yr) | | |
|------------------------------|---|------------------------|-----------------------------|
| | POTABLE | NON-POTABLE | POTABLE PLUS NON-POTABLE |
| GROUNDWATER | | | |
| Public Community Systems | 1,955 | 0 | 1,955 |
| Public Non Community Systems | 233 | 0 | 233 |
| Self Supplied Industries | 827 | 0 | 827 |
| Private Domestic Systems | 641 | 0 | 641 |
| GROUNDWATER TOTAL | 3,656 | 0 | 3,656 |
| SURFACE WATER | | | |
| Public Community Systems | 0 | 176 ³ | 176 ³ |
| Public Non-Community Systems | 0 | 206 ³ | 206 ³ |
| SURFACE WATER TOTAL | 0 | 382³ | 382³ |
| TOTAL WATER SUPPLY | 3,656 | 382³ | 4,038³ |

¹ Water was classified as potable or non-potable based on the system delivering the water rather than the characteristics of the water. Thus, all water supplied to secondary irrigation systems or self-supplied industries was classified as non-potable.

² Water supplies for secondary water systems, self-supplied industries, public non-community systems, and private domestic water systems are assumed to be equal to use.

³ This amount includes non-potable water supplied by irrigation companies to customers of public community systems. (Secondary water is often supplied to customers of public community systems by irrigation companies that are separate entities from the potable water supplier.)

Table 10. Morgan County Present Municipal and Industrial Water Use by Source and Category

| SOURCE | WATER USE ¹ (Ac-Ft/Yr) | | |
|--------------------------------------|-----------------------------------|------------------------|--------------------------|
| | POTABLE | NON-POTABLE | POTABLE PLUS NON-POTABLE |
| GROUNDWATER: | | | |
| Residential: | | | |
| Public Community Systems | 1,025 | 0 | 1,025 |
| Public Non-Community Systems | 15 | 0 | 15 |
| Private Domestic Systems | 641 | 0 | 641 |
| Commercial and Institutional: | | | |
| Public Community Systems | 98 | 0 | 98 |
| Public Non-Community Systems | 218 | 0 | 218 |
| Industrial: | | | |
| Public Community Systems | 13 | 0 | 13 |
| Self-Supplied Industries | 827 | 0 | 827 |
| GROUNDWATER TOTAL | 2,837 | 0 | 2,837 |
| SURFACE WATER: | | | |
| Residential: | | | |
| Public Community Systems | 0 | 176 ² | 176 ² |
| Public Non-Community Systems | 0 | 0 | 0 |
| Commercial and Institutional: | | | |
| Public Community Systems | 0 | 0 | 0 |
| Public Non-Community Systems | 0 | 206 | 206 |
| SURFACE WATER TOTAL | 0 | 382² | 382² |
| TOTAL WATER USE | 2,837 | 382² | 3,219² |

¹ Water was classified as potable or non-potable based on the system delivering the water rather than the characteristics of the water. Thus, all water supplied to secondary irrigation systems or self-supplied industries was classified as non-potable.

² This amount includes non-potable water supplied by irrigation companies to customers of public community systems. (Secondary water is often supplied to customers of public systems by irrigation companies that are separate entities from the potable water supplier.)

**TABLE 11
MORGAN COUNTY
WATER USE AND SUPPLY FOR PUBLIC COMMUNITY SYSTEMS**

| WATER SUPPLIER | POTABLE USAGE | | | | | Secondary Residential, Institutional & Commercial Outdoor Use (Ac-Ft/Yr) | Secondary Residential & Institutional Outdoor Use Plus Total Potable M & I Use (Ac-Ft/Yr) | POTABLE PER CAPITA USAGE | | | Maximum Water Supply Available Under Present Conditions (Ac-Ft/Yr) | POTABLE ESTIMATED PEAK DAY VALUES | | | | Reliable System Source Capacity (Ac-Ft/Yr) | | | | | | | | | | |
|-------------------------------------|-----------------------------------|------------------------------------|---|---------------------------|--------------------------|--|---|--------------------------|---|--------------------------------------|--|-----------------------------------|-----------------------|-----------------------|-----------------------------------|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | Residential Indoor Use (Ac-Ft/Yr) | Residential Outdoor Use (Ac-Ft/Yr) | Commercial and Institutional Use (Ac-Ft/Yr) | Industrial Use (Ac-Ft/Yr) | TOTAL M&I Use (Ac-Ft/Yr) | | | Population | Average Per Capita Water Use (Ac-Ft/Yr) | Average Per Capita Water Use (GPCPD) | | Assumed Peaking Factor (PD/AD) | Peak Day Supply (MGD) | Peak Day Demand (MGD) | Peak Day Supply Over Demand (MGD) | | | | | | | | | | | |
| MOUNTAIN GREEN AREA | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Highlands Water Co. | 18.7 | 36.4 | 3.3 | 0.0 | 58.4 | 0.0 | 58.4 | 550 | 0.106 | 94.8 | 361 | 1.9788 | 0.3223 | 0.1032 | 0.2191 | 182 | | | | | | | | | | |
| Monte Verde Water Association | 11.6 | 22.2 | 0.0 | 0.0 | 33.8 | 0.0 | 33.8 | 93 | 0.363 | 324.4 | 36 | 2.3477 | 0.0708 | 0.0708 | 0.0000 | 34 | | | | | | | | | | |
| Mountain Green Sub. Water Assc. | 4.8 | 7.6 | 0.0 | 3.0 | 15.4 | 0.0 | 15.4 | 59 | 0.261 | 233.0 | 84 | 2.2880 | 0.0750 | 0.0315 | 0.0435 | 37 | | | | | | | | | | |
| Wilkinson Water Co. | 44.1 | 74.9 | 0.1 | 0.0 | 119.1 | 0.0 | 119.1 | 450 | 0.265 | 236.3 | 619 | 2.2909 | 0.5526 | 0.2436 | 0.3090 | 270 | | | | | | | | | | |
| PETERSON/ENTERPRISE AREA | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peterson Pipeline Co. | 45.9 | 37.2 | 0.4 | 1.5 | 85.0 | 34.5 | 119.5 | 350 | 0.243 | 216.8 | 312 | 2.2721 | 0.2785 | 0.1724 | 0.1061 | 137 | | | | | | | | | | |
| V.P. Enterprise Estates Water Assc. | 5.4 | 6.6 | 0.0 | 0.0 | 12.0 | 9.0 | 21.0 | 82 | 0.146 | 130.2 | 35 | 2.1206 | 0.0312 | 0.0226 | 0.0086 | 17 | | | | | | | | | | |
| West Enterprise Water Association | 3.3 | 0.2 | 0.0 | 0.0 | 3.5 | 3.0 | 6.5 | 27 | 0.130 | 115.7 | 39 | 2.0731 | 0.0348 | 0.0065 | 0.0283 | 19 | | | | | | | | | | |
| MORGAN AREA | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Morgan City Corporation | 239.3 | 401.8 | 94.1 | 5.0 | 740.2 | 110.4 | 850.6 | 2,100 | 0.352 | 314.6 | 2,703 | 2.3430 | 2.4129 | 1.5482 | 0.8648 | 1,154 | | | | | | | | | | |
| Richville Pipeline Co. | 12.3 | 17.3 | 0.0 | 3.1 | 32.7 | 4.5 | 37.2 | 100 | 0.327 | 291.9 | 77 | 2.3308 | 0.0687 | 0.0680 | 0.0007 | 33 | | | | | | | | | | |
| South Littleton Water Co. | 4.4 | 2.3 | 0.0 | 0.0 | 6.7 | 8.1 | 14.8 | 36 | 0.187 | 167.1 | 16 | 2.2044 | 0.0143 | 0.0133 | 0.0010 | 7 | | | | | | | | | | |
| South Robinson Spring Water Users | 3.7 | 12.6 | 0.0 | 0.0 | 16.3 | 0.0 | 16.3 | 30 | 0.543 | 485.0 | 38 | 2.3981 | 0.0349 | 0.0349 | 0.0000 | 16 | | | | | | | | | | |
| CROYDEN AREA | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Croyden Water Co. | 6.9 | 5.7 | 0.0 | 0.0 | 12.6 | 6.0 | 18.6 | 56 | 0.225 | 200.9 | 110 | 2.2540 | 0.0982 | 0.0254 | 0.0728 | 49 | | | | | | | | | | |
| | | | | | | | | | | | see note | | | | | | | | | | | | | | | |
| MORGAN COUNTY TOTALS | | | | | | | | | | | 4,430 | 2,3084 | 3,9546 | 2,3403 | 1,6143 | 1,955 | | | | | | | | | | |
| A | | | | | | | | | | | B | C | E | F | G | H | I | J | K | L | M | N | O | P | Q | R |

*Peak Day Demand exceeds the calculated Peak Day Supply. Per DWR, an assumption was made that in these cases the Peak Day Supply has been exactly met and should be set equal to the Peak Day Demand.

Note: Although hydrologic conditions may allow some systems to withdraw the maximum water supply available under present conditions, the hydrologic conditions will probably limit all systems collectively from withdrawing this quantity as presented.

A, B, C, E, F, I, K, and N are all input data

G=B+C+E+F

I=G+H

K=G/J

L=K*892.682; (converts from Ac-Ft/Yr to GPD)

N=(2.5*L-49.4)/L

O=M*892.682/1000000; (except as provided in the note above)

P=J*L*N/1000000

Q=O-P

R={O/(N*L)}*L*1120.22; (1120.22 converts from MGD to Ac-Ft/Yr)

This value represents only Potable M&I Water Use.

This value represents Secondary Water Use combined with Potable M&I Water Use.

Average per capita water use based only on use of potable water.

The factor which when multiplied to the average per capita water use represents water use during peak demands.

Peak Day Supply of potable water based on maximum reliable source capacity converted to MGD). Where the calculated Peak Day Supply of potable water is less than the Peak Day Demand of Potable Water, this value was set equal to the Peak Day Demand of potable water.

Peak Day Demand on potable water based on the total potable M&I water use multiplied by the peaking factor

The amount of Peak Day Supply of potable water above the amount of the Peak Day Demand of potable water.

Reliable system source capacity represents that volume of water, which when divided by the average annual water per capita use, gives that population that can be reliably served by the system sources under peak day demand conditions.

Table 12. Secondary Water Use by Customers of Public Community Water Systems in Morgan County.

| PUBLIC COMMUNITY WATER SUPPLIERS | SECONDARY WATER USE^{1,2} (Ac-Ft/Yr) | | |
|--|---|--------------------------|--------------|
| | GROUND- WATER | SURFACE WATER | TOTAL |
| MOUNTAIN GREEN AREA | | | |
| Highlands Water Company | 0 | 0 | 0 |
| Monte Verde Water Association | 0 | 0 | 0 |
| Mountain Green Subdivision Water Association | 0 | 0 | 0 |
| Wilkinson Water Company | 0 | 0 | 0 |
| PETERSON/ENTERPRISE AREA | | | |
| Peterson Pipeline Company | 0 | 35 | 35 |
| V.P. Enterprise Estates Water Association | 0 | 9 | 9 |
| West Enterprise Water Association | 0 | 3 | 3 |
| MORGAN AREA | | | |
| Morgan City Corporation | 0 | 110 | 110 |
| Richville Pipeline Company | 0 | 5 | 5 |
| South Littleton Water Company | 0 | 8 | 8 |
| South Robinson Spring Water Users | 0 | 0 | 0 |
| CROYDEN | | | |
| Croyden Pipeline Company | 0 | 6 | 6 |
| <hr/> | | | |
| TOTAL SECONDARY WATER USE | 0 | 176 | 176 |
| <hr/> | | | |

¹ Secondary water use for non-metered sources was calculated by assuming an irrigation demand of about four acre-feet per irrigated acre.

² These amounts include non-potable water supplied by irrigation companies to customers of public community systems. (Secondary water is often supplied to customers of public community systems by irrigation companies that are separate entities from the potable water supplier.)

**Table 13. Morgan County Public Non-Community and Industrial Water Suppliers
- 1992 Supplies and Usage Within the Weber River Basin**

| <u>Feet/Year)</u> | WATER USE | | | | TOTAL | (Acre- |
|--|-------------|------------------------------|--------------------|--------------|----------------|--------|
| | Residential | Recreational & Commercial | Irrigation | Industrial | | |
| WATER SUPPLIER | | | | | | |
| Camp Zarahemia | 0.0 | 0.4 | 10.5 ¹ | 0.0 | 11.9 | |
| East Canyon Resort | 14.7 | 10.8 | 183.0 | 0.0 | 208.5 | ± |
| Canyon State Park | 0.7 | 3.0 | 7.5 | 0.0 | 11.2 | |
| LDS Stake Camp Woodland | 0.0 | 0.3 | 9.0 | 0.0 | 9.3 | |
| Milton LDS Church | 0.0 | 0.6 | 0.0 | 0.0 | 0.6 | |
| Morgan 5 th and 6 th Wards | 0.0 | 0.5 | 13.5 ¹ | 0.0 | 15.0 | |
| Mountain Green Hwy Rest Stop | 0.0 | 0.3 | 1.5 | 0.0 | 1.8 | |
| Peterson LDS Church | 0.0 | 0.8 | 0.0 | 0.0 | 0.8 | |
| Round Valley Country Club | 0.0 | 0.2 | 181.8 ¹ | 0.0 | 182.0 | |
| Stoddard Inn Café | 0.0 | 0.3 | 0.0 | 0.0 | 0.3 | |
| MORGAN COUNTY IND.² | 0.0 | 0.0 | 0.0 | 827.1 | 827.1 | |
| MORGAN CO. TOTALS | 15.4 | 17.2 | 406.8 | 827.1 | 1,266.5 | |

¹ Irrigation by non-potable secondary system

² Ideal Basic Industries, and Anne Heiner Spring Water (Como Springs Resort)

Per Capita Municipal and Industrial Water Usage

Average per capita water use in Morgan County was calculated using the water use amounts for 1992. The population totals for areas supplied by public systems were provided by the individual water supply entities. The population served by private domestic water systems was estimated using population estimates by the Utah Office of Planning and Budget, and subtracting the populations given by the various water supply entities. Per capita water use for several categories of water use are presented in Table 14.

Table 14. Average Per Capita Municipal and Industrial Water Use in Morgan County.

| CATEGORY | AVERAGE PER CAPITA USE (AC-FT/CAP/YR) | AVERAGE PER CAPITA USE (GAL/CAP/DAY) |
|--|--|---|
| Residential Potable Use ¹ | 0.27 | 244.0 |
| Residential Potable Plus Secondary Use ¹ | 0.30 | 269.6 |
| Public Community Systems Potable Use ² | 0.29 | 257.9 |
| Public Community Systems Potable Plus Secondary Use ² | 0.33 | 297.6 |

¹Based on Morgan County population of 6,150.

²Based on population of 3,933 within Public Community Suppliers.

OGDEN VALLEY M&I WATER SUPPLIES AND USES

General

The Ogden Valley portion of Weber County includes the communities of Huntsville, Eden, and Liberty. Within this area are 12 public community systems, and 22 public non-community systems. Location of the public community systems are shown in Figure 5. A water supply and use analysis for these systems is given in Tables 15 and 19. Appendix C contains a detailed description of each of these public community and non-community systems.

Municipal and Industrial Water Supply

Sources of municipal and industrial supply for Ogden Valley are presented in two categories: groundwater and surface water. Presently developed water supply is defined as a resource which is currently developed. It is further defined as limited by either a mechanical constraint such as pump capacity or pipe size, a hydrologic constraint such as reliable stream flow or groundwater safe yield, or a legal constraint such as water rights and contracts.

Groundwater

As in the other Weber Basin areas, groundwater is an important source of M&I water supply in Ogden Valley. Data collected for this study indicates that wells and springs serving municipalities through public water supply systems have a reliable system source capacity of 1,143 acre-feet per year. These are tabulated for each public community water supplier in Ogden Valley in Table 15 and are taken from analysis presented in Table 18.

Public non-community systems and private domestic wells are assumed to have capacities equal to their present uses. Public non-community groundwater supply is 64 acre-feet per year. The estimated presently developed groundwater supply from private domestic wells is 85 acre-feet per year. The total reliable groundwater supply for Ogden Valley is estimated to be 1,292-feet per year.

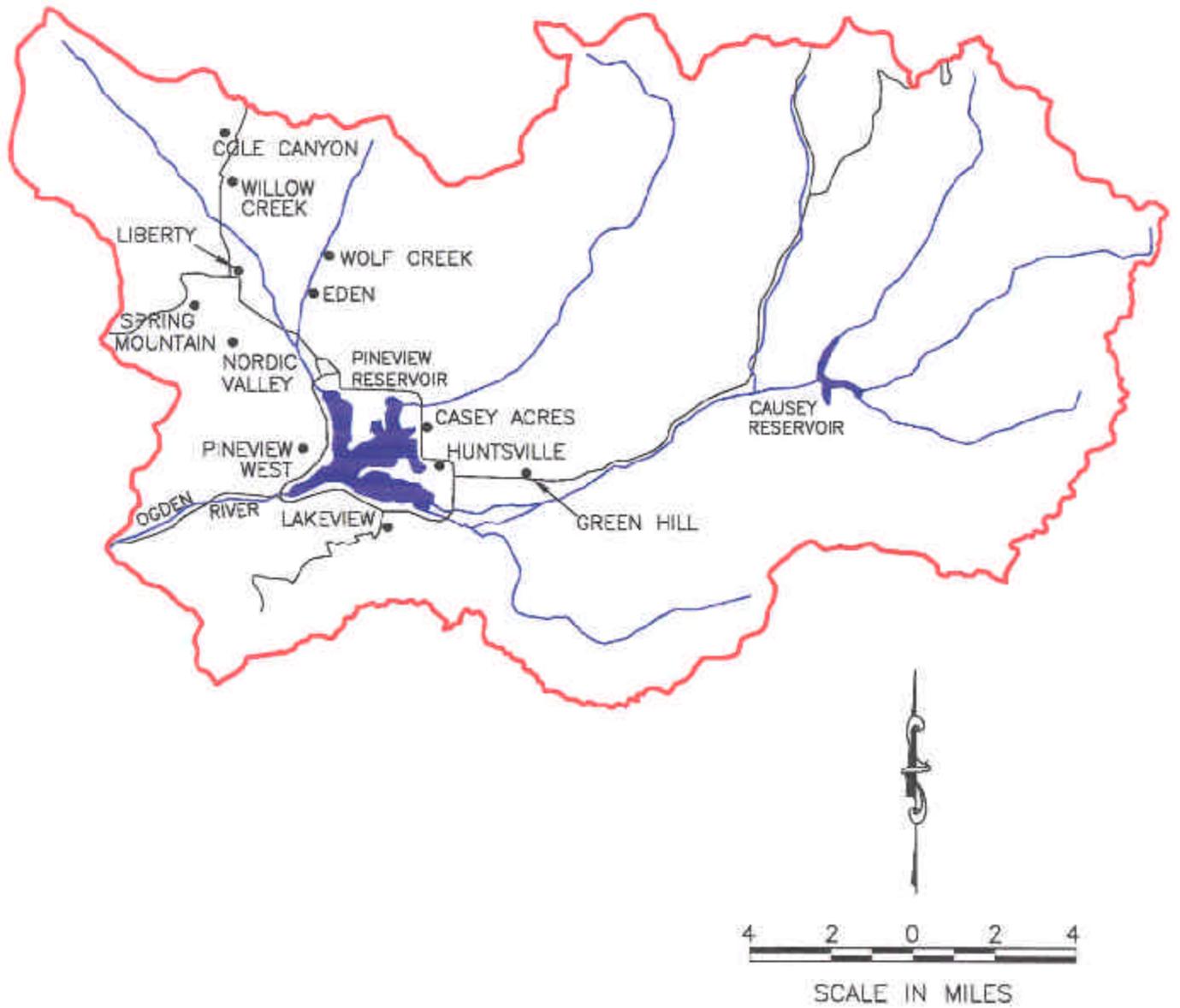


Figure 5. Ogden Valley Water Suppliers.

Table 15. Maximum Groundwater Supply Available Under Present Conditions for Public Community Water Suppliers in Ogden Valley.

| PUBLIC COMMUNITY WATER SUPPLIERS | RELIABLE SYSTEM SOURCE CAPACITY ¹ (Ac-Ft/Yr) | MAXIMUM SOURCE CAPACITY ² (Ac-Ft/Yr) | | |
|-------------------------------------|---|--|------------------------------|--|
| | | POTABLE | NON- POTABLE ³ | POTABLE PLUS NON- POTABLE ³ |
| Casey Acres | 53 | 71 | 0 | 71 |
| Cole Canyon Water Company | 34 | 72 | 0 | 72 |
| Eden Water Works Company | 135 ⁴ | 213 | 0 | 213 |
| Green Hill Water and Sewer | 52 | 110 | 0 | 110 |
| Huntsville Municipal Water System | 105 | 226 | 0 | 226 |
| Lakeview Corporation | 42 | 90 | 0 | 90 |
| Liberty Pipeline Company | 102 ⁴ | 81 | 0 | 81 |
| Nordic Valley Water Company | 288 | 394 | 0 | 394 |
| Pineview West Water Company | 20 | 32 | 0 | 32 |
| Spring Mountain | 37 | 81 | 0 | 81 |
| Willow Creek Subdivision | 8 ⁴ | 18 | 0 | 18 |
| Wolf Creek Country Club | 266 | 548 | 0 | 548 |
| <hr/> | | | | |
| TOTAL GROUNDWATER SUPPLIES | 1,143 | 1,936⁵ | 0 | 1,936⁵ |

¹ The potable water supply available in the pattern of use was calculated for each public community system using the source capacity and the estimated peak demand for each entity. See Table 18 for the calculation of these values.

² Water was classified as potable or non-potable according to the system that delivered the water rather than the physical characteristics of the water.

³ Non-potable water is supplied by secondary systems. Secondary water system capacities are assumed to be equal to secondary water use.

⁴ Current supply available is equal to current use.

⁵ Although hydrologic conditions may allow some systems to withdraw the maximum water supply available under present conditions, the hydrologic conditions will limit all systems collectively from withdrawing this quantity.

Surface Water

Surface water sources to Ogden Valley include the Ogden River, and several small tributaries. Extensive development of the Ogden River has been accomplished through a number of reservoir projects, namely Causey and Pineview Reservoirs, all located in Weber County. Secondary water use within the valley is estimated to be 1,197 acre-feet per year.

Total reliable surface and groundwater for municipal and industrial proposed within Ogden Valley is 2,489 acre-feet per year. Total municipal and industrial water supplies for Ogden Valley are tabulated in Table 16.

Present Municipal and Industrial Water Use

The previously presented water supply includes the developed water which could be used for municipal and industrial purposes within Ogden Valley. The present water use includes the developed water which is actually diverted from surface water or withdrawn from groundwater. Total municipal and industrial water use in Ogden Valley is 1,848 acre-feet per year. An estimate of the present water use by source of supply and use category in Ogden Valley is presented in Table 17. Culinary (potable) and secondary water uses by individual public community systems are presented in Tables 18 and 19. Culinary (potable) water use by non-community systems is presented in Table 20.

Table 16. Presently Developed Municipal and Industrial Water Supplies In Ogden Valley.

| SOURCE | RELIABLE WATER SUPPLY ^{1,2} (Ac-Ft/Yr) | | |
|-------------------------------|---|--------------------------|-----------------------------|
| | POTABLE | NON-POTABLE | POTABLE PLUS NON-POTABLE |
| GROUNDWATER | | | |
| Public Community Systems | 1,143 | 0 | 1,143 |
| Public Non-Community Systems | 64 | 0 | 64 |
| Self-Supplied Industries | 0 | 0 | 0 |
| Private Domestic Systems | 85 | 0 | 85 |
| GROUNDWATER SUBTOTAL | 1,292 | 0 | 1,292 |
| SURFACE WATER | | | |
| Public Community Systems | 0 | 1,197 ³ | 1,197 ³ |
| Public Non-Community Systems | 0 | 0 | 0 ³ |
| SURFACE WATER SUBTOTAL | 0 | 1,197³ | 1,197³ |
| TOTAL WATER SUPPLY | 1,292 | 1,197³ | 2,489³ |

¹ Water was classified as potable or non-potable based on the system delivering the water rather than the characteristics of the water. Thus, all water supplied to secondary irrigation systems or self-supplied industries was classified as non-potable.

² Water supplies for secondary water systems, self-supplied industries, public non-community systems, and private domestic water systems are assumed to be equal to use.

³ This amount includes non-potable water supplied by irrigation companies to customers of public community systems. (Secondary water is often supplied to customers of public community systems by irrigation companies that are separate entities from the potable water supplier.)

Table 17. Ogden Valley Present Municipal & Industrial Water Use by Source and Category.

| SOURCE | WATER USE ¹ (Ac-Ft/Yr) | | |
|--|-----------------------------------|--------------------------|-----------------------------|
| | POTABLE | NON-POTABLE | POTABLE PLUS NON-POTABLE |
| GROUNDWATER: | | | |
| Residential: | | | |
| Public Community Systems | 472 | 0 | 472 |
| Public Non-Community Systems | 13 | 0 | 13 |
| Private Domestic Systems | 85 | 0 | 85 |
| Commercial & Institutional: | | | |
| Public Community Systems | 23 | 0 | 23 |
| Public Non-Community Systems | 51 | 0 | 51 |
| Industrial: | | | |
| Public Community Systems | 7 | 0 | 7 |
| Self-Supplied Industries | 0 | 0 | 0 |
| GROUNDWATER TOTAL | 651 | 0 | 651 |
| SURFACE WATER: | | | |
| Residential: | | | |
| Public Community Systems | 0 | 717 ² | 717 ² |
| Public Non-Community Systems | 0 | 0 | 0 |
| Commercial and Institutional: | | | |
| Public Community Systems | 0 | 480 ² | 480 ² |
| Public Non-Community Systems | 0 | 0 | 0 |
| SURFACE WATER TOTAL | 0 | 1,197² | 1,197² |
| TOTAL WATER USE | 651 | 1,197² | 1,848² |

¹Water was classified as potable or non-potable based on the system delivering the water rather than the characteristics of the water. Thus, all water supplied to secondary irrigation systems or self-supplied industries was classified as non-potable.

²This amount includes non-potable water supplied by irrigation companies to customers of public community systems. (Secondary water is often supplied to customers of public systems by irrigation companies that are separate entities from the potable water supplier.)

**TABLE 18
 OGDEN VALLEY
 WATER USE AND SUPPLY FOR PUBLIC COMMUNITY SYSTEMS**

| WATER SUPPLIER | POTABLE USAGE | | | | | Secondary Residential, Institutional & Commercial Outdoor Use (Ac-Ft/Yr) | Secondary Residential & Institutional Outdoor Use Plus Total Potable M & I Use (Ac-Ft/Yr) | POTABLE PER CAPITA USAGE | | | Maximum Water Supply Available Under Present Conditions (Ac-Ft/Yr) | POTABLE ESTIMATED PEAK DAY VALUES | | | | Reliable System Source Capacity (Ac-Ft/Yr) |
|-----------------------------------|-----------------------------------|------------------------------------|---|---------------------------|--------------------------|--|---|--------------------------|---|--------------------------------------|--|-----------------------------------|-----------------------|-----------------------|-----------------------------------|--|
| | Residential Indoor Use (Ac-Ft/Yr) | Residential Outdoor Use (Ac-Ft/Yr) | Commercial and Institutional Use (Ac-Ft/Yr) | Industrial Use (Ac-Ft/Yr) | TOTAL M&I USE (Ac-Ft/Yr) | | | Population | Average Per Capita Water Use (Ac-Ft/Yr) | Average Per Capita Water Use (GPCPD) | | Assumed Peaking Factor (PD/AD) | Peak Day Supply (MGD) | Peak Day Demand (MGD) | Peak Day Supply Over Demand (MGD) | |
| Causey Acres | 1.7 | 0.0 | 0.0 | 0.0 | 1.7 | 21.6 | 23.3 | 36 | 0.047 | 42.2 | 71 | 1.3281 | 0.0634 | 0.0020 | 0.0614 | 53 |
| Cole Canyon Water Co. | 19.7 | 4.1 | 0.0 | 0.0 | 23.8 | 0.0 | 23.8 | 160 | 0.149 | 132.8 | 72 | 2.1280 | 0.0643 | 0.0452 | 0.0191 | 34 |
| Eden Water Works | 89.4 | 38.6 | 6.9 | 0.0 | 134.9 | 162.0 | 296.9 | 1,215 | 0.111 | 99.1 | 213 | 2.0016 | 0.2410 | 0.2410 | 0.0000 | 135 |
| Green Hill Water and Sewer | 15.5 | 1.9 | 0.0 | 0.0 | 17.4 | 0.0 | 17.4 | 126 | 0.138 | 123.3 | 110 | 2.0993 | 0.0982 | 0.0326 | 0.0656 | 52 |
| Huntsville Municipal Water System | 69.1 | 7.3 | 14.1 | 0.0 | 90.5 | 243.0 | 333.5 | 561 | 0.161 | 144.0 | 226 | 2.1570 | 0.2017 | 0.1743 | 0.0275 | 105 |
| Lakeview Corp. | 13.6 | 2.6 | 0.1 | 0.0 | 16.3 | 3.3 | 19.6 | 110 | 0.148 | 132.3 | 90 | 2.1265 | 0.0803 | 0.0309 | 0.0494 | 42 |
| Liberty Pipeline Co. | 80.1 | 14.4 | 0.0 | 7.3 | 101.8 | 133.8 | 235.6 | 650 | 0.157 | 139.8 | 81 | 2.1467 | 0.1951 | 0.1951 | 0.0000 | 102 |
| Nordic Valley Water Co. | 16.6 | 9.8 | 0.5 | 0.0 | 26.9 | 138.9 | 165.8 | 550 | 0.049 | 43.7 | 394 | 1.3685 | 0.3517 | 0.0329 | 0.3189 | 288 |
| Pineview West Water Co. | 2.4 | 0.0 | 0.0 | 0.0 | 2.4 | 9.8 | 12.2 | 40 | 0.060 | 53.6 | 32 | 1.5777 | 0.0286 | 0.0034 | 0.0252 | 20 |
| Spring Mountain | 12.3 | 5.4 | 0.0 | 0.0 | 17.7 | 3.6 | 21.3 | 100 | 0.177 | 158.0 | 81 | 2.1874 | 0.0723 | 0.0346 | 0.0377 | 37 |
| Willow Creek Subdivision | 5.5 | 2.7 | 0.0 | 0.0 | 8.2 | 0.0 | 8.2 | 45 | 0.182 | 162.7 | 18 | 2.1963 | 0.0161 | 0.0161 | 0.0000 | 8 |
| Wolf Creek Country Club | 42.4 | 16.5 | 0.9 | 0.0 | 59.8 | 480.0 | 539.8 | 478 | 0.125 | 111.7 | 548 | 2.0577 | 0.4892 | 0.1098 | 0.3793 | 266 |
| OGDEN VALLEY TOTALS | 368.3 | 103.3 | 22.5 | 7.3 | 501.4 | 1,196.0 | 1,697.4 | 4,071 | 0.123 | 109.9 | 1,936 | 2.0507 | 1.7282 | 0.9179 | 0.8104 | 1,143 |
| A | B | C | E | F | G | H | I | J | K | L | M | N | O | P | Q | R |

*Peak Day Demand exceeds the calculated Peak Day Supply. Per DWR, an assumption was made that in these cases the Peak Day Supply has been exactly met and should be set equal to the Peak Day Demand.

Note: Although hydrologic conditions may allow some systems to withdraw the maximum water supply available under present conditions, the hydrologic conditions will probably limit all systems collectively from withdrawing this quantity as presented.

A, B, C, E, F, I, K, and N are all input data

G=B+C+E+F

I=G+H

K=G/J

L=K*892.682; (converts from Ac-Ft/Yr to GPD)

N=(2.5*L-49.4)/L

O=M*892.682/1000000; (except as provided in the note above)

P=J*L*N/1000000

Q=O-P

R=(O/(N*L))*L*1120.22; (1120.22 converts from MGD to Ac-Ft/Yr)

This value represents only Potable M&I Water Use.

This value represents Secondary Water Use combined with Potable M&I Water Use.

Average per capita water use based only on use of potable water.

The factor which when multiplied to the average per capita water use represents water use during peak demands.

Peak Day Supply of potable water based on maximum reliable source capacity converted to MGD). Where the calculated Peak Day Supply of potable water is less than the Peak Day Demand of Potable Water, this value was set equal to the Peak Day Demand of potable water.

Peak Day Demand on potable water based on the total potable M&I water use multiplied by the peaking factor

The amount of Peak Day Supply of potable water above the amount of the Peak Day Demand of potable water.

Reliable system source capacity represents that volume of water, which when divided by the average annual water per capita use, gives that population that can be reliably served by the system sources under peak day demand conditions.

Table 19. Secondary Water Use by Customers of Public Community Water Systems in Ogden Valley.

| PUBLIC COMMUNITY WATER SUPPLIERS | SECONDARY WATER USE^{1,2}(Ac-Ft/Yr) | | |
|---|--|----------------|--------------|
| | GROUNDWATER | SURFACE | TOTAL |
| Casey Acres | 0 | 22 | 22 |
| Cole Canyon Water Company | 0 | 0 | 0 |
| Eden Water Works Company | 0 | 162 | 162 |
| Green Hill Water & Sewer | 0 | 0 | 0 |
| Huntsville Municipal Water System | 0 | 243 | 243 |
| Lakeview Corporation | 0 | 3 | 3 |
| Liberty Pipeline Company | 0 | 134 | 134 |
| Nordic Valley Water Company | 0 | 139 | 139 |
| Pineview West Water Company | 0 | 10 | 10 |
| Spring Mountain | 0 | 4 | 4 |
| Willow Creek Subdivision | 0 | 0 | 0 |
| Wolf Creek Country Club | 0 | 480 | 480 |
| TOTAL SECONDARY WATER USE | 0 | 1,197 | 1,197 |

¹ Secondary water use for non-metered sources was calculated by assuming an irrigation demand of about four acre-feet per irrigated acre.

² These amounts include non-potable water supplied by irrigation companies to customers of public community systems. (Secondary water is often supplied to customers of public community systems by irrigation companies that are separate entities from the potable water supplier.)

**Table 20. Ogden Valley Public Non-Community and Industrial Water Suppliers
- 1992 Supplies and Usage Within the Weber River Basin**

| WATER SUPPLIER | WATER USE (Acre-Feet/Year) | | | | |
|-----------------------------|-----------------------------------|---|-------------------|-------------------|--------------|
| | Residential | Recreational &Commercial | Irrigation | Industrial | TOTAL |
| Abbey of the Holy Trinity | 7.8 | 0.0 | 0.0 | 0.0 | 7.8 |
| American Legion | 0.0 | 0.4 | 0.0 | 0.0 | 0.4 |
| Anderson Cove Campground | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 |
| Camp Atoka | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 |
| Camp Kiesel & Browning | 0.0 | 3.6 | 3.0 | 0.0 | 6.6 |
| Camp Utaba | 0.0 | 1.0 | 0.0 | 0.0 | 1.0 |
| Camp Valley View Stake | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 |
| Causey Estates | 0.0 | 0.9 | 0.0 | 0.0 | 0.9 |
| Chris Trading Post | 1.2 | 1.1 | 6.0 | 0.0 | 8.3 |
| Eagle Family Meadows | 0.0 | 2.6 | 0.0 | 0.0 | 2.6 |
| Jackson Fork Inn | 0.4 | 1.1 | 6.0 | 0.0 | 7.5 |
| Jefferson Hunt Campground | 0.0 | 0.8 | 0.0 | 0.0 | 0.8 |
| North Fork Learning Center | 0.0 | 0.6 | 0.0 | 0.0 | 0.6 |
| North Fork Park | 0.0 | 7.7 | 0.0 | 0.0 | 7.7 |
| Ogden Pineview Yacht Club | 0.0 | 0.6 | 0.0 | 0.0 | 0.6 |
| Pine View Summer Homes | 2.5 | 0.6 | 0.0 | 0.0 | 3.1 |
| Powder Mountain | 0.6 | 2.5 | 0.0 | 0.0 | 3.1 |
| Red Rock Café & Outfitters | 0.5 | 0.7 | 0.0 | 0.0 | 1.2 |
| Snow Basin Ski Area | 0.0 | 3.8 | 0.0 | 0.0 | 3.8 |
| South Fork Complex | 0.0 | 3.8 | 0.0 | 0.0 | 3.8 |
| Sunridge Subdivision Water | 0.0 | 0.9 | 0.0 | 0.0 | 0.9 |
| Weber County Memorial Park | 0.0 | 1.1 | 0.0 | 0.0 | 1.1 |
| OGDEN VALLEY INDUSTRIES | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| OGDEN VALLEY SUMMARY | 13.0 | 36.1 | 15.0 | 0.0 | 64.1 |

Per Capita Municipal and Industrial Water Usage

Average per capita water use in Ogden Valley was calculated using the water use amounts for 1992. The 1992 population totals for areas supplied by public systems were provided by the individual water supply entities. The population served by private domestic water systems was estimated using population estimates by the Utah Office of Planning and Budget, and subtracting the populations given by the various water supply entities. Per capita water use for several categories of water use are presented in Table 21.

Table 21. Average Per Capita M&I Water Use in Ogden Valley

| CATEGORY | AVERAGE PER CAPITA USE (Ac-Ft/Cap/Yr) | AVERAGE PER CAPITA USE (Gal/Cap/Day) |
|--|--|---|
| Residential Potable Use ¹ | 0.12 | 103.4 |
| Residential Potable Plus Secondary Use ¹ | 0.29 | 260.7 |
| Public Community Systems Potable Use ² | 0.12 | 110.0 |
| Public Community Systems Potable Plus Secondary Use ² | 0.42 | 372.4 |

¹ Based on Ogden Valley population of 4,620.

² Based on population of 4,071 within Public Community Suppliers.

WASATCH FRONT AREA M&I WATER SUPPLIES AND USES

General

The Wasatch Front Area (Davis County and eastern Weber County) include the communities of North Salt Lake, Woods Cross, Bountiful, West Bountiful, Centerville, Farmington, Fruit Heights, Kaysville, Layton, Syracuse, Clearfield, West Point, Sunset, Clinton, South Weber, Roy, Hooper, Uintah, Riverdale, South Ogden, Ogden, North Ogden, Taylor-West Weber, Plain City, and Pleasant View. Within this area are 29 public community systems, 28 public non-community systems and self supplied industries. Location of the public community systems is shown in Figure 6. A detailed water supply and use analysis for these systems is given in Tables 22, 25 and 26. The data presented in these tables is generated for 1992 from the Wasatch Front Water Demand Model. Appendix D contains the 1992 Wasatch Front Water Demand Model run.

Municipal and Industrial Water Supply

Because the division's Wasatch Front Water Demand Model was used, sources of M&I supply for the Wasatch Front are presented in two categories: potable and non-potable water. Presently developed water supply is defined as a resource which is currently developed. It is further defined as limited by either a mechanical constraint such as pump capacity or pipe size, a hydrologic constraint such as reliable stream flow or groundwater safe yield, or a legal constraint such as water rights and contracts.

Most of the presently developed potable supply for both Weber and Davis Counties comes in the form of groundwater, although two communities (Ogden and Bountiful) have some of their supply from treated surface waters. Data collected for this study indicates that municipalities of Weber and Davis Counties through public water supply systems have a reliable system source capacity of 62,437 acre-feet per year. These are tabulated for each public community water supplier in both counties in Table 22 and are taken from analysis presented in Table 25 and 26. The remainder of their supply comes from the Weber Basin Water Conservancy District water. The district has a future estimated supply of 106,000 acre-feet (21,000 from groundwater and 85,000 from surface water sources).



Figure 6. Wasatch Front (Weber and Davis Counties) Water Suppliers.

Table 22. Maximum Water Supply Available Under Present Conditions for Public Community Water Suppliers along Wasatch Front Area of the Weber River Basin.

| PUBLIC COMMUNITY WATER SUPPLIERS | RELIABLE SYSTEM SOURCE CAPACITY ¹ (Ac-Ft/Yr) | MAXIMUM SOURCE CAPACITY ² (Ac-Ft/Yr) | | |
|--|--|---|--------------------------|---------------------------------------|
| | | POTABLE | NON-POTABLE ³ | POTABLE PLUS NON-POTABLE ³ |
| WEBER COUNTY | | | | |
| Bona Vista W.I.D. | 718 ⁴ | 1,600 | 647 | 2,247 |
| Hooper W.I.D. | 1,957 | 4,343 | 0 | 4,343 |
| North Ogden | 2,100 ⁴ | 4,308 | 4,002 | 8,310 |
| Ogden | 17,926 ⁴ | 28,402 | 7,416 | 35,818 |
| Pleasant View | 651 ⁴ | 1,452 | 563 | 2,015 |
| Riverdale | 1,332 ⁴ | 3,140 | 0 | 3,140 |
| Roy | 2,212 ⁴ | 4,587 | 6,225 | 10,812 |
| South Ogden | 0 ⁴ | 0 | 3,610 | 3,610 |
| Taylor West Weber | 614 ⁴ | 1,446 | 0 | 1,446 |
| Uintah | 65 ⁴ | 152 | 0 | 152 |
| Uintah Highland | 474 | 867 | 637 | 1,504 |
| Washington Terrace | <u>811⁴</u> | <u>1,711</u> | <u>3,138</u> | <u>4,849</u> |
| WEBER COUNTY TOTAL | 28,859 | 52,008⁵ | 26,238 | 78,246⁵ |
| DAVIS COUNTY | | | | |
| Bountiful | 7,880 | 15,144 | 6,511 | 21,877 |
| Centerville | 2,383 | 4,816 | 2,823 | 10,033 |
| Clearfield | 4,324 ⁴ | 10,107 | 0 | 10,107 |
| Clinton | 954 ⁴ | 2,136 | 0 | 2,136 |
| Farmington | 1,600 | 3,181 | 2,465 | 15,451 |
| Fruit Heights | 474 ⁴ | 926 | 1,528 | 5,357 |
| Hill Air Force Base | 4,336 ⁴ | 10,600 | 0 | 10,600 |
| Kaysville | 0 ⁴ | 0 | 3,490 | 7,317 |
| Layton | 4,687 ⁴ | 10,334 | 5,756 | 27,621 |
| North Salt Lake | 1,485 ⁴ | 3,444 | 602 | 6,554 |
| South Davis W.I.D. | 1,088 | 2,168 | 1,260 | 3,428 |
| South Weber | 178 ⁴ | 398 | 454 | 1,794 |
| Sunset | 698 ⁴ | 1,612 | 0 | 1,612 |
| Syracuse | 666 ⁴ | 1,303 | 2,573 | 3,876 |
| West Bountiful | 230 ⁴ | 521 | 390 | 1,709 |
| West Point | 708 ⁴ | 1,644 | 0 | 1,644 |
| Woods Cross | <u>1,887</u> | <u>4,313</u> | <u>667</u> | <u>9,597</u> |
| DAVIS COUNTY TOTAL | 33,578 | 72,647⁵ | 28,519 | 141,313⁵ |
| TOTAL WASATCH FRONT AREA SUPPLIES | 62,437 | 124,655⁵ | 54,757 | 179,412⁵ |

¹The reliable system source capacity was calculated for each public community system using the maximum source capacity and the estimated peak demand for each entity. See Table 25 and 26 for the calculation of these values.

²Water was classified as potable or non-potable according to the system that delivered the water rather than the physical characteristics of the water.

³Non-Potable water is supplied by secondary systems. Secondary water system capacities are assumed to be equal to secondary water use.

⁴Current supply available is equal to or less than current use. These systems buy additional water from the Weber Basin Water Conservancy District.

⁵Although hydrologic conditions may allow some systems to withdraw the maximum water supply available under present conditions, the hydrologic conditions will limit all systems collectively from withdrawing this quantity.

Public non-community systems were not analyzed for these two counties but private domestic wells and self-supplied industries were and are assumed to have capacities equal to their present uses. The estimated presently developed groundwater supply from private domestic wells is 2,353 acre-feet per year. The six self-supplied industries have a supply and use 22,334 acre-feet per year. The total reliable M&I supply (including secondary water) for the Wasatch Front area of the Weber Basin is estimated to be 247,820 acre-feet per year.

Present Municipal and Industrial Water Use

The previously presented water supply includes the developed water, which could be used for M&I purposes, within the Wasatch Front area. The present water use includes the developed water that is actually diverted from surface water or withdrawn from groundwater. Total M&I water use along the Wasatch Front area of the Weber Basin is 156,845 acre-feet per year. An estimate of the present water use by category along the Wasatch Front area is presented in Table 24. Culinary (potable) water use by individual public community systems are presented in Tables 25 and 26. Secondary water use is presented in Table 27.

Table 23. Presently Developed Municipal and Industrial Water Supplies Along Wasatch Front Area.

| CATEGORY | RELIABLE WATER SUPPLY ^{1,2} (Ac-Ft/Yr) | | |
|--|---|---------------------------|----------------------------|
| | POTABLE | NON-POTABLE | POTABLE PLUS NON-POTABLE |
| WEBER COUNTY | | | |
| Public Community Systems | 28,859 | 26,238 ³ | 55,097 |
| Public Non-Community Systems | N/A | N/A | N/A |
| Self-Supplied Industries | 312 | 19,848 ⁴ | 20,160 |
| Private Domestic Systems | 853 | 0 | 853 |
| WEBER COUNTY TOTAL | 30,024 | 46,086³ | 76,110 |
| DAVIS COUNTY | | | |
| Public Community Systems | 33,578 | 28,519 ³ | 62,097 |
| Public Non-Community Systems | N/A | N/A | N/A |
| Self-Supplied Industries | 1,882 | 292 | 2,174 |
| Private Domestic Systems | 1,500 | 0 | 1,500 |
| DAVIS COUNTY TOTAL | 36,960 | 28,810³ | 65,771 |
| WEBER BASIN WATER CONS. DIST. | 106,000⁵ | N/A⁵ | 106,000⁵ |
| TOTAL WASATCH FRONT AREA WATER SUPPLY | 172,984 | 74,836³ | 247,820 |

¹ Water was classified as potable or non-potable based on the system delivering the water rather than the characteristics of the water. Thus, all water supplied to secondary irrigation systems or self-supplied industries was classified as non-potable.

² Water supplies for secondary water systems, self-supplied industries, public non-community systems, and private domestic water systems are assumed to be equal to use.

³ This amount includes non-potable water supplied by irrigation companies to customers of public community systems. (Secondary water is often supplied to customers of public community systems by irrigation companies that are separate entities from the potable water supplier.)

⁴ An additional 80,000 acre-feet of Great Salt Lake water supply (saline) is available and used by Great Salt Lake Minerals and Chemical, Inc.

⁵ Weber Basin Water Conservancy District has an estimated 21,000 acre-feet of groundwater supply and 85,000 acre-feet of surface supply available for M&I purposes. This water could be used for culinary (potable) or secondary (non-potable) purposes.

Table 24. Wasatch Front Area Present Municipal & Industrial Water Use by Category

| CATEGORY | USE ¹ (Ac-Ft/Yr) | | |
|---|-----------------------------|-----------------------------|------------------------------|
| | POTABLE | NON-POTABLE | POTABLE PLUS NON- POTABLE |
| WEBER COUNTY: | | | |
| Residential: | | | |
| Public Community Systems | 20,419 | 23,238 ² | 43,657 ² |
| Public Non-Community Systems | N/A | N/A | N/A |
| Private Domestic Systems | 853 | 0 | 853 |
| Commercial and Institutional: | | | |
| Public Community Systems | 15,415 | 3,000 | 18,415 |
| Public Non-Community Systems | N/A | N/A | N/A |
| Industrial: | | | |
| Public Community Systems | 1,295 | 0 | 1,295 |
| Self-Supplied Industries | 312 | 19,848 ³ | 20,160 ³ |
| WEBER COUNTY TOTAL | 38,294 | 46,086^{2,3} | 84,380^{2,3} |
| DAVIS COUNTY: | | | |
| Residential: | | | |
| Public Community Systems | 22,753 | 25,519 ² | 49,272 ² |
| Public Non-Community Systems | N/A | N/A | N/A |
| Private Domestic Systems | 1,500 | 0 | 1,500 |
| Commercial and Institutional: | | | |
| Public Community Systems | 16,212 | 3,000 | 19,212 |
| Public Non-Community Systems | N/A | N/A | N/A |
| Industrial: | | | |
| Public Community Systems | 1,307 | 0 | 1,307 |
| Self-Supplied Industries | 1,882 | 292 | 2,174 |
| DAVIS COUNTY TOTAL | 43,654 | 28,811² | 72,465^{2,3} |
| TOTAL WASATCH FRONT AREA WATER USE | 81,948 | 74,897^{2,3} | 156,845^{2,3} |

¹ Water was classified as potable or non-potable based on the system delivering the water rather than the characteristics of the water. Thus, all water supplied to secondary irrigation systems or self-supplied industries was classified as non-potable.

² This amount includes non-potable water supplied by irrigation companies to customers of public community systems. (Secondary water is often supplied to customers of public systems by irrigation companies that are separate entities from the potable water supplier.)

³ An additional 80,000 acre-feet of Great Salt Lake water (saline) is used by Great Salt Lake Minerals and Chemical, Inc.

**TABLE 25
WEBER COUNTY
WATER USE AND SUPPLY FOR PUBLIC COMMUNITY SYSTEMS**

| WATER SUPPLIER | POTABLE USAGE | | | | | Secondary Residential, Institutional & Commercial Outdoor Use (Ac-Ft/Yr) | Secondary Residential & Institutional Outdoor Use Plus Total Potable M & I Use (Ac-Ft/Yr) | POTABLE PER CAPITA USAGE | | | Maximum Water Supply Available Under Present Conditions (Ac-Ft/Yr) | POTABLE ESTIMATED PEAK DAY VALUES | | | | Reliable System Source Capacity (Ac-Ft/Yr) |
|----------------------------|-----------------------------------|------------------------------------|---|---------------------------|----------------------------|--|---|--------------------------|---|--------------------------------------|--|-----------------------------------|-----------------------|-----------------------|-----------------------------------|--|
| | Residential Indoor Use (Ac-Ft/Yr) | Residential Outdoor Use (Ac-Ft/Yr) | Commercial and Institutional Use (Ac-Ft/Yr) | Industrial Use (Ac-Ft/Yr) | TOTAL M & I Use (Ac-Ft/Yr) | | | Population | Average Per Capita Water Use (Ac-Ft/Yr) | Average Per Capita Water Use (GPCPD) | | Assumed Peaking Factor (PD/AD) | Peak Day Supply (MGD) | Peak Day Demand (MGD) | Peak Day Supply Over Demand (MGD) | |
| Bona Vista W. I. D. | 908.0 | 776.0 | 518.0 | 836.0 | 3,038.0 | 647.0 | 3,685.0 | 14,875 | 0.204 | 182.3 | 1,600 | 2,2290 | 1,4283 | 6.0451 * | (4.6168) | 718 |
| Hooper W. I. D. | 486.0 | 776.0 | 334.0 | 0.0 | 1,596.0 | 0.0 | 1,596.0 | 8,106 | 0.197 | 175.8 | 4,343 | 2,2189 | 3,8769 | 3.1614 | 0.7156 | 1,957 |
| North Ogden | 844.0 | 368.0 | 361.0 | 1.0 | 1,574.0 | 4,002.0 | 5,576.0 | 12,766 | 0.123 | 110.1 | 4,308 | 2,0512 | 3,8457 | 2.8821 | 0.9636 | 2,100 |
| Ogden | 4,830.0 | 2,858.0 | 10,309.0 | 429.0 | 18,426.0 | 7,416.0 | 25,842.0 | 59,879 | 0.308 | 274.7 | 28,402 | 2,3202 | 25,3540 | 38.1634 * | (12.8094) | 17,926 |
| Pleasant View | 268.0 | 359.0 | 203.0 | 5.0 | 835.0 | 563.0 | 1,398.0 | 4,062 | 0.206 | 183.5 | 1,452 | 2,2308 | 1,2962 | 1.6628 * | (0.3666) | 651 |
| Riverdale | 480.0 | 982.0 | 1,097.0 | 4.0 | 2,563.0 | 0.0 | 2,563.0 | 6,630 | 0.387 | 345.1 | 3,140 | 2,3568 | 2,8030 | 5.3923 * | (2.5893) | 1,332 |
| Roy | 1,810.0 | 250.0 | 1,079.0 | 5.0 | 3,144.0 | 6,225.0 | 9,369.0 | 24,216 | 0.130 | 115.9 | 4,587 | 2,0738 | 4,0947 | 5.8202 * | (1.7255) | 2,212 |
| South Ogden | 1,040.0 | 125.0 | 446.0 | 4.0 | 1,615.0 | 3,610.0 | 5,225.0 | 10,229 | 0.158 | 140.9 | 0 | 2,1495 | 0.0000 | 3.0989 * | (3.0989) | 0 |
| Taylor West Weber | 478.0 | 1,517.0 | 527.0 | 3.0 | 2,525.0 | 0.0 | 2,525.0 | 6,626 | 0.381 | 340.2 | 1,446 | 2,3548 | 1,2908 | 5.3077 * | (4.0169) | 614 |
| Uintah | 72.0 | 113.0 | 115.0 | 0.0 | 300.0 | 0.0 | 300.0 | 888 | 0.338 | 301.6 | 152 | 2,3362 | 0.1357 | 0.6256 * | (0.4900) | 65 |
| Uintah Highland | 222.0 | 50.0 | 69.0 | 8.0 | 349.0 | 637.0 | 986.0 | 4,219 | 0.083 | 73.8 | 867 | 1,8310 | 0.7740 | 0.5704 | 0.2035 | 474 |
| Washington Terrace | 742.0 | 65.0 | 357.0 | 0.0 | 1,164.0 | 3,138.0 | 4,302.0 | 8,192 | 0.142 | 126.8 | 1,711 | 2,1105 | 1,5274 | 2.1930 * | (0.6656) | 811 |
| | | | | | | | | | | | see note | | | | | |
| WEBER COUNTY TOTALS | 12,180.0 | 8,239.0 | 15,415.0 | 1,295.0 | 37,129.0 | 26,238.0 | 63,367.0 | 160,688.0 | 0.231 | 206.3 | 52,008.0 | 2,2605 | 46.4266 | 74.9230 | (28.4964) | 28,859 |
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q |

* Peak Day Demand exceeds the calculated Peak Day Supply. Per DWR, an assumption was made that in these cases the Peak Day Supply has been exactly met and should be set equal to the Peak Day Demand.

Note: Although hydrologic conditions may allow some systems to withdraw the maximum water supply available under present conditions, the hydrologic conditions will probably limit all systems collectively from withdrawing this quantity as presented.

A, B, C, D, E, G, I, and L are all input data

F=B+C+D+E

H=G+F

J=F/I

K=J*892.682; (converts from Ac-Ft/Yr to GPD)

M=(2.5*K-49.4)/K

N=L*892.682/1000000; (except as provided in the note above)

O=I*K*M/1000000

P=N-O

Q=[N/(M*K)]*K*1120.22; (1120.22 converts from MGD to Ac-Ft/Yr)

This value represents only Potable M&I Water Use.

This value represents Secondary Water Use combined with Potable M&I Water Use.

Average per capita water use based only on use of potable water.

The factor which when multiplied to the average per capita water use represents water use during peak demands.

Peak Day Supply of potable water based on maximum reliable source capacity converted to MGD). Where the calculated Peak Day Supply of potable water is less than the Peak Day Demand of Potable Water, this value was set equal to the Peak Day Demand of potable water.

Peak Day Demand on potable water based on the total potable M&I water use multiplied by the peaking factor

The amount of Peak Day Supply of potable water above the amount of the Peak Day Demand of potable water.

Reliable system source capacity represents that volume of water, which when divided by the average annual water per capita use, gives that population that can be reliably served by the system sources under peak day demand conditions.

**TABLE 26
DAVIS COUNTY
WATER USE AND SUPPLY FOR PUBLIC COMMUNITY SYSTEMS**

| WATER SUPPLIER | POTABLE USAGE | | | | | Secondary Residential, Institutional & Commercial Outdoor Use (Ac-Ft/Yr) | Secondary Residential & Institutional Outdoor Use Plus Total Potable M & I Use (Ac-Ft/Yr) | POTABLE PER CAPITA USAGE | | | Maximum Water Supply Available Under Present Conditions (Ac-Ft/Yr) | POTABLE ESTIMATED PEAK DAY VALUES | | | | Reliable System Source Capacity (Ac-Ft/Yr) |
|----------------------------|-----------------------------------|------------------------------------|---|---------------------------|----------------------------|--|---|--------------------------|---|--------------------------------------|--|-----------------------------------|-----------------------|-----------------------|-----------------------------------|--|
| | Residential Indoor Use (Ac-Ft/Yr) | Residential Outdoor Use (Ac-Ft/Yr) | Commercial and Institutional Use (Ac-Ft/Yr) | Industrial Use (Ac-Ft/Yr) | TOTAL M & I Use (Ac-Ft/Yr) | | | Population | Average Per Capita Water Use (Ac-Ft/Yr) | Average Per Capita Water Use (GPCPD) | | Assumed Peaking Factor (PD/AD) | Peak Day Supply (MGD) | Peak Day Demand (MGD) | Peak Day Supply Over Demand (MGD) | |
| Bountiful | 498.0 | 2,666.0 | 1,407.0 | 62.0 | 4,633.0 | 6,511.0 | 11,144.0 | 36,404 | 0.127 | 113.6 | 15,144 | 2.0652 | 13.5188 | 8.5411 | 4.9776 | 7,880 |
| Centerville | 132.0 | 1,078.0 | 304.0 | 23.0 | 1,537.0 | 2,823.0 | 4,360.0 | 13,310 | 0.115 | 103.1 | 4,816 | 2.0208 | 4.2992 | 2.7726 | 1.5265 | 2,383 |
| Clearfield | 1,630.0 | 842.0 | 2,077.0 | 205.0 | 4,754.0 | 0.0 | 4,754.0 | 13,961 | 0.341 | 304.0 | 10,107 | 2.3375 | 9.0223 | 9.9199 * | (0.8975) | 4,324 |
| Clinton | 1,037.0 | 458.0 | 198.0 | 0.0 | 1,693.0 | 0.0 | 1,693.0 | 7,952 | 0.213 | 190.1 | 2,136 | 2.2401 | 1.9068 | 3.3854 * | (1.4787) | 954 |
| Farmington | 72.0 | 824.0 | 277.0 | 0.0 | 1,173.0 | 2,465.0 | 3,638.0 | 10,851 | 0.108 | 96.5 | 3,181 | 1.9881 | 2.8396 | 2.0818 | 0.7579 | 1,600 |
| Fruit Heights | 30.0 | 352.0 | 109.0 | 0.0 | 491.0 | 1,528.0 | 2,019.0 | 4,854 | 0.101 | 90.3 | 926 | 1.9529 | 0.8266 | 0.8560 * | (0.0294) | 474 |
| Hill Air Force Base | 0.0 | 0.0 | 5,154.0 | 0.0 | 5,154.0 | 0.0 | 5,154.0 | 5,148 | 1.001 | 893.7 | 10,600 | 2.4447 | 9.4624 | 11.2479 * | (1.7855) | 4,336 |
| Kaysville | 67.0 | 750.0 | 849.0 | 53.0 | 1,719.0 | 3,490.0 | 5,209.0 | 13,541 | 0.127 | 113.3 | 0 | 2.0641 | 0.0000 | 3.1674 * | (3.1674) | 0 |
| Layton | 2,622.0 | 3,360.0 | 2,727.0 | 51.0 | 8,760.0 | 5,756.0 | 14,516.0 | 46,758 | 0.187 | 167.2 | 10,334 | 2.2046 | 9.2250 | 17.2399 * | (8.0149) | 4,687 |
| North Salt Lake | 580.0 | 564.0 | 889.0 | 617.0 | 2,650.0 | 602.0 | 3,252.0 | 8,667 | 0.306 | 272.9 | 3,444 | 2.3190 | 3.0744 | 5.4859 * | (2.4115) | 1,485 |
| South Davis W.I.D. | 34.0 | 366.0 | 108.0 | 18.0 | 526.0 | 1,260.0 | 1,786.0 | 4,825 | 0.109 | 97.3 | 2,168 | 1.9924 | 1.9353 | 0.9355 | 0.9998 | 1,088 |
| South Weber | 320.0 | 236.0 | 232.0 | 0.0 | 788.0 | 454.0 | 1,242.0 | 3,788.0 | 0.208 | 185.7 | 398 | 2.2340 | 0.3553 | 1.5715 * | (1.2162) | 178 |
| Sunset | 813.0 | 348.0 | 523.0 | 0.0 | 1,684.0 | 0.0 | 1,684.0 | 5,816 | 0.290 | 258.5 | 1,612 | 2.3089 | 1.4390 | 3.4709 * | (2.0319) | 698 |
| Syracuse | 49.0 | 572.0 | 206.0 | 5.0 | 832.0 | 2,573.0 | 3,405.0 | 8,168.0 | 0.102 | 90.9 | 1,303 | 1.9567 | 1.1632 | 1.4533 * | (0.2901) | 666 |
| West Bountiful | 363.0 | 298.0 | 239.0 | 180.0 | 1,080.0 | 390.0 | 1,470.0 | 4,588 | 0.235 | 210.1 | 521 | 2.2649 | 0.4651 | 2.1836 * | (1.7185) | 230 |
| West Point | 709.0 | 220.0 | 261.0 | 8.0 | 1,198.0 | 0.0 | 1,198.0 | 3,830 | 0.313 | 279.2 | 1,644 | 2.3231 | 1.4676 | 2.4844 * | (1.0168) | 708 |
| Woods Cross | 445.0 | 418.0 | 652.0 | 85.0 | 1,600.0 | 667.0 | 2,267.0 | 6,182 | 0.259 | 231.0 | 4,313 | 2.2862 | 3.8501 | 3.2653 | 0.5848 | 1,887 |
| DAVIS COUNTY TOTALS | 9,401.0 | 13,352.0 | 16,212.0 | 1,307.0 | 40,272.0 | 28,519.0 | 68,791.0 | 198,643 | 0.203 | 181.0 | 72,647.0 | 2.2270 | 64.8507 | 80.0623 | (15.2116) | 33,578 |
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q |

* Peak Day Demand exceeds the calculated Peak Day Supply. Per DWR, an assumption was made that in these cases the Peak Day Supply has been exactly met and should be set equal to the Peak Day Demand.

Note: Although hydrologic conditions may allow some systems to withdraw the maximum water supply available under present conditions, the hydrologic conditions will probably limit all systems collectively from withdrawing this quantity as presented.

A, B, C, D, E, G, I, and L are all input data

F=B+C+D+E

H=G+F

J=F/I

K=J*892.682; (converts from Ac-Ft/Yr to GPD)

M=(2.5*K-49.4)/K

N=L*892.682/1000000; (except as provided in the note above)

O=I*K*M/1000000

P=N-O

Q=(N/(M*K))*K*1120.22; (1120.22 converts from MGD to Ac-Ft/Yr)

This value represents only Potable M&I Water Use.

This value represents Secondary Water Use combined with Potable M&I Water Use.

Average per capita water use based only on use of potable water.

The factor which when multiplied to the average per capita water use represents water use during peak demands.

Peak Day Supply of potable water based on maximum reliable source capacity converted to MGD). Where the calculated Peak Day Supply of potable water is less than the Peak Day Demand of Potable Water, this value was set equal to the Peak Day Demand of potable water.

Peak Day Demand on potable water based on the total potable M&I water use multiplied by the peaking factor

The amount of Peak Day Supply of potable water above the amount of the Peak Day Demand of potable water.

Reliable system source capacity represents that volume of water, which when divided by the average annual water per capita use, gives that population that can be reliably served by the system sources under peak day demand conditions.

Table 27. Secondary Water Use by Customers of Public Community Water Systems Along Wasatch Front Area.

| PUBLIC COMMUNITY WATER SUPPLIERS | SECONDARY WATER USE ^{1,2} (Ac-Ft/Yr) | | |
|-------------------------------------|---|------------------|---------------|
| | GROUND- WATER | SURFACE WATER | TOTAL |
| WEBER COUNTY | | | |
| Bona Vista W.I.D. | 0 | 647 | 647 |
| Hooper W.I.D. | 0 | 0 | 0 |
| North Ogden | 0 | 4,002 | 4,002 |
| Ogden | 0 | 7,416 | 7,416 |
| Pleasant View | 0 | 563 | 563 |
| Riverdale | 0 | 0 | 0 |
| Roy | 0 | 6,225 | 6,225 |
| South Ogden | 0 | 3,610 | 3,610 |
| Taylor West Weber | 0 | 0 | 0 |
| Uintah | 0 | 0 | 0 |
| Uintah Highland | 0 | 637 | 637 |
| Washington Terrace | 0 | 3,138 | 3,138 |
| <hr/> | | | |
| SUBTOTAL | 0 | 26,238 | 26,238 |
| <hr/> | | | |
| DAVIS COUNTY | | | |
| Bountiful | 0 | 6,511 | 6,511 |
| Centerville | 0 | 2,823 | 2,823 |
| Clearfield | 0 | 0 | 0 |
| Clinton | 0 | 0 | 0 |
| Farmington | 0 | 2,465 | 2,465 |
| Fruit Heights | 0 | 1,528 | 1,528 |
| Hill Air Force Base | 0 | 0 | 0 |
| Kaysville | 0 | 3,490 | 3,490 |
| Layton | 0 | 5,756 | 5,756 |
| North Salt Lake | 0 | 602 | 602 |
| South Davis W.I.D. | 0 | 1,260 | 1,260 |
| South Weber | 0 | 454 | 454 |
| Sunset | 0 | 0 | 0 |
| Syracuse | 0 | 2,573 | 2,573 |
| West Bountiful | 0 | 390 | 390 |
| West Point | 0 | 0 | 0 |
| Woods Cross | 0 | 667 | 667 |
| <hr/> | | | |
| SUBTOTAL | 0 | 28,519 | 28,519 |
| <hr/> | | | |
| TOTAL SECONDARY WATER USE | 0 | 54,757 | 54,757 |

¹ Secondary water use for non-metered sources was calculated by assuming an irrigation demand of about 4 acre-feet per irrigated acre.

² These amounts include non-potable water supplied by irrigation companies to customers of public community systems. (Secondary water is often supplied to customers of public community systems by irrigation companies that are separate entities from the potable water supplier.)

Per Capita Municipal and Industrial Water Usage

Average per capita water use along the along the Wasatch Front area was calculated using the water use amounts for 1992. The 1992 population totals for areas supplied by public systems were provided by the individual water supply entities. The population served by private domestic water systems was estimated using population estimates by the Utah Office of Planning and Budget, and subtracting the populations given by the various water supply entities. Per capita water use for several categories of water use are presented in Table 28.

Table 28. Average Per Capita Municipal and Industrial Water Use Along the Wasatch Front Area.

| AREA / CATEGORY | AVERAGE PER CAPITA USE (Ac-Ft/Cap/Yr) | AVERAGE PER CAPITA USE (Gal/Cap/Day) |
|--|--|---|
| EASTERN PORTION OF WEBER COUNTY | | |
| Residential Potable Use ¹ | 0.13 | 115.5 |
| Residential Potable Plus Secondary Use ¹ | 0.29 | 258.0 |
| Public Community Systems Potable Use ² | 0.23 | 206.3 |
| Public Community Systems Potable Plus Secondary Use ² | 0.39 | 352.1 |
| DAVIS COUNTY | | |
| Residential Potable Use ³ | 0.12 | 105.1 |
| Residential Potable Plus Secondary Use ³ | 0.26 | 228.7 |
| Public Community Systems Potable Use ⁴ | 0.20 | 181.0 |
| Public Community Systems Potable Plus Secondary Use ⁴ | 0.35 | 309.2 |

¹Based on Wasatch Front portion of Weber County population of 164,380.

²Based on population of 160,688 within Public Community Systems.

³Based on Davis County population of 206,000.

⁴Based on population of 198,643 within Public Community Systems.

SUMMARY OF M&I WATER SUPPLIES AND USES WITHIN THE WEBER RIVER DRAINAGE

General

This last chapter contains a summary of the data presented in prior chapters of this report. It is for general information only. More detailed information can be obtained in each of the area chapters.

Municipal and Industrial Water Supply

Sources of M&I supply for the Weber River Basin are presented in two categories: groundwater and surface water. Water supply is defined as a resource that is currently developed or potentially developable. It is further defined as limited by either a mechanical constraint such as pump capacity of pipe size, a hydrologic constraint such as reliable stream flow or groundwater safe yield, or a legal constraint such as water rights and contracts.

Groundwater

Groundwater is an important source of M&I water supply in the Weber Basin. Data collected for this study indicates that wells and springs serving potable water through public water supply systems and private systems have a reliable supply of 89,414 acre-feet per year. Another 307 acre-feet per year is non-potable groundwater supply for self-supplied industries. Thus the total groundwater M&I supply for the basin is 89,726, about 34 percent of the total M&I basin supply.

Surface Water

Surface water sources in Weber Basin that can be used reliably for potable uses currently include the Ogden River and the Weber River. The reliable potable surface supply is 95,543 acre-feet. Non-potable surface supplies which are used in residential secondary systems and self-supplied industrial systems are equal to 79,957 acre-feet. The total surface water supplies are 173,500 acre-feet, about 65 percent of the 263,226 total Weber Basin M&I supply. Table 29 presents this information in more detail.

Table 29. Presently Developed Municipal and Industrial Water Supplies in the Weber River Basin.

| SOURCE | RELIABLE WATER SUPPLY ^{1,2} (Ac-Ft/Yr) | | |
|----------------------------------|---|--------------------------|---------------------------------------|
| | POTABLE | NON-POTABLE ³ | POTABLE PLUS NON-POTABLE ³ |
| GROUNDWATER | | | |
| Public Community Systems | 61,942 | 0 | 61,942 |
| Weber Basin Conservancy District | 21,000 | 0 | 21,000 |
| Public Non-Community Systems | 347 | 0 | 347 |
| Self-Supplied Industries | 3,021 | 307 | 3,328 |
| Private Domestic Systems | 3,109 | 0 | 3,109 |
| GROUNDWATER TOTAL | 89,419 | 307 | 89,726 |
| SURFACE WATER | | | |
| Public Community Systems | 10,543 | 57,903 | 68,446 |
| Weber Basin Conservancy District | 85,000 | 0 | 85,000 |
| Public Non-Community Systems | 0 | 206 | 206 |
| Self-Supplied :Industries | 0 | 19,848 ⁴ | 19,848 ⁴ |
| SURFACE WATER TOTAL | 95,543 | 77,957 | 173,500 |
| TOTAL WATER SUPPLY | 184,962 | 78,264 | 263,226 |

¹Water was classified as potable or non-potable based on the system delivering the water rather than the characteristics of the water. Thus, all water supplied to secondary irrigation systems or self-supplied industries was classified as non-potable.

²Water supplies for secondary water systems, self-supplied industries, public non-community systems, and private domestic water systems are assumed to be equal to use.

³This amount includes non-potable water supplied by irrigation companies to customers of public community and non-community systems. (Secondary water is often supplied to customers of public community systems by irrigation companies that are separate entities from the potable water supplier.)

⁴An additional 80,000 acre-feet of Great Salt Lake water supply (saline) is available and used by Great Salt Lake Minerals and Chemicals, Inc.

Present Municipal and Industrial Water Use

The previously presented water supply includes the reliable developable water which could be used for municipal and industrial purposes within the basin. The present M&I water use includes the developed water which is actually diverted from surface water or withdrawn from groundwater. Total potable M&I water use in the Weber Basin is 91,530 acre-feet per year. Non-potable use accounts for another 78,264 acre-feet per year, bringing the total current (1992) M&I water use in the Weber River Basin to 169,794 acre-feet. Table 30 presents this information in more detail.

Table 30. Weber River Basin Present Municipal & Industrial Water Use by Source and Category.

| SOURCE | WATER USE ¹ (Ac-Ft/Yr) | | |
|--------------------------------------|-----------------------------------|--------------------------|--------------------------|
| | POTABLE | NON-POTABLE ² | POTABLE PLUS NON-POTABLE |
| GROUNDWATER: | | | |
| Residential: | | | |
| Public Community Systems | 30,199 | 0 | 30,199 |
| Public Non-Community Systems | 32 | 0 | 32 |
| Private Domestic Systems | 3,109 | 0 | 3,109 |
| Commercial and Institutional: | | | |
| Public Community Systems | 20,081 | 0 | 20,081 |
| Public Non-Community Systems | 315 | 0 | 315 |
| Industrial: | | | |
| Public Community Systems | 1,638 | 0 | 1,638 |
| Self-Supplied Industries | 3,021 | 307 | 3,328 |
| GROUNDWATER TOTAL | 58,395 | 307 | 58,702 |
| SURFACE WATER: | | | |
| Residential: | | | |
| Public Community Systems | 19,307 | 50,689 | 69,996 |
| Public Non-Community Systems | 0 | 0 | 0 |
| Commercial and Institutional: | | | |
| Public Community Systems | 12,784 | 7,214 | 19,998 |
| Public Non-Community Systems | 0 | 206 | 206 |
| Industrial: | | | |
| Public Community systems | 1,044 | 0 | 1,044 |
| Self-Supplied Industries | 0 | 19,848 | 19,848 |
| SURFACE WATER TOTAL | 33,135 | 77,957 | 111,092 |
| TOTAL WATER USE | 91,530 | 78,264 | 169,794 |

¹Water was classified as potable or non-potable based on the system delivering the water rather than the characteristics of the water. Thus, all water supplied to secondary irrigation systems or self-supplied industries was classified as non-potable.

²This amount includes non-potable water supplied by irrigation companies to customers of public community systems. (Secondary water is often supplied to customers of public systems by irrigation companies that are separate entities from the potable water supplier.)

Per Capita Municipal and Industrial Water Usage

Average per capita M&I water use in the Weber River Basin was calculated using the water use amounts for 1992. The 1992 population totals for areas supplied by public systems were provided by the individual water supply entities. The 1992 population served by private domestic water systems was estimated by the Utah Office of Planning and Budget and by subtracting the populations given by the various water supply entities. Per capita water use for several categories of water use in the Weber River Basin are presented in Table 31.

Table 31. Average Per Capita Municipal and Industrial Water Use in the Weber River Basin.

| CATEGORY | AVERAGE PER CAPITA USE (Ac-Ft/Cap/Yr) | AVERAGE PER CAPITA USE (Gal/Cap/Day) |
|--|--|---|
| Residential Potable Use ¹ | 0.13 | 117.2 |
| Residential Potable Plus Secondary Use ¹ | 0.26 | 230.0 |
| Public Community Systems Potable Use ² | 0.22 | 196.1 |
| Public Community Systems Potable Plus Secondary Use ² | 0.37 | 329.7 |

¹Based on a total Weber River Basin population of 401,027.

²Based on population of 387,112 within public community suppliers in the Weber River Basin.

**APPENDIX A
SUMMITT COUNTY
DETAILED DESCRIPTION OF PUBLIC COMMUNITY
AND NON-COMMUNITY SYSTEMS**

Table A-1. Summit County Public Community Systems Descriptions, Assumptions and Calculations.

COALVILLE AREA

I. Cluff Ward Pipeline Company

| | |
|----------------------|--|
| Population | 148 |
| No. of Connections | 52 (50 residential, 2 industrial, including dairy barn and livestock). |
| Water Use | (6,925,000 gallons = 21.25 ac-ft) is completely based on data supplied by the water company. |
| Residential Indoor | 5,910,000 gallons = 18.14 ac-ft. |
| Residential Outdoor: | |
| Potable Water | None. |
| Secondary Water | By observation, the estimated average area of each lot that is irrigated is a quarter of an acre. Therefore, the estimated secondary water usage = (52 lots)(0.25 acres/lot)(3 acre-feet/acre) = 39 ac-ft. |
| Commercial | None. |
| Industrial | 1,015,000 gallons = 3.12 ac-ft (includes 17,000 gallons or 0.05 ac-ft livestock watering). |

Total water use is metered. Separate water use data is estimated by supplier. Maximum reliable source capacity: information couldn't be supplied. Some spillage occurs at the springs that couldn't be estimated.

II. Coalville Culinary Water

| | |
|----------------------|--|
| Population | 1065 |
| No. of Connections | 450 (407 residential residential and parks; 40 commercial, including church and government with 2 being irrigation and 5 industrial). |
| Water Use | (100,538,000 gallons=308.56 ac-ft) after spillage. The total metered quantity is 158,148,600 which results in about 57,610,600 gallons (176.81 ac-ft) of spillage. |
| Residential Indoor | (110 gpcd)(1065 people)(365 days) = 42,759,750 gallons = 131.23 ac-ft (estimated). |
| Residential Outdoor: | |
| Potable Water | 75,000,000 - 42,759,750 = 32,240,250 gallons = 98.95 ac-ft. |
| Secondary Water | About 60 percent of the connections have lot sizes that are larger than a quarter of an acre and use secondary water for irrigation of their yards. Assume an average of 1/3 acre is irrigated lawn and shrubbery and the rest of the property is either garden or pasture. Therefore, estimated secondary water usage = (450*0.6 lots)(0.33 acres/lot)(3 acre-feet/acre) = 267.3 ac-ft. |
| Commercial | 13,038,000 gallons = 40.01 ac-ft (includes 3,500,000 gallons irrigation and 6,138,000 gallons other). |
| Industrial | 12,500,000 gallons = 38.36 ac-ft. |

Total water use is metered. Separate water use data is estimated by supplier. Max. reliable source capacity = (spring, 140,000 gpd + ((wells, 0.8(110 gpm + 40 gpm + 220 gpm))(60 m/hr)(24 hr/d))(365 d/yr) =206,677,600 gallons = 634.31 ac-ft.

III. Hoytsville Culinary Water

| | |
|----------------------|---|
| Population | (132 connections)(assumed 2.6 people/connection) = 345. |
| No. of Connections | 132 (130 residential, 2 industrial including dairies). |
| Water Use | (23,760,000 gallons=72.92 ac-ft) is completely based on data supplied by the water company. |
| Residential Indoor | (110 gpcd)(345 people)(365 days) = 13,851,750 gallons = 42.51 ac-ft. |
| Residential Outdoor: | |
| Potable Water | 23,760,000 - 13,851,750 - 2,000,000 = 7,908,250 gallons = 24.27 ac-ft. |
| Secondary Water | About 60 percent of the connections use secondary water for irrigation of their yards (lawn and shrubbery) which consist of about 0.3 acre and the rest of the property is either garden or pasture. Therefore, estimated secondary water usage = (132*0.6 lots)(0.30 acres/lot)(3 acre-feet/acre) = 71.28 ac-ft. |
| Commercial | None. |
| Industrial | (1,000,000 gallons/dairy)(2 dairies) =2,000,000 gallons = 6.14 ac-ft (estimated assuming ~1 million gallons per dairy as estimated for other local dairies). |

Total water use is estimated by supplier. Separate water use data is estimated by HA&L. Max. reliable source capacity = (well, 0.8*350 gpm + springs, 55 gpm)(60 m/hr) (24 hr/d)(365 d/yr) = 176,076,000 gallons = 540.39 ac-ft.

IV. Questar Pipeline Company

| | |
|----------------------|---|
| Population | 17 |
| No. of Connections | 6 (4 homes, 1 office & 1 maintenance building). |
| Water Use | (1,258,600 gallons = 3.86 ac-ft) based on data supplied by water company. |
| Residential Indoor | (110 gpcd)(17 people)(365 days) = 682,550 gallons = 2.09 ac-ft. |
| Residential Outdoor: | |
| Potable Water | 1,258,600 - 682,550 - 350,000 = 226,050 gallons = 0.69 ac-ft. |
| Secondary Water | None. |
| Commercial | 350,000 gallons = 1.07 ac-ft (assumed). |
| Industrial | None. |

Total water use is estimated by supplier. Separate water use data is estimated by HA&L. Max. reliable source capacity = (wells, 0.8*8 gpm)(60 m/hr)(24 hr/d)(365 d/yr) = 3,363,840 gallons = 10.32 ac-ft.

ECHO AREA

I. Echo Mutual Water Company

| | |
|----------------------|---|
| Population | 52 |
| No. of Connections | 32 (24 residential, 8 commercial). |
| Water Use | (2,567,000 gallons = 7.88 ac-ft) is completely based on data supplied by the water company. |
| Residential Indoor | (110 gpcd)(52 people)(365 days) = 2,087,800 gallons = 6.41 ac-ft. |
| Residential Outdoor: | |
| Potable Water | Only 3 connections use the culinary water for irrigation; therefore, assume irrigation as negligible. |
| Secondary Water | About 90 percent of the connections use secondary water on their 0.50 acre lots. Assume about 0.33 (1/3) acre of each lot is yard area (lawn and shrubbery) which is irrigated with secondary water. Therefore, estimated secondary water usage = (32*0.9 lots)(0.33 acres/lot)(3 acre-feet/acre) =28.51 ac-ft. |
| Commercial | 2,567,000 - 2,087,800 = 479,200 gallons = 1.47 ac-ft. |
| Industrial | None. |

Total water use is estimated by supplier. Separate water use data is estimated by HA&L. Max. reliable source capacity = NA.

HENEFER AREA

I. Henefer Pipeline Company

| | |
|----------------------|---|
| Population | 570 |
| No. of Connections | 205 (201 residential, 4 commercial). |
| Water Use | No water use data was provided; therefore, all data provided below is estimated. |
| Residential Indoor | (110 gpcd)(570 people)(365 days) = 22,885,500 gallons = 70.24 ac-ft. |
| Residential Outdoor: | |
| Potable Water | Very little, mostly irrigated by secondary water in irrigation ditches. Assume 0. |
| Secondary Water | All of the connections use secondary water on their 0.33 acre lots. Assume about 0.25 (1/4) acre of each lot is yard area (lawn and shrubbery) which is irrigated with secondary water. Therefore, estimated secondary water usage = (205 lots)(0.33 acres/lot)(3 acre-feet/acre) = 202.95 ac-ft. |
| Commercial | (200,000 gallons/unit)(4 entities) = 800,000 gallons = 2.46 ac-ft. |
| Industrial | None. |

Total water use is estimated by HA&L. Separate water use data is estimated by HA&L. Max. reliable source capacity = (spring, 67 gpm)(60 m/hr)(24 hr/d)(365 d/yr) = 35,215,200 gallons = 108.08 ac-ft.

KAMAS AREA

I. Kamas Culinary Water System

| | |
|----------------------|---|
| Population | 1061 |
| No. of Connections | 426 (397 residential, 4 irrigation and 25 commercial, including schools, stores, businesses, fast foods, restaurants, lumber yards, gas stations, etc.). |
| Water Use | (227,722,200 gallons = 698.90 ac-ft) of which 180,000 gallons is for irrigation of parks and schools (assume as commercial) based on information supplied by the water company. According to the information provided, the springs spill about as much as usage from the springs. |
| Residential Indoor | (110 gpcd)(1061 people)(365 days) = 42,599,150 gallons = 130.74 ac-ft (estimated). |
| Residential Outdoor: | |
| Potable Water | 227,722,200 - 42,599,150 - 26,818,990 = 158,304,060 gallons = 485.85 ac-ft, which includes all irrigation of churches, parks, etc. |
| Secondary Water | About 25 percent of the connections use secondary water on their 0.25 acre lots. Assume about 0.19 acre of each lot is irrigated with secondary water. Therefore, estimated secondary water usage = (397*0.25 lots)(0.19 acres/lot)(3 acre-feet/acre) = 56.57 ac-ft. |
| Commercial | 26,818,990 gallons = 82.31 ac-ft. |
| Industrial | None. |

Total water use is estimated by supplier. Separate water use data is estimated by HA&L. Max. reliable source capacity: springs, 213,416,000 gallons + (wells, 0.8*600 gpm) (60 m/hr)(24 hr/d)(365 d/yr) = 465,704,000 gallons = 1,429.29 ac-ft.

MARION AREA

I. Marion Waterworks Company

| | |
|--|---|
| Population | 350 |
| No. of Connections | 76 (72 residential, 2 commercial incl. 1 store and 1 church, 2 industrial incl. dairies). |
| Water Use | 20,400,000 gallons = 62.61 ac-ft. |
| Residential Indoor | (110 gpcd)(350 people)(365 days) = 14,052,500 gallons = 43.13 ac-ft (estimated). |
| Residential Outdoor: | |
| Potable Water | 20,400,000 - 14,052,500 - 2,400,000 = 3,947,500 gallons = 12.12 ac-ft. |
| Secondary Water | About 25 percent of the connections use secondary water on their 0.50 acre lots. Assume about 0.33 (1/3) acre of each lot is yard area (lawn and shrubbery) which is irrigated with secondary water. Therefore, estimated secondary water usage = (72*0.25 lots)(0.33 acres/lot)(3 acre-feet/acre) = 17.82 ac-ft. |
| Commercial | (200,000 gallons/entity)(2) = 400,000 gallons = 1.23 ac-ft. |
| Industrial | (1,000,000 gallons/dairy)(2 dairies) = 2,000,000 gallons = 6.14 ac-ft. |
| Total water use is estimated by supplier. Separate water use data is estimated by HAL. Max. reliable source capacity = NA. | |

OAKLEY AREA

I. Oakley Culinary Water

| | |
|----------------------|--|
| Population | 550 |
| No. of Connections | 220 (218 residential, 2 commercial). |
| Water Use | 252,900,000 gallons before spillage and about 50% spills; therefore, 126,450,000 gallons = 388.09 ac-ft, which appears too high. Assume 75% spills, which gives 63,225,000 gallons = 194.04 ac-ft, appears to be more reasonable. |
| Residential Indoor | (110 gpcd)(550 people)(365 days) = 22,082,500 gallons = 67.77 ac-ft (estimated). |
| Residential Outdoor: | |
| Potable Water | 63,225,000 - 22,082,500 - 2,000,000 = 39,142,500 gallons = 120.13 ac-ft. |
| Secondary Water | All of the connections use secondary water on their one acre lots. Assume about 0.33 (1/3) acre of each lot is yard area (lawn and shrubbery) which is irrigated with secondary water. Therefore, estimated secondary water usage = (220 lots)(0.33 acres/lot)(3 acre-feet/acre) = 217.80 ac-ft. |
| Commercial | (1,000,000 gallons/entity)(2 entities) = 2,000,000 gallons = 6.14 ac-ft. |
| Industrial | None. |

Total water use is estimated by supplier. Separate water use data is estimated by HAL. Max. reliable source capacity = NA.

PARK CITY AREA

I. Atkinson Special Improvement District

| | |
|----------------------|------------------------------------|
| Population | 350 |
| No. of Connections | 86 (84 residential, 2 industrial). |
| Water Use | 17,464,000 gallons = 53.60 ac-ft. |
| Residential Indoor | 9,072,000 gallons = 27.84 ac-ft. |
| Residential Outdoor: | |
| Potable Water | 6,942,000 gallons = 21.31 ac-ft. |
| Secondary Water | None. |
| Commercial | None. |
| Industrial | 1,450,000 gallons = 4.45 ac-ft. |

Total water use is metered. Separate water use data is metered. Max. reliable source capacity = (well, 0.8*100 gpm)(60 m/hr)(24 hr/d))(365 d/yr) = 42,048,000 gallons = 129.05 ac-ft.

II. Community Water Company

| | |
|----------------------|--|
| Population | ~1000 avg. (est. 450 spring & fall, 1000 summer, 2000 winter). |
| No. of Connections | 185 (155 residential with condominiums and town houses, 11 commercial and 19 irrigation for residential and commercial). |
| Water Use | 77,752,000 gallons = 238.63 ac-ft (includes leakage). |
| Residential Indoor | 41,488,940 gallons = 127.33 ac-ft. |
| Residential Outdoor: | |
| Potable Water | 23,504,810 gallons = 72.14 ac-ft. |
| Secondary Water | None. |
| Commercial | 8,014,090 gallons = 24.60 ac-ft. |
| Industrial | None. |

Total water use is metered. Separate water use data is metered. Max. reliable source capacity = (wells, $0.8 \times (40 \text{ gpm} + 150 \text{ gpm} + 20 \text{ gpm})$)(60 m/hr) (24 hr/d)(365 d/yr) + est. 35,000,000 willow crk.

=

123,300,800 gallons = 378.42 ac-ft.

III. Gorgoza Mutual Water Company

| | |
|----------------------|---|
| Population | 2420 |
| No. of Connections | 605 (603 residential, 2 commercial incl. schools) = 2420/603 = 4 people per connection which results in roughly half the population being children. Assume about 60 percent (725) of the children are in school. Part of the residential water use will, therefore, be at school. |
| Water Use | 109,124,000 gallons = 334.91 ac-ft (includes leakage ~1000 gal). |
| Residential Indoor | 65,474,000 gallons (about 74 GPCD, which is very low water usage). Assume about 15 GPCD for 75% of the year (about 2,980,000 gallons) is used by children at school. Assume residential indoor use is 65,474,000 - 2,980,000 = 62,494,000 gallons = 191.80 ac-ft. |
| Residential Outdoor: | |
| Potable Water | 43,649,000 gallons = 133.96 ac-ft |
| Secondary Water | None. |
| Commercial | 2,980,000 gallons = 9.15 ac-ft |
| Industrial | None. |

Total water use is metered. Separate water use data is estimated by water company. Max. reliable source capacity (wells, $0.8 \times (240 \text{ gpm} + 230 \text{ gpm} + 300 \text{ gpm})$) (60 m/hr)(24 hr/d)(365 d/yr) + spring, est. 56,000,000 based on metered use from spring = 379,769,600 gallons = 1,165.55 ac-ft.

IV. High Valley Water Company

| | |
|----------------------|--|
| Population | 520 |
| No. of Connections | 130 residential |
| Residential Indoor | (110 gpcd)(520 people)(365 days) = 20,878,000 gallons = 64.08 ac-ft. |
| Residential Outdoor: | |
| Potable Water | 20,878,000 gallons = 64.08 ac-ft |
| Secondary Water | None. |
| Commercial | None. |
| Industrial | None. |

Total water use is estimated by HAL. Separate water use data is estimated by HAL. Max. reliable source capacity = NA.

V. Park City Culinary Water

| | |
|----------------------|--|
| Population | 5500 |
| No. of Connections | 3112 (2703 residential with condominiums and town houses, 188 commercial and 153 irrigation for residential condominiums and town houses and 68 for mixed public use, i.e. government buildings, schools, etc.). |
| Water Use | 865,801,000 gallons = 2657.23 ac-ft. |
| Residential Indoor | 466,957,000 gallons = 1433.14 ac-ft (estimated). |
| Residential Outdoor: | |
| Potable Water | 120,751,000 gallons = 370.60 ac-ft. |
| Secondary Water | None. |
| Commercial | 278,093,000 gallons = 853.49 ac-ft. |
| Secondary Water | Park City G.C. -255 ac-ft; Park Meadows G.C. - 255.0 ac-ft Total - 510 ac-ft |
| Industrial | None. |

Total water use is metered. Separate water use data is metered. Max. reliable source capacity = (wells, $0.8 \times (1100 \text{ gpm} + 1190 \text{ gpm})(60 \text{ m/hr}) (24 \text{ hr/d})(365 \text{ d/yr})$ + est. 820,000,000 from tunnels and springs based on use data (assume 25,000,000 g/mo from thiriot springs, 15,000,000 g/mo from Spiro Tunnel and 340,613,000 gal total from Judge Tunnel) = 1,782,899,200 gallons = 5,471.89 ac-ft.

VI. Silver Springs Water, Inc.

| | |
|----------------------|---|
| Population | 1388 |
| No. of Connections | 475 (474 residential and 1 commercial). |
| Water Use | 81,860,900 gallons = 251.24 ac-ft. |
| Residential Indoor | 41,198,900 gallons = 126.44 ac-ft. |
| Residential Outdoor: | |
| Potable Water | 40,437,000 gallons = 124.11 ac-ft. |
| Secondary Water | None. |
| Commercial | 225,000 gallons = 0.69 ac-ft. |
| Industrial | None. |

Total water use is metered. Separate water use data is metered. Max. reliable source capacity = (springs, 226 gpm + well, $0.8 \times 250 \text{ gpm})(60 \text{ m/hr}) (24 \text{ hr/d})(365 \text{ d/yr})$ = 223,905,600 gallons = 687.19 ac-ft.

VII. Spring Creek Water Company

| | |
|----------------------|---------------------------------------|
| Population | 120 |
| No. of Connections | 31 (30 residential and 1 commercial). |
| Water Use | 4,627,000 gallons = 14.20 ac-ft. |
| Residential Indoor | 2,239,000 gallons = 6.87 ac-ft. |
| Residential Outdoor: | |
| Potable Water | 2,239,000 gallons = 6.87 ac-ft. |
| Secondary Water | None. |
| Commercial | 149,000 gallons = 0.46 ac-ft. |
| Industrial | None. |

Total water use is estimated by supplier. Separate water use data is estimated by supplier. Max. reliable source capacity = (well, $0.8 \times 350 \text{ gpm})(60 \text{ m/hr})(24 \text{ hr/d})(365 \text{ d/yr})$ = 147,168,000 gallons = 451.67 ac-ft.

VIII. Summit County Service Area #3

| | |
|----------------------|---|
| Population | 108 |
| No. of Connections | 43 residential. |
| Water Use | 6,593,024 gallons = 20.23 ac-ft. |
| Residential Indoor | (110 gpcd)(108 people)(365 days) = 4,336,200 gallons = 13.31 ac-ft. |
| Residential Outdoor: | |
| Potable Water | 6,593,024 - 4,336,200 = 2,256,824 gallons = 6.93 ac-ft. |
| Secondary Water | None. |
| Commercial | None. |
| Industrial | None. |

Total water use is metered. Separate water use data is estimated. Max. reliable source capacity = (well, 0.8*75 gpm)(60 m/hr)(24 hr/d)(365 d/yr) = 31,536,000 gallons = 96.79 ac-ft.

IX. Summit Park Special Service District

| | |
|----------------------|---|
| Population | ~1500 |
| No. of Connections | 368 (366 residential, 2 commercial). |
| Water Use | 46,941,000 gallons = 144.07 ac-ft (includes leakage). |
| Residential Indoor | 46,661,000 gallons = 143.21 ac-ft. |
| Residential Outdoor: | |
| Potable Water | None. |
| Secondary Water | None. |
| Commercial | 280,000 gallons = 0.86 ac-ft. |
| Industrial | None. |

Total water use is metered. Separate water use data is metered. Max. reliable source capacity = (wells, 0.8(40 gpm + 125 gpm + 11 gpm + 18 gpm)) (60 m/hr)(24 hr/d)(365 d/yr) = 81,573,120 gallons = 250.36 ac-ft.

X. Summit Water District

| | |
|----------------------|---|
| Population | Est. 2100 |
| No. of Connections | 691 (680 residential with condominiums and town houses, 11 commercial). |
| Water Use | 214,445,320 gallons = 658.15 ac-ft. |
| Residential Indoor | (110 gpcd)(2100 people)(365 days) = 84,315,000 gallons = 258.77 ac-ft. |
| Residential Outdoor: | |
| Potable Water | 185,066,310 - 84,315,000 = 100,751,310 gallons = 309.22 ac-ft. |
| Secondary Water | None. |
| Commercial | 29,379,010 gallons = 90.17 ac-ft. |
| Secondary Water | Jeremy Ranch G.C. - 224 ac-ft |
| Industrial | None. |

Total water use is metered. Separate water use data is estimated by supplier and HAL. Max. reliable source capacity = (wells, 0.8(450 gpm + 40 gpm + 350 gpm)) (60 m/hr)(24 hr/d)(365 d/yr) = 353,203,200 gallons = 1,084.01 ac-ft.

PEOA AREA

I. Peoa Pipeline Company

| | |
|----------------------|---|
| Population | 215 |
| No. of Connections | 48 (47 residential and 1 industrial which is a dairy). |
| Water Use | 8,000,000 gallons = 24.55 ac-ft. |
| Residential Indoor | 7,500,000 gallons = 23.02 ac-ft. |
| Residential Outdoor: | |
| Potable Water | None. |
| Secondary Water | Average lot sizes couldn't be obtained from the system operators, however, based on observations made of the Peoa, the irrigated yard area of the lots appear to be similar to the yard areas in Oakley. Assume the irrigated yard areas to be approximately 1/3 (0.33) acre. Secondary water use is, therefore, estimated to be = (48 lots)(0.33 acres/lot)(3 acre-feet/acre) = 47.52 ac-ft. |
| Commercial | None. |
| Industrial | 500,000 gallons = 1.53 ac-ft. |

Total water use is estimated by supplier. Separate water use data is estimated by HAL. Max. reliable source capacity = (springs, 224 gpm)(60 m/hr)(24 hr/d))(365 d/yr) = 117,734,400 gallons = 361.34 ac-ft.

II. Wooden Shoe Water Company

| | |
|----------------------|---|
| Population | (16 connections)(2.6 people per connection) = 42. |
| No. of Connections | 16 residential. |
| Residential Indoor | (110 gpcd)(42 people)(365 days) = 1,686,300 gallons = 5.18 ac-ft. |
| Residential Outdoor: | |
| Potable Water | None. |
| Secondary Water | Average lot sizes couldn't be obtained from the system operators; however, assume the irrigated yard area of the lots are similar to the other yard areas in Peoa. Assume the irrigated yard areas to be approximately 1/3 (0.33) acre. Secondary water use is, therefore, estimated to be = (16 lots)(0.33 acres/lot)(3 acre-feet/acre) = 15.84 ac-ft. |
| Commercial | None. |
| Industrial | None. |

Total water use is estimated by HAL. Separate water use data is estimated by HAL. Max. reliable source capacity = NA.

UPTON AREA

I. Upton Water Works

| | |
|----------------------|--|
| Population | (4 families)(2.6 per family) = 10. |
| No. of Connections | 5 (4 residential and 1 commercial which is a church). |
| Residential Indoor | (110 gpcd)(10 people)(365 days) = 401,500 gallons = 1.23 ac-ft. |
| Residential Outdoor: | |
| Potable Water | None. |
| Secondary Water | All of the connections use secondary water on their one acre lots. Assume about 0.33 (1/3) acre of each lot is yard area (lawn and shrubbery) which is irrigated with secondary water. Therefore, estimated secondary water usage = (4 lots)(0.33 acres/lot)(3 acre-feet/acre) = 3.96 ac-ft. |
| Commercial | 40,000 gallons = 0.12 ac-ft. |
| Industrial | None. |

Total water use is estimated by HAL. Separate water use data is estimated by HAL. Max. reliable source capacity = (springs, 27 gpm)(60 m/hr)(24 hr/d))(365 d/yr) = 14,191,200 gallons = 43.55 ac-ft.

WANSHIP AREA

I. Wanship Mutual Water Company

| | |
|----------------------|---|
| Population | 184 |
| No. of Connections | 74 (70 residential, 4 commercial). |
| Water Use | According to the source data submitted to the Division of Water Rights in 1992, the water use totals either 258,400 gallons or 258,400,000 gallons depending on whether the data supplied is in gallons or 1,000 gallons. Neither of the values, however, appear reasonable because a total of 258,400 gallons results in 3.8 gpcd and 258,400,000 gallons results in 3,850 gpcd. If the data is supplied in 100 gallons, the use is 385 gpcd. When the water company was contacted, they were reluctant to provide information due to discussions they are currently having with the Division of Water Rights regarding water rights, sources and uses. According to the water company, most water used for irrigation is obtained from irrigation ditches and there is very little culinary water used outdoors for watering purposes. The data supplied has not been used and the following water use data has been estimated based on assumptions and water use data from the Hoytsville Culinary Water system which appears to be similar. Assume each of the four commercial connections (1 is a gas station and 1 is a restaurant) to be 250,000 gallons each for a total of 1 million gallons. Total residential use (180,000 gallons/connection)(74 connections) = 13,320,000 gallons = 40.88 ac-ft. (110 gpcd)(184 people)(365 days) = 7,387,600 gallons = 22.67 ac-ft (estimated). |
| Residential Indoor | (110 gpcd)(184 people)(365 days) = 7,387,600 gallons = 22.67 ac-ft (estimated). |
| Residential Outdoor: | |
| Potable Water | 13,320,000 - 1,000,000 - 7,387,600 gallons = 4,932,400 gallons = 15.14 ac-ft (estimated). |
| Secondary Water | About 90 percent of the connections use secondary water on their half acre lots. Assume about 0.33 (1/3) acre of each lot is yard area (lawn and shrubbery) which is irrigated with secondary water. Therefore, estimated secondary water usage = (70*0.9 lots)(0.33 acres/lot) (3 acre-feet/acre) = 62.37 ac-ft. |
| Commercial | 1,000,000 gallons = 3.07 ac-ft. |
| Industrial | None. |

Total water use is estimated. Separate water use data is estimated. Max. reliable source capacity = (springs, 13.5 gpm + wells, 0.8(65 gpm + 35 gpm)) (60 m/hr)(24 hr/d)(365 d/yr) = 49,143,600 gallons = 150.83 ac-ft. II. Wanship Cottage Sites

Consists of 25 connections to cabins consisting of 54 part-time and 20 permanent residents. All connections are used year round. Calculate population based on a weighted average.

| | |
|----------------------|---|
| Population | $\frac{((54 \text{ part-time})(2 \text{ days/wk})(52 \text{ wks}) + (20 \text{ full-time})(365 \text{ days}))}{(2 \text{ days/wk})(52 \text{ wks}) + (365 \text{ days})} = 27.5; \text{ use } 28.$ |
| Total Usage: | 585,000 gallons = 1.80 ac-ft. |
| Permanent Residents | (120 gpd/unit)(7 units)(365 days) 306,600 gallons = 0.94 ac-ft. |
| Part-Time Usage | (77 gpd/unit)(18 units)(2 days/week)(52 weeks) 144,144 gallons = 0.44 ac-ft. |
| Residential Indoor | 450,744 gallons = 1.38 ac-ft. |
| Residential Outdoor: | |
| Potable Water | 585,000 - 450,744 = 134,256 gallons = 0.41 ac-ft. |
| Secondary Water | About 80 percent of the connections use secondary water on their 0.20 acre lots. Assume about 0.14 acre of each lot is yard area (lawn and shrubbery) which is irrigated with secondary water. Therefore, estimated secondary water usage = (25*0.8 lots)(0.14 acres/lot)(3 acre-feet/acre) = 8.40 ac-ft. |
| Commercial | None. |
| Industrial | None. |

Max. reliable source capacity = (well, 0.8*30 gpm)(60 m/hr)(24 hr/d)(365 d/yr) = 12,614,400 gallons = 38.71 ac-ft.

Table A-2. Summit County Public Non-Community Systems Descriptions, Assumptions, and Calculations.

I. Aspen Mountain Water Company

(Serving 35 cabins with year round access; however, it is used mostly during summer months.)

Assume Usage:

Summer Use (120 gpd/cabin)*(35 cabins)*(~30 days/mo.)*(3 months) = 378,000 gallons = 1.16 ac-ft.

Off-Season Use (77 gpd/cabin)*(35 cabins)*(~30 days/mo.)*(9 months) = 727,650 gallons = 2.23 ac-ft.

Total Assumed Usage 3.39 ac-ft/year.

Number of Connections 35

II. Beaver Knoll Service District

(Serving 10 cabins only from May to September.)

Assume Usage:

Summer Use (120 gpd/cabin)*(10 cabins)*(~30 days/mo.)*(5 months) = 180,000 gallons = 0.55 ac-ft.

Total Assumed Usage 0.55 ac-ft/year.

Number of Connections 10

III. Butko Chevron Service

(Serving a single Chevron service station at Kimball Junction and I-80. Restroom and washroom use only. Assume usage (based on data obtained from Summit Park Water SSD for usage at the Sinclair service station located at Parley's Summit.)

Annual Use ~200,000 gallons = 0.61 ac-ft.

Number of Connections 1

IV. Camperworld Echo Is Ranch

(The campground serves 105 RV hook-ups for 90 days during the summer months and one permanent resident year-round.)

Assume Usage:

RV Hook-Ups (87 gpd/unit)*(105 units)*(~30 days/mo.)*(3 months) = 783,000 gallons = 2.4 ac-ft.

Resident (100 gpd)*(365 days) = 36,500 gallons = 0.11 ac-ft.

Total Assumed Usage 2.5 ac-ft/year.

Number of Connections 106

V. Camp Pinecliff

(The campground is a summer camp which serves between 25 and 80 campers from June to August.)

Assume Usage:
Campers (10 gpd/camper)*(55 assumed avg. campers)*(~30 days/mo.)*(3 months) = 49,500 gallons = 0.15 ac-ft.
Total Assumed Usage 0.15 ac-ft/year.
Number of Connections 1

VI. Canyon Rim Service Dist.

(Serving 19 cabins; however, it is used mostly during summer months on an average of two days per week. Eight of the cabins have water year-round, and they are used on an average of one day per week.)

Assume Usage:
Summer Use (120 gpd/cabin)*(19 cabins)*(~8 days/mo.)*(3 months) = 54,720 gallons = 0.17 ac-ft.
Off-Season Use (77 gpd/cabin)*(8 cabins)*(~4 days/mo.)*(9 months) = 22,176 gallons = 0.07 ac-ft.
Total Assumed Usage 0.24 ac-ft/year.
Number of Connections 19

VII. Cool Spring Mutual Water Company

(Serving 159 total connections; 12 permanent connections during summer and 4 permanent connections during winter.)

Meter Usage: 1,902,970 gallons = 5.84 ac-ft.
Residential Use: 348,661 g = 1.07 ac-ft.
Recreational Use 5.84 ac-ft. - 1.07 ac-ft. = 4.77 ac-ft.
Number of Connections 159

VIII. Echo Resort

(Serves a resort for about 15 staff members, a public resort and 20 campsites served by individual taps. The public resort probably consists of an office for boat rentals, restrooms and drinking fountain. The resorts and campsites are open from April through September.)

Assume Usage:
Staff Member Resort (75 gpd/person)*(15 people)*(30 days/mo.)*(6 mos.) = 202,500 gallons = 0.62 ac-ft.
Public Resort (10 gpd/person)*(30 assumed people)*(30 days/mo)*(6 mo) = 54,000 gallons = 0.17 ac-ft.
Campsites (10 gpd/person)*(20 sites)*(3 people/site)*(30 days/mo)*(6 mo) = 108,000 gallons = 0.33 ac-ft.
Total Assumed Usage 1.12 ac-ft/year.
Number of Connections 22

IX. Echo State Hwy Rest Stop (Dist. 2)

(Use is estimated at 25,000 gal/day during summer months and 5,000 gal/day during winter months.)

| | |
|-----------------------|--|
| Summer Usage | $(25,000 \text{ gal/day}) * (30 \text{ days/mo}) * (3.5 \text{ mo}) = 2,625,000 \text{ gallons} = 8.06 \text{ ac-ft.}$ |
| Non-Summer Usage | $(5,000 \text{ gal/day}) * (30 \text{ days/mo}) * (8.5 \text{ mo}) = 1,275,000 \text{ gallons} = 3.91 \text{ ac-ft.}$ |
| Total Usage | 11.97 ac-ft/year. |
| Number of Connections | 1 serving restrooms, fountains and irrigation. |

X. Hidden Haven Campground

(RV park with 47 RV campsites of which 16 have full hookups, 19 tent sites and 4 apartments. The campground is used year round with full occupancy during the summer and 50% occupancy during the off-season.)

Assume Summer Usage:

| | |
|----------------|--|
| RV No Hook-Ups | $(30 \text{ gpd/unit}) * (31 \text{ units}) * (\sim 30 \text{ days/mo.}) * (3 \text{ months}) = 83,700 \text{ gallons} = 0.26 \text{ ac-ft.}$ |
| RV Hook-Ups | $(87 \text{ gpd/unit}) * (16 \text{ units}) * (\sim 30 \text{ days/mo.}) * (3 \text{ months}) = 125,280 \text{ gallons} = 0.38 \text{ ac-ft.}$ |
| Tent Sites | $(30 \text{ gpd/site}) * (19 \text{ sites}) * (\sim 30 \text{ days/mo.}) * (3 \text{ months}) = 51,300 \text{ gallons} = 0.16 \text{ ac-ft.}$ |

Assume Non-Summer Usage:

| | |
|-----------------------|--|
| RV No Hook-Ups | $(30 \text{ gpd/unit}) * (15 \text{ units}) * (\sim 30 \text{ days/mo.}) * (9 \text{ months}) = 121,500 \text{ gallons} = 0.37 \text{ ac-ft.}$ |
| RV Hook-Ups | $(87 \text{ gpd/unit}) * (8 \text{ units}) * (\sim 30 \text{ days/mo.}) * (9 \text{ months}) = 187,920 \text{ gallons} = 0.58 \text{ ac-ft.}$ |
| Tent Sites | $(30 \text{ gpd/site}) * (8 \text{ sites}) * (\sim 30 \text{ days/mo.}) * (9 \text{ months}) = 64,800 \text{ gallons} = 0.20 \text{ ac-ft.}$ |
| Total Assumed Usage | 1.95 ac-ft/year. |
| Number of Connections | 74 |

XI. Hidden Lake Association

(Serving 99 cabins of which 2 are primary residences. Assume that the non-resident cabins are used an average of 3 days per week. The non-resident cabins are shut off during the winter months.)

Assume Usage:

| | |
|-----------------------|---|
| Non-Resident | $(120 \text{ gpd/cabin}) * (97 \text{ cabins}) * (\sim 12 \text{ days/mo.}) * (5 \text{ months}) = 698,400 \text{ gallons} = 2.14 \text{ ac-ft.}$ |
| Residential Use | $(120 \text{ gpd/cabin}) * (2 \text{ cabins}) * (365 \text{ days}) = 87,600 \text{ gallons} = 0.27 \text{ ac-ft.}$ |
| Total Assumed Usage | 2.41 ac-ft/year. |
| Number of Connections | 99 |

XII. Kids Kampus

(Day care center with a total population of 40 people which includes children and staff. Assume water is for flush toilets, drinking fountains, sinks and kitchen. Assume usage at about 15 gpd/person.)

| | |
|-----------------------|--|
| Usage | $(15 \text{ gpd/person}) * (40 \text{ people}) * (365 \text{ days}) = 219,000 \text{ gallons} = 0.67 \text{ ac-ft.}$ |
| Number of Connections | 1 |

XIII. Kimball State Hwy Rest Stop

(Use is estimated at 10,000 gal/day during summer months and 3,000 gal/day during winter months.)

| | |
|-----------------------|--|
| Summer Usage | $(10,000 \text{ gal/day}) \times (30 \text{ days/mo}) \times (3.5 \text{ mo}) = 1,050,000 \text{ gallons} = 3.22 \text{ ac-ft.}$ |
| Non-Summer Usage | $(3,000 \text{ gal/day}) \times (30 \text{ days/mo}) \times (8.5 \text{ mo}) = 765,000 \text{ gallons} = 2.35 \text{ ac-ft.}$ |
| Total Usage | 5.57 ac-ft/year. |
| Number of Connections | 1 serving restrooms, fountains and irrigation. |

XIV. Lake Rockport Estates

(Property consists of 30 cabins and 60 campsites with each campsite consisting of a tap that may be used for RV hook-ups. The property is used from June to October at an average of 2 days per week per connection.)

| | |
|-----------------------|---|
| Cabin Usage | $(120 \text{ gpd/cabin}) \times (30 \text{ cabins}) \times (\sim 8 \text{ days/mo.}) \times (5 \text{ months}) = 144,000 \text{ gallons} = 0.44 \text{ ac-ft.}$ |
| Campsite Usage | $(30 \text{ gpd/campsite}) \times (60 \text{ campsites}) \times (\sim 8 \text{ days/mo.}) \times (5 \text{ months}) = 72,000 \text{ gallons} = 0.22 \text{ ac-ft.}$ |
| Total Assumed Usage | 0.66 ac-ft/year. |
| Number of Connections | 90 |

XV. Ledgefork Campground

(Property consists of 73 total campsites which can be used for RV or tent sites. No individual campsite hookups. There are 11 taps or spigots of which each serves several campsites. Average daily population is 165 people with an average usage of 5 gpd/person. The campsite is open June through September.)

| | |
|-----------------------|---|
| Campsite Usage | $(5 \text{ gpd/person}) \times (165 \text{ people}) \times (30 \text{ days/mo}) \times (4 \text{ mo}) = 99,000 \text{ gallons} = 0.30 \text{ ac-ft.}$ |
| Number of Connections | 11 |

XVI. Ma Bell's Gas & Groceries

(Truck stop type service station and grocery store located at the intersection of US-40 and I-80. Water usage is for 2 restrooms, 4 showers and a Deli. The Sinclair station at Summit Park uses about 200,000 gallons per year for restrooms and a Deli. Ma Bells Gas & Grocery will use more water than the Sinclair station as a result of the shower facilities. Assume twice as much water usage "or" 400,000 gallons.)

| | |
|-----------------------|-------------------------------|
| Water Usage | 400,000 gallons = 1.23 ac-ft. |
| Number of Connections | 1 |

XVII. Pine Meadow Special Service Dist.

(Property serves 197 cabin lots on which there is currently a mix of cabins and RV usage instead of cabins on the lots. Usage is entirely during the months of June through October.)

| | |
|-----------------------|-------------------------------|
| Total Usage | 671,601 gallons = 2.06 ac-ft. |
| Number of Connections | 197 |

XVIII. Pine Mountain Culinary

(Property serves 240 cabins. Usage is mostly on weekends during the summer months. About 6 cabins have full time residents during the summer and about 2 cabins have full time residents during the winter. Part time summer use peaks at about 100 cabins during the summer weekends and about 20 cabins during the winter weekends.)

Part-time residents:

Summer Usage $(120 \text{ gpd/cabin}) * (100 \text{ cabins}) * (8 \text{ days/mo}) * (4 \text{ mo}) = 384,000 \text{ gallons} = 1.18 \text{ ac-ft.}$

Off-Season Use $(77 \text{ gpd/cabin}) * (20 \text{ cabins}) * (4 \text{ days/mo}) * (8 \text{ mo}) = 49,280 \text{ gallons} = 0.15 \text{ ac-ft.}$

Full-Time Residents:

Usage $(120 \text{ gpd/cabin}) * (6 \text{ cabins}) * (365 \text{ days}) = 262,800 \text{ gallons} = 0.81 \text{ ac-ft.}$

Total Use 2.14 ac-ft.

Number of Connections 240

XIX. Pine Ranch

(Property serves 24 cabins. Usage is mostly on weekends (about 1.5 to 2 days per week) during the summer months. Common pasture (about 75 acres) is watered from a ditch. There is no data on the amount of irrigation water usage.)

Total Usage $(120 \text{ gpd/cabin}) * (24 \text{ cabins}) * (8 \text{ days/mo}) * (5 \text{ mo}) = 115,200 \text{ gallons} = 0.35 \text{ ac-ft.}$

Number of Connections 24

XX. Rockport State Park

(Use consists of 2 public restrooms, 2 residences (assume 3 people per residence), 1 maintenance building and 30 campground spigots during the summer months of June through September. Summer usage totals about 80,000 gallons per week. Use consists of 2 residences and one maintenance building during the winter months of October through May.)

Resident Usage $(300 \text{ gpd/residences}) * (2 \text{ residences}) * (\sim 365 \text{ days}) = 219,000 \text{ gallons} = 0.67 \text{ ac-ft.}$

Campsite Usage $((80,000 \text{ gal/week}) - (300 \text{ gpd/residents}) * (2 \text{ residents}) * (7 \text{ days/wk})) * (12 \text{ weeks}).$ This includes maintenance building use = 909,000 gallons = 2.79 ac-ft.

Total Assumed Usage 3.46 ac-ft/year.

Number of Connections 35

XXI. Smith-Morehouse Campground

(Property consists of 34 total campsites which can be used for RV or tent sites. No individual campsite hookups. There are six taps or spigots of which each serves several campsites. Average daily population is 90 people with an average usage of 5 gpd/person. The campsite is open June through September.)

Campsite Usage $(5 \text{ gpd/person}) * (90 \text{ people}) * (30 \text{ days/mo}) * (4 \text{ mo}) = 54,000 \text{ gallons} = 0.17 \text{ ac-ft.}$

Number of Connections 6

XXII. Wanship Well Water System

(The property consists of a park and one residence. Assume 3 people at the residence. The connection at the park is a single tap and is not used for irrigation.)

Usage $((300 \text{ gpd for residence}) + (\text{assume } 50 \text{ gpd for tap in park})) * (365 \text{ days}) = 127,750 \text{ gallons} = 0.39 \text{ ac-ft.}$
Number of Connections 2

XXIII. Weber-Meadows View Ranch

(Serves 25 cabins of which 2 cabins serve as primary residences. The other 23 cabins are used an average of 2 days per week during the summer months and about 1 day per week average during the winter months.)

Resident Usage $(120 \text{ gpd/cabin}) * (2 \text{ cabins}) * (365 \text{ days}) = 87,600 \text{ gallons} = 0.27 \text{ ac-ft.}$
Summer Usage $(120 \text{ gpd/cabin}) * (23 \text{ cabins}) * (8 \text{ days/mo}) * (4 \text{ mo}) = 88,320 \text{ gallons} = 0.27 \text{ ac-ft.}$
Winter Usage $(77 \text{ gpd/cabin}) * (23 \text{ cabins}) * (4 \text{ days/mo}) * (8 \text{ mo}) = 56,672 \text{ gallons} = 0.17 \text{ ac-ft.}$
Total Usage 0.71 ac-ft/year.
Number of Connections 25

XXIV. Weber Wild Water Company

(Serves 48 cabins of which 5 cabins serve as primary residences. The other 43 cabins are used an average of 2 days per week during the year.)

Resident Usage $(120 \text{ gpd/cabin}) * (5 \text{ cabins}) * (365 \text{ days}) = 219,000 \text{ gallons} = 0.67 \text{ ac-ft.}$
Summer Usage $(120 \text{ gpd/cabin}) * (43 \text{ cabins}) * (2 \text{ days/wk}) * (16 \text{ wks}) = 165,120 \text{ gallons} = 0.51 \text{ ac-ft.}$
Winter Usage $(77 \text{ gpd/cabin}) * (43 \text{ cabins}) * (2 \text{ days/wk}) * (36 \text{ wks}) = 238,392 \text{ gallons} = 0.73 \text{ ac-ft.}$
Total Usage 1.91 ac-ft/year.
Number of Connections 48

**APPENDIX B
MORGAN COUNTY
DETAILED DESCRIPTION OF PUBLIC COMMUNITY
AND NON-COMMUNITY SYSTEMS**

Table B-1. Morgan County Public Community Systems Descriptions, Assumptions and Calculations.

MOUNTAIN GREEN AREA

I. Highlands Water Co.

| | |
|---------------------|---|
| Population | 550 |
| No. of Connections | 122 (119 residential, 1 convenience store, 1 park, 1 cemetery). |
| Water Use | 19,104,750 gallons/year of potable water is based on data supplied by the water company and includes outdoor use. |
| Residential Indoor | 6,098,000 gallons = 18.71 ac.ft. |
| Residential Outdoor | 11,862,590 gallons = 36.41 ac. ft. includes park and cemetery. |
| Secondary Outdoor | None. |
| Commercial | 1,089,410 gallons = 3.34 ac.ft. |
| Industrial | None. |

Spillage is estimated at 54,750 gallons. Separate water use is estimated by DWR. Maximum reliable source capacity = $(280 \text{ gpm})(.8)(60 \text{ m/hr})(24 \text{ hr/dy})(365 \text{ d/yr}) = 117,734,400 \text{ gallons} = 361.32 \text{ ac.ft.}$

II. Monte Verde Water Association

| | |
|--------------------|---|
| Population | 93 |
| No. of Connections | 28 residential |
| Water Use | 10,996,000 gallons/year of potable water is based on data supplied by the water company and includes outdoor use. |
| Potable Indoor | 3,773,950 gallons = 11.58 ac.ft. |
| Potable Outdoor | 7,262,010 gallons = 22.2 ac.ft. |
| Secondary Outdoor | None. |
| Commercial | None. |
| Industrial | None. |

Separate water use is estimated by DWR. Maximum reliable source capacity = $(22 \text{ gpm})(60 \text{ m/hr})(24 \text{ hr/dy})(365 \text{ dy/yr}) = 11,563,200 \text{ gallons} = 35.5 \text{ ac.ft.}$

III. Mountain Green Subdivision Water Association

| | |
|--------------------|--|
| Population | 76 |
| No. of Connections | 19(18 residential, 1 dairy). |
| Water Use | 5,032,134 gallons/year of potable water is based on data supplied by the water company and includes outdoor use. System is individually metered. |
| Potable Indoor | 1,575,799 gallons = 4.83 ac.ft. |
| Potable Outdoor | 2,478,785 gallons = 7.61 ac.ft. |
| Secondary Outdoor | None. |
| Commercial | None. |
| Industrial | 977,550 gallons = 3.00 ac. ft. |

Separate water use is supplied by company and estimated by DWR. Max. reliable source capacity = $(65 \text{ gpm})(.80)(60 \text{ m/hr})(24 \text{ hr/dy})(365 \text{ dy/yr}) = 27,331,200 \text{ gallons} = 83.88 \text{ ac.ft.}$

IV. Wilkinson Water Company

| | |
|--------------------|---|
| Population | 450 |
| No. of Connections | 136(133 residential, 3 airport). |
| Water Use | 38,838,400 gallons/year of potable water is based on data supplied by the water company and includes outdoor use. |
| Potable Indoor | 14,383,000 gallons = 44.14 ac.ft. |
| Potable Outdoor | 24,410,400 gallons = 74.91 ac.ft. |
| Secondary | None. |
| Commercial | 45,000 gallons. |
| Industrial | None. |

Total water use is master metered. Separate water use is estimated by DWR. Max. reliable source capacity = $(480 \text{ gpm})(.80)(60 \text{ m/hr})(24 \text{ hr/dy})(365 \text{ dy/yr}) = 201,830,400 \text{ gallons} = 619.00 \text{ ac.ft.}$

PETERSON/ENTERPRISE AREA

I. Peterson Pipeline Company

| | |
|--------------------|--|
| Population | 350 |
| No. of Connections | 97(93 residential, 1 commercial, 1 church, 1 dairy, 1 cemetery). Secondary water is used by 50% of the company's members. System is individually metered. Water use of 27,676,000 gallons/year of potable water is based on data supplied by the water company and includes 50% costumers outdoor use. Secondary use is estimated from acreage. |
| Potable Indoor | 14,965,100 gallons = 45.93 ac.ft. |
| Potable Outdoor | 12,114,500 gallons = 37.18 ac.ft. |
| Commercial | 116,400 gallons = 0.36 ac.ft. |
| Industrial | 480,000 gallons. |
| Secondary | 11,241,825 gallons = 34.5 ac.ft. |

Separate water use is estimated by DWR. Max. reliable source capacity = $(242 \text{ gpm})(.80)(60 \text{ m/hr})(24 \text{ hr/dy})(365 \text{ dy/yr}) = 101,756,160 \text{ gallons} = 312.28 \text{ ac.ft.}$

II. V.P. Enterprise Estates Water Association

| | |
|--------------------|--|
| Population | 82 |
| No. of Connections | 19 residential |
| Water Use | (6,840,950 gallons = 20.99 ac.ft.), based on information provided by the supplier. Approximately 53% of the company has secondary water. |
| Potable Indoor | 1,747,440 gallons = 5.36 ac.ft. |
| Potable Outdoor | 2,160,860 gallons = 6.63 ac.ft. |
| Commercial | None. |
| Industrial | None. |
| Secondary Outdoor | 2,932,650 gallons = 9.0 ac.ft. |

Separate water use estimated by DWR based on outdoor acreage. Max. reliable source capacity = $(35 \text{ gpm})(.8)(60 \text{ m/hr})(24 \text{ hr/dy})(365 \text{ dy/yr}) = 14,716,800 \text{ gallons. (Water right} = 11,323,288 \text{ gallons} = 34.75 \text{ ac.ft.)}$

III. West Enterprise Water Association

| | |
|--------------------|---|
| Population | 27 |
| No. of Connections | 12 residential. |
| Water Use | (2,134,916 gallons = 6.56 ac.ft.) estimated by DWR based on information provided by the supplier. Approximately 50% of the company has secondary water. |
| Potable Indoor | 1,084,050 gallons = 3.33 ac.ft. |
| Potable Outdoor | 73,316 gallons = 0.23 ac.ft. |
| Commercial | None. |
| Industrial | None. |
| Secondary Outdoor | 977,550 gallons = 3.00 ac.ft. |

Separate water use estimated by DWR. Max. reliable source capacity = (30 gpm)(60 m/hr)(24 hr/dy)(365 dy/yr) = 12,614,400 gallons = 38.71 ac.ft.

MORGAN AREA

I. Morgan City Corporation

| | |
|--------------------|---|
| Population | 2100 |
| No. of Connections | 698 (620 residential, 74 commercial, 3 parks, 1 cemetery). |
| Water Use | (277,146,000 gallons = 850.53 ac.ft.) is completely based on information supplied by the water company. Approximately 36% of the company has secondary water. |
| Potable Indoor | 77,976,000 gallons = 239.30 ac.ft. |
| Potable Outdoor | 130,927,000 gallons = 401.80 ac.ft. |
| Commercial | 30,655,550 gallons = 94.08 ac.ft. |
| Industrial | 1,613,450 gallons = 4.95 ac.ft. (Assumed 5% of commercial.) |
| Secondary Outdoor | 35,974,000 gallons = 110.40 ac.ft. |

Max. reliable source capacity = (2,095 gpm)(.8)(60 m/hr)(24 hr/dy)(365 y/yr) = 880,905,600 gallons = 2703.40 ac.ft.

II. Richville Pipeline Company

| | |
|--------------------|--|
| Population | 100 |
| No. of Connections | 33 (31 residential, 2 dairies). |
| Water Use | (12,102,238 gallons = 37.14 ac.ft.) is completely based on data supplied by the water company. Approximately 18% of the company has secondary water. |
| Potable Indoor | 4,015,000 gallons = 12.32 ac.ft. |
| Potable Outdoor | 5,620,913 gallons = 17.25 ac.ft. |
| Commercial | None. |
| Industrial | 1,000,000 |
| Secondary Outdoor | 1,466,325 gallons = 4.50 ac.ft. |

Max. reliable source capacity = (60 gpm)((.8)(60 m/hr)(24 hr/dy)(365 dy/yr) = 25,228,800 gallons = 77.43 ac.ft.

III. South Littleton Water Company

| | |
|--------------------|---|
| Population | 36 (estimated). |
| No. of Connections | 12 residential. |
| Water Use | Not metered in any way. Total and separate water use is estimated by DWR based on population and acreage information supplied by the company. |
| Secondary water | Available to 75% of the company. |
| Potable Indoor | 1,445,400 gallons = 4.44 ac.ft. |
| Potable Outdoor | 733,163 gallons = 2.25 ac.ft. |
| Commercial | None. |
| Industrial | None. |
| Secondary | 2,639,385 gallons = 8.10 ac.ft. |

Max. reliable source capacity = (12 gpm)(.80)(60 m/hr)(24 hr/dy)(365 dy/yr) = 5,045,760 gallons = 15.48 ac.ft.

IV. South Robinson Spring Water Users

| | |
|--------------------|--|
| Population | 30 |
| No. of Connections | 12 residential. |
| Water Use | (5,310,210 gallons) is estimated by DWR based on population and acreage information supplied by the company. Secondary water is not available. |
| Potable Indoor | 1,204,500 gallons = 3.70 ac.ft. |
| Potable Outdoor | 4,105,710 gallons = 12.60 ac.ft. |
| Commercial | None. |
| Industrial | None. |

Max. reliable source capacity = (150 gpm)(.80)(60 m/hr)(24 hr/dy)(365 dy/yr) = 63,072,000 gallons = 193.56 ac.ft. (Water right = 12,244,009 gallons = 37.57.)

CROYDEN AREA

I. Croyden Pipeline Company

| | |
|--------------------|--|
| Population | 56 |
| No. of Connections | 15 residential. |
| Water Use | (6,060,845 gallons) estimated by DWR based on population and acreage information provided by the company. The company has installed a new system recently, so a full years worth of water usage had to be estimated. Approximately 75% of the company has secondary water. |
| Potable Indoor | 2,248,400 gallons = 6.90 ac.ft. |
| Potable Outdoor | 1,857,345 gallons = 5.70 ac.ft. |
| Commercial | None. |
| Industrial | None. |
| Secondary | 1,955,100 gallons = 6.0 ac.ft. |

Max. reliable source capacity = (80 gpm)(.8)(60 m/hr)(24 hr/dy)(365dy/yr) = 42,048,000 gallons = 129.00 ac.ft. (Water Right = 35,843,500 gallons = 110.00 ac.ft.)

Table B-2. Morgan County Public Non-Community Systems Descriptions, Assumptions and Calculations.

I. Camp Zarahemla - This is a 3.5 acre park used in the summer months by LDS wards and other groups. There is a lodge that is rented out year-round; it has a kitchen and two bathrooms. The park is irrigated from a secondary system.

| | |
|-----------------|----------------------------------|
| Potable Indoor | 144,000 gallons = 0.44 ac.ft. |
| Potable Outdoor | None. |
| Secondary Water | 3,421,425 gallons = 10.50 ac.ft. |

II. East Canyon Resort - This resort is open year round and has 33 condo connections, 1 lodge, and 73 RV pads. About 61 acres are irrigated for horse pasturing and lawn area.

| | |
|-----------------|------------------------------------|
| Potable Indoor | 4,792,000 gallons = 14.71 ac.ft. |
| Potable Outdoor | 59,630,550 gallons = 183.00 ac.ft. |
| Commercial | 3,504,000 gallons = 10.75 ac.ft. |

III. East Canyon State Park - This facility is a state campground with campsites, 2 residences and about 2.5 acres of irrigated lawn area.

| | |
|-----------------|---|
| Potable Indoor | (300 gpd)2 residences = 219,000 gallons = 0.67 ac.ft. |
| Potable Outdoor | 2,443,875 gallons = 7.50 ac.ft. |
| Commercial | 960,000 gallons = 2.95 ac.ft. |

IV. LDS Stake Camp Woodland - This 3.0 acre park has one set baths and is open only in the summer months.

| | |
|-----------------|---------------------------------|
| Potable Outdoor | 2,932,650 gallons = 9.00 ac.ft. |
| Commercial | 100,000 gallons = 0.31 ac.ft. |

V. Milton LDS Church, Morgan 5th and 6th Wards, Peterson LDS Church - These facilities are churches that are self-supplied by wells. The water use was estimated using comparative churches in other areas of this study.

| | |
|-----------------|-------------------------------|
| Milton Church | 200,000 gallons = 0.62 ac.ft. |
| Morgan Church | 150,000 gallons = 0.46 ac.ft. |
| Peterson Church | 250,000 gallons = 0.77 ac.ft. |
| Secondary Use | = 13.5 ac-ft. |

VI. Round Valley Golf Club - This is a golf course with 9 holes and approximately 100 acres irrigated. The clubhouse has its own well.

| | |
|-----------------|------------------------------|
| Commercial | 50,000 gallons = 0.15 ac.ft. |
| Secondary Water | Estimated - 181.8 ac-ft. |

VII. Mountain Green Rest Stop - This facility is located in Morgan County and has a restroom and about .5 acres of irrigated lawn.

| | |
|------------|-------------------------------|
| Commercial | 588,775 gallons = 1.81 ac.ft. |
|------------|-------------------------------|

VIII. Stoddard Inn Cafe - This is a restaurant open from lunch till evening.

| | |
|------------|-------------------------------|
| Commercial | 100,000 gallons = 0.31 ac.ft. |
|------------|-------------------------------|

**APPENDIX C
OGDEN VALLEY
DETAILED DESCRIPTION OF PUBLIC COMMUNITY
AND NON-COMMUNITY SYSTEMS**

Table C-1. Ogden Valley Public Community Systems Descriptions, Assumptions and Calculations.

I. Casey Acres

| | |
|---------------------|--|
| Population | 36 |
| No. of Connections | 9 residential. |
| Water Use | 540,000 gallons/year of potable water is based on data supplied by the water company. All outdoor use is secondary water and quantity is based on the acreage irrigated. |
| Residential Indoor | 540,000 gallons = 1.66 ac.ft. |
| Residential Outdoor | None. |
| Secondary Outdoor | 7,039,640 gallons = 21.6 ac.ft. |
| Commercial | None. |
| Industrial | None. |

Potable water use is estimated by supplier. Secondary water use is estimated based on acreage irrigated. Maximum reliable source capacity = $(55 \text{ gpm})(.8)(60 \text{ m/hr})(24 \text{ hr/dy})(365 \text{ d/yr}) = 23,126,400 \text{ gallons} = 70.97 \text{ ac.ft.}$

II. Cole Canyon Water Company

| | |
|--------------------|---|
| Population | 160 |
| No. of Connections | 27 residential. Supplier does not meter and has no idea how much water is used. Quantities are based on 110 GPDU average and acreage irrigated. None of the connections have secondary water. |
| Potable Indoor | 6,424,000 gallons = 19.72 ac.ft. |
| Potable Outdoor | 1,319,650 gallons = 4.05 ac.ft. |
| Secondary Outdoor | None. |
| Commercial | None. |
| Industrial | None. |

Separate water use is estimated by DWR. Maximum reliable source capacity = $(70 \text{ gpm})(60 \text{ m/hr})(24 \text{ hr/dy})(365 \text{ dy/yr}) = 36,792,000 \text{ gallons} = 112.91 \text{ ac.ft.}$

III. Eden Water Works Company

| | |
|--------------------|--|
| Population | 1215 |
| No. of Connections | 292 (287 residential, 2 churches, 2 commercial, 1 school.) System is master metered and individually metered. Total inflow = 68,668,000 gallons = 210.74 ac.ft. Spillage = 24,719,660 gallons = 75.86 ac.ft. Approximately 50% of the residential connections use secondary water. All of the commercial connections have secondary water. |
| Potable Indoor | 29,120,964 gallons = 89.37 ac.ft. |
| Potable Outdoor | 12,564,618 gallons = 38.56 ac.ft. |
| Secondary Outdoor | 52,785,918 gallons = 162 ac.ft. |
| Commercial | 2,262,758 gallons = 6.94 ac.ft. |
| Industrial | None. |

Separate water use is supplied by company and estimated by DWR. Max. reliable source capacity = $(132 \text{ gpm})(60 \text{ m/hr})(24 \text{ hr/dy})(365 \text{ dy/yr}) = 69,379,200 \text{ gallons} = 212.92 \text{ ac.ft.}$

IV. Green Hill Water & Sewer

| | |
|--------------------|---|
| Population | 126 (estimated to yield GPDU of approx. 110 gallons) |
| No. of Connections | 35 residential. Water use (5,652,000 gallons = 17.35 ac.ft.) is completely based on data supplied by the water company. |
| Potable Indoor | 5,040,000 gallons = 15.47 ac.ft. |
| Potable Outdoor | 612,000 gallons = 1.88 ac.ft. |
| Commercial | None. |
| Industrial | None. |

Total water use is: metered. Separate water use is estimated by the company. Supplier purchases water from WBWCD: 110 ac.ft. Max. reliable source capacity = 35,842,290 gallons = 110 ac.ft.

V. Huntsville Municipal Water System

| | |
|--------------------|---|
| Population | 561 |
| No. of Connections | 226 (216 residential, 8 commercial, 1 church, 1 school). Secondary water is used by 97% of the company's members. Primary source, Bennett's Spring, is shared with Abbey of Holy Trinity. System is master metered, has individual meters, but individual meters are not read. Total of water metered is 111,320,000 gallons = 341.64 ac.ft. System has 6" overflow pipe which flows full in winter, and also flows in summer, but there is no measurement of spillage. |
| Potable Indoor | 22,524,150 gallons = 69.13 ac.ft. |
| Potable Outdoor | 2,375,366 gallons = 7.29 ac..ft. |
| Commercial | 4,591,680 gallons = 14.09 ac.ft. |
| Industrial | None. |
| Secondary | 79,178,877 gallons = 243 ac.ft. |

Separate water use is estimated by DWR. Spillage is estimated to be 81,628,804 gallons = 251.13 ac.ft. Max. reliable source capacity = (140 gpm)(60 m/hr)(24 hr/dy)(365 dy/yr) = 73,584,000 gallons = 225.83 ac.ft.

VI. Lakeview Corporation

| | |
|--------------------|--|
| Population | 110 |
| No. of Connections | 44 (43 residential, 1 church). |
| Water Use | (5,280,000 gallons = 16.20 ac.ft.), based on information provided by the supplier. Approximately 25% of the company has secondary water. |
| Potable Indoor | 4,416,500 gallons = 13.55 ac.ft. |
| Potable Outdoor | 839,500 gallons = 2.58 ac.ft. |
| Commercial | 24,000 gallons = .07 ac.ft. |
| Industrial | None. |
| Secondary Outdoor | 1,075,470 gallons = 3.30 ac.ft. |

Separate water use estimated by DWR based on 110 gpdu for indoor usage. Max. reliable source capacity = (70 gpm)(.8)(60 m/hr)(24 hr/dy)(365 dy/yr) = 29,433,600 gallons = 90.33 ac.ft.

VII. Liberty Pipeline Company

| | |
|--------------------|--|
| Population | 650 |
| No. of Connections | 158 [157 residential, 1 industrial (dairy)] |
| Water Use | (33,200,000 gallons = 101.89 ac.ft.), based on information provided by the supplier. Summer usage is not significantly higher than winter usage, so no spillage is assumed. There is 1 small day use park connected to the system, but it is irrigated with secondary water (2 ac.). Approximately 90% of the company has secondary water. |
| Potable Indoor | 26,107,040 gallons = 80.12 ac.ft. |
| Potable Outdoor | 4,692,960 gallons = 14.40 ac.ft. |
| Commercial | None. |
| Industrial | 2,400,000 gallons = 7.31 ac.ft. |
| Secondary Outdoor | 43,597,258 gallons = 133.8 ac.ft. |

Separate water use provided by company and estimated by DWR. Max. reliable source capacity = (50 gpm)(60 m/hr)(24 hr/dy)(365 dy/yr) = 26,280,000 gallons = 80.65 ac.ft.

VIII. Nordic Valley Water Company

| | |
|-------------------------|---|
| Population | 550 |
| No. of Connections | 162 (160 residential, 2 commercial). |
| Total Potable Water Use | (8,591,000 gallons = 26.37 ac.ft.) is completely based on meter readings supplied by the water company. Secondary water is supplied to a 9-hole golf course, but not to anyone else in the company. |
| Potable Indoor | 540,000 gallons = 16.57 ac.ft. |
| Potable Outdoor | 3,191,000 gallons = 9.79 ac.ft. |
| Commercial | 160,000 gallons = .49 ac.ft. |
| Industrial | None. |
| Secondary Outdoor | Nordic Valley G.C. - 139.0 ac-ft |

Max. reliable source capacity = (305 gpm)(.8)(60 m/hr)(24 hr/dy)(365 dy/yr) = 128,246,400 gallons = 393.59 ac.ft.

IX. Pineview West Water Company

| | |
|--------------------|---|
| Population | 40 |
| No. of Connections | 13 residential. |
| Water Use | (780,000 gallons = 2.39 ac.ft.) is completely based on data supplied by the water company. Secondary water is supplied by the company to all connections. |
| Potable Indoor | 780,000 gallons = 2.39 ac.ft. |
| Potable Outdoor | Commercial = Industrial = None. |
| Secondary Outdoor | 3,177,525 gallons = 9.75 ac.ft. |

Max. reliable source capacity = (25 gpm)(.8)(60 m/hr)(24 hr/dy)(365 dy/yr) = 10,512,000 gallons = 32.26 ac.ft.

X. Spring Mountain

| | |
|--------------------|--|
| Population | 100 (estimated). |
| No. of connections | 30 residential. Water use is not metered in any way. Total and separate water use is estimated by DWR based on population and acreage information supplied by the company. Secondary water is available to 40% of the company. |
| Potable Indoor | 4,015,000 gallons = 12.32 ac.ft. |
| Potable Outdoor | 1,759,860 gallons = 5.40 ac.ft. |
| Commercial | None. |

| | |
|------------|---------------------------------|
| Industrial | None. |
| Secondary | 1,173,240 gallons = 3.60 ac.ft. |

Max. reliable source capacity = $(50 \text{ gpm})(60 \text{ m/hr})(24 \text{ hr/dy})(365 \text{ dy/yr}) = 26,280,000 \text{ gallons} = 80.65 \text{ ac.ft.}$

XI. Willow Creek Subdivision

| | |
|--------------------|--|
| Population | 45 |
| No. of Connections | 9 residential. System has individual meters, but they are not read. Water use is estimated by DWR based on population and acreage information supplied by the company. Secondary water is not available. |
| Potable Indoor | 1,806,750 gallons = 5.54 ac.ft. |
| Potable Outdoor | 879,930 gallons = 2.70 ac.ft. |
| Commercial | None. |
| Industrial | None. |

Max. reliable source capacity is estimated by multiplying the assumed usage by the peaking factor. $(8.24 \text{ acft})(2.1978) = 18.11 \text{ ac.ft./yr.}$ No estimate of the company's well output could be found.

XII. Wolf Creek Country Club

| | |
|--------------------|---|
| Population | 478 (The manager estimated the population at 200, but this would be less than 1 person per connection, which is not realistic. Use 2.6 people per full time connection = $(184)(2.6) = 478$.) |
| No. of Connections | 231 (1 commercial, 22 residential, 208 condos). System has master meters, but no individual meters. Water use is estimated by DWR based on population and acreage information provided by the company. The company has had a large leak for several years which was just fixed within the last few months. As a result, the overall use figures provided by the company are very high when compared to the population. Most of the condos are permanent residences (162), with the remainder (46) being time share or nightly rentals. Secondary water is available to all condos, the golf course, and 1/2 of the homes. Total acreage irrigated with secondary water estimated at 300 acres by the water company. |
| Potable Indoor | 13,822,550 gallons = 42.42 ac.ft. |
| Potable Outdoor | 5,376,344 gallons = 16.50 ac.ft. |
| Commercial | 280,000 gallons = .86 ac.ft. |
| Industrial | None. |
| Secondary | Estimate 300 ac $(1.6\text{ac-ft/ac}) = 480.0 \text{ ac-ft}$ (Wolf Creek G. C. - 280.0 ac-ft) |

Max. reliable source capacity = $[(20 \text{ gpm} + (400 \text{ gpm} * .8))(60 \text{ m/hr})(24 \text{ hr/dy})(365 \text{ dy/yr}) = 178,704,000 \text{ gallons} = 548.44 \text{ ac.ft.}$

Table C-2. Ogden Valley Public Non-Community Systems Descriptions, Assumptions and Calculations.

I. Abbey of Holy Trinity

Population 50. The Abbey has 30 full time monks, and normally 20 visitors for a total of 50 people. The system manager states that the average water use is 7000 GPM for culinary use. Source of potable water, Bennets Spring, is shared with Huntsville.

Potable Indoor 2,555,000 gallons = 7.84 ac.ft.
 Potable Outdoor None.
 Commercial None.
 Industrial None.

Total water use is based on 7,000 GPD average. The company also uses secondary water for stockwatering, but did not have any idea of quantity. Maximum reliable source capacity = $(30 \text{ gpm})(60 \text{ m/hr})(24 \text{ hr/dy})(365 \text{ d/yr}) = 15,768,000 \text{ gallons} = 48.39 \text{ ac.ft.}$

II. Casey Acres - American Legion

This is essentially a bar, open only in the evenings. Usage is estimated to be 120,000 gallons/year. Water is used indoors only. 120,000 gallons = .37 ac.ft.

III. Anderson Cove Campground

This facility is a Forest Service campground with 68 campsites, and is connected to the Huntsville town water system spillage. Three couples live at the campground for 3 months each year, and 10 acres of grass are irrigated with secondary water. Forest Service estimates 20,300 visitors per season.

Part-time residents = $(6 \text{ people})(5 \text{ months})(30 \text{ dy/m})(45 \text{ gpd}) = 40,500 \text{ gallons}$
 $(20,300 \text{ people})(3 \text{ dy/visit})(10 \text{ gpd}) = 609,000 \text{ gallons. Total} = 649,500 \text{ gallons} = 1.99 \text{ ac.ft.}$

IV. Camp Atoka

This facility consists of a lodge capable of holding 100 people, for day use only. Water is provided by an unmetered well. The facility is open from May-September, and is available on a reservation basis only. No grass is irrigated. Assume 50 people/day from June - August, and 25 people/day for the other 2 months, with 10 gpd water usage.

$(50 \text{ people/dy})(10 \text{ gpd})(90 \text{ dy}) = 45,000 \text{ gallons}$
 $(25 \text{ people/dy})(10 \text{ gpd})(60 \text{ dy}) = 15,000 \text{ gallons. Total} = 45,000 \text{ gallons} = .14 \text{ ac.ft.}$

V. Camp Kiesel & Browning

These facilities are Boy Scout camps, open year round. Usage is 250 people/day from June-August, then 50 people for weekend use the remainder of the year. Total irrigated grass for the 2 camps is 1 acre. No secondary water is available. Showers and flush toilets are present at both camps.

$(250 \text{ people/dy})(90 \text{ dy})(45 \text{ gpd}) = 1,012,500 \text{ gallons}$
 $(50 \text{ people/dy})(9 \text{ mo})(8 \text{ dy/mo})(45 \text{ gpd}) = 162,000 \text{ gallons}$
 $(1 \text{ ac})(3 \text{ acft/yr}) = 977,517 \text{ gallons} = 3 \text{ ac.ft. Total} = 2,152,017 \text{ gallons} = 6.60 \text{ ac.ft.}$

VI. Camp Utaba

This is a private camp located near North Fork Park, owned by the American Baptists of Utah. The facility consists of a lodge with dining hall, kitchen, and conference room, and 19 cabins with a total capacity of 180 for overnight use. There are also 6 camper sites with full hookups. No areas of grass are maintained. Total use last year was 6900 camper days.

$$(6,900)(45 \text{ gpd}) = 310,500 \text{ gallons} = .95 \text{ ac.ft.}$$

VII. Camp Valley View Stake

This area is owned by the LDS church, and is only open from May-September. The camp is a day use area only, with flush toilets and culinary water, but no total usage data is kept. Assume 5 months of use, with 40 people per day, at 40 gpd.

$$(5 \text{ mo})(30 \text{ dy/mo})(40 \text{ gpd})(40 \text{ people/dy}) = 240,000 \text{ gallons} = .74 \text{ ac.ft.}$$

VIII. Causey Estates

This is a summer cabin community, consisting of 70 total connections. The area is open from approximately May-October. Water is provided by a spring, but no measurement of flow is made. Assume the cabins used weekends only at 75% occupancy, and 120 gallons per day usage per cabin. This estimate is based on information provided by the system manager.

$$(70 \text{ cabins})(120 \text{ gpd})(6 \text{ mo})(8 \text{ dy/mo})(.75) = 302,400 \text{ gallons} = .93 \text{ ac.ft.}$$

IX. Chris Trading Post

This is a small commercial facility consisting of a gas station, restaurant, garage, trading post, and snowmobile shop. In addition, the well serves as the water supply for 5 residences, with a total population of 10 people. Water is not metered. Secondary water is used to irrigate approximately 2 acres of grass.

$$\text{Potable Indoor}(10 \text{ people})(110 \text{ gpd})(365 \text{ dy/yr}) = 401,500 \text{ gallons} = 1.23 \text{ ac.ft.}$$

Potable Outdoor None.

$$\text{Commercial} \quad (12 \text{ mo})(30,000 \text{ gal/mo}) = 360,000 \text{ gallons} = 1.10 \text{ ac.ft.}$$

Industrial None.

$$\text{Secondary} \quad (2 \text{ ac})(3 \text{ acft/yr}) = 6 \text{ ac.ft.} = 1,955,034 \text{ gallons}$$

$$\text{Total potable} 761,500 \text{ gallons} = 2.34 \text{ ac.ft.}$$

X. Eagle Family Meadows

This facility consists of a lodge and 47 trailer hookups. The area is open year round, but no usage figures are available. Water used is not metered. No grass is maintained at the site. Flush toilets are present, but no shower facilities. No secondary water is used. Assume 75% occupancy for the summer, and 10% during the winter, with 3 people per hookup.

$$\text{Summer} = (47 \text{ hookups})(.75)(180 \text{ dy/yr})(3 \text{ people/site})(40 \text{ gpd}) = 761,400 \text{ gallons} = 2.34 \text{ ac.ft.}$$

$$\text{Winter} = (47 \text{ hookups})(.1)(185 \text{ dy/yr})(3 \text{ people/site})(40 \text{ gpd}) = 104,340 \text{ gallons} = .32 \text{ ac.ft.}$$

$$\text{Total} = 865,740 \text{ gallon} = 2.66 \text{ ac.ft.}$$

XI. Jackson Fork Inn

This facility consists of a restaurant and 8 unit inn. In addition, 3 people live at the site full time. Water is not metered. Secondary water is used to irrigate 2 acres of lawn. Assume 50% occupancy for the inn at 2 people per room, and 20,000 gallons per month for the restaurant.

$$\text{Residential} = (3 \text{ people})(110 \text{ gpd})(365 \text{ dy/yr}) = 120,450 \text{ gallons} = .37 \text{ ac.ft.}$$

$$\text{Inn} = (8 \text{ rm})(.5)(40 \text{ gpd})(2 \text{ people})(365 \text{ dy/yr}) = 116,800 \text{ gallons} = .36 \text{ ac.ft.}$$

$$\text{Restaurant} = (12)(20,000) = 240,000 \text{ gallons} = .74 \text{ ac.ft.}$$

$$\text{Total Commercial} = 356,800 \text{ gallons} = 1.10 \text{ ac.ft}$$

$$\text{Secondary} = (2 \text{ ac})(3 \text{ acft/yr}) = 6 \text{ ac.ft.} = 1,955,034 \text{ gallons}$$

XII. Jefferson Hunt Campground

The campground consists of 29 camping sites with 4 spigots. Two people live at the campground from 6/1 through 8/30. Water is not metered. No grass is irrigated. Neither flush toilets nor shower facilities are present. The Forest Service estimated the number of visitors for one season at 8,400. Assume 3 days per visitor, and 10 gpd water use.

$(2 \text{ people})(92 \text{ dy})(30 \text{ gpd}) = 5,520$
 $(8,400 \text{ people})(3 \text{ dy})(10 \text{ gpd}) = 252,000$ gallons. Total = 257,520 gallons = .79 ac.ft.

XIII. North Fork Learning Center

Facility is owned by Weber School District and consists of a lodge with dormitories for 80, showers, drinking fountains and restrooms. The facility is located within North Fork Park. It is open year round, and school year use = 4,000 day use and 2,300 overnight use. The area is used for classes and other activities during the summer. Approximate usage = 40 people(5 days/wk)(6 weeks) = 1,200 overnight use days. Assume 40 gpd for day visitors, and 45 gpd for overnight use.

$(4,000)(40 \text{ gpd}) = 160,000$ gallons
 $(2,300)(45 \text{ gpd}) = 103,500$ gallons
 $(1,200)(45 \text{ gpd}) = 54,000$ gallons. Total = 317,500 gallons = .97 ac.ft.

XIV. North Fork Park

This facility consists of a park of about 2,500 acres, as well as 86 camp sites. Spigots are provided at each campsite, and flush toilets are also present. No buildings or showers are present. Water use is for drinking and flush toilets only. Water usage is estimated by the supplier at 2,500,000 gallons per year.

2,500,000 gallons = 7.67 ac.ft.

XV. Ogden Pineview Yacht Club

The area consists of a small boathouse for the use of people keeping their boats at the facility. It is open from May through September. Water is not metered, but total usage per year is estimated at 33,000 gallons by the facility manager. The facility is used primarily on weekends. Approximately .33 acres are irrigated for grass. Assuming 50 people per day, weekends only, for the 5 month season.

$(50 \text{ people})(8 \text{ dy/mo})(5 \text{ mo})(10 \text{ gpd}) = 20,000$ gallons
 $(.33)(3) = 1$ ac. ft. = 325,839 gallons. This is way above estimate by manager. Use 1/2 of this amount. Total use = 20,000 + 162,000 = 182,000 gallons = .56 ac.ft.

XVI. Pine View Summer Homes

This is a summer cabin development consisting of 44 connections. No lawns are maintained with system water. Cabins are open approximately 6 months of the year. Only about 10 cabins are used on a regular basis. Assume 20 cabins are used, weekends only, 120 gpd per cabin. $(20 \text{ cabins})(4 \text{ wknd/mo})(2 \text{ dy/wk})(6 \text{ mo})(120 \text{ gpd}) = 115,200$ gallons = .35 ac.ft. XVII. Powder Mountain

This is a commercial ski area consisting of a lodge, restaurant, and 57 condos. There are 2 year-round connections serving a total of 5 people. No grass is maintained at the area. Assume 4 months of condo usage with 75% occupancy and 120 gpd per condo.

Residential: $(5)(110)(365) = 200,750$ gallons = .62 ac.ft.

Condos: $(57)(120)(.75)(120) = 615,600$ gallons.

Total = 815,600 gallons = 2.50 ac.ft.

Commercial - Restaurant: $(30,000)(4) = 120,000$ gallons.

Lodge: $(20,000)(4) = 80,000$ gallons.

Total = 0.6 ac-ft.

XVIII. Red Rock Cafe and Outfitters

Facility consists of a 36 seat restaurant, outfitter, and also provides year round residence for 4 people. Water is not metered. No grass is maintained.

Residence = (4)(110)(365) = 160,600 gallons = .49 ac.ft.
Restaurant = 12(10,000) = 120,000 gallons.
Outfitter = 12(10,000) = 120,000 gallons.
Total Commercial = 240,00 gallons = .74 ac.ft.

XIX. Snow Basin Ski Area

Facility consists of lodge, restaurant, and maintenance facilities. Water was not metered prior to April of 1993. Water usage was estimated by extrapolating 1993 data and assuming that 1992 usage was similar. No permanent residences are served by the system. Approximately .018 acres are irrigated to grow grass, but this water is included in the overall usage. This would amount to only 17,500 gallons for the year.

Lodge/Restaurant/Etc. = 1,207,094 gallons
Maintenance Shop = 36,500 gallons
Total = 1,243,594 gallons = 3.82 ac.ft.

XX. South Fork Complex

This complex consists of 7 separate campgrounds containing a total of 135 family sites and 3 group sites. Two couples live in the campgrounds all summer, and the campgrounds are open approximately 6 months each year. Annual number of visitors estimated at 41,300 by Forest Service. Assume 3 day stay per visitor, 10 gpd water use for short term visitors and 30 gpd for resident couples. Neither flush toilets nor showers are provided.

(4 people)(90 days)(30 gpd) = 10,800 gallons(41,300 people)(3 days)(10 gpd) = 1,239,000 gallons. Total = 1,249,800 gallons = 3.84 ac.ft.

XXI. Sunridge Subdivision Water

This is a summer home community located NW of Causey Reservoir. At the present time there are 64 connections. The area is open approximately 6 months each year. Assume 75% occupancy for the season, weekend use only, and 120 gpd per cabin. No lawns are irrigated with the water.

(64 cabins)(.75)(6 months)(8 dy/mo)(120 gpd) = 276,480 gallons. = .85 ac.ft.

XXII. Weber County Memorial Park

This area consists of a park, with 3 group sites and 15 individual camp sites. No estimate of usage could be provided by the park manager. Assume a 6 month season, with 80% occupancy during the summer, and 50% during the other 3 months. Assume 3 people per individual site and 10 per group site, with 40 gpd per person water usage. Flush toilets and culinary water are provided, but no showers.

(15 sites)(3 people)(40 gpd)(90 dy)(.8) = 129,600 gallons(15 sites)(3 people)(40 gpd)(90 dy)(.5) = 81,000 gallons(3 sites)(10 people)(40 gpd)(90 dy)(.8) = 86,400 gallons(3 sites)(10 people)(40 gpd)(90 dy)(.5) = 54,000 gallons. Total usage = 351,000 gallons = 1.08 ac.ft.

APPENDIX D
WASATCH FRONT WATER DEMAND MODEL
1992 RUN

 ***** WFMSM VS.1 *****

PRICE FACTOR= 1.00000
 INDOOR CONSERVATION? **** N
 OUTDOOR CONSERVATION? **** N
 MULTI-FAMILY/SINGLE FAMILY SHIFT? **** N 0.000000 %
 UPDATED PERSONS PER HOUSEHOLD? **** N

10/13/95 09:12:34.56

1992 Report for climatcal condition :
 Total Summer Rain = 3.76 inches (10.0%)
 Average Summer Temperature = 67.39 degree (90.0%)

 * 1992 Demand Forecast for WEBER/DAVIS COUNTY (Acre-ft) *

| City | Popu. | Residential | | | Ind/Comm | Res. Plus Ind/Comm | Unmetered Public use & Loss | Total Non-Ag Demand | Agriculture | Dual | Grand Total |
|-------------------|---------|-------------|--------|--------|----------|--------------------|-----------------------------|---------------------|-------------|---------|-------------|
| | | Summer | Winter | Total | | | | | | | |
| Bountiful | 36404 | 1831. | 1333. | 3164. | 762. | 3926. | 707. | 4633. | 5880. | 6733. | 17246. |
| Centerville | 13510 | 671. | 539. | 1210. | 327. | 1537. | 0. | 1537. | 386. | 5817. | 7740. |
| Clearfield | 13961 | 2051. | 421. | 2472. | 973. | 3444. | 1309. | 4753. | 6227. | 0. | 10980. |
| Clinton | 7952 | 1266. | 229. | 1495. | 88. | 1583. | 111. | 1694. | 8911. | 0. | 10605. |
| Farmington | 10851 | 484. | 412. | 896. | 277. | 1173. | 0. | 1173. | 754. | 12220. | 14147. |
| Fruit Height | 4854 | 206. | 176. | 382. | 17. | 399. | 92. | 491. | 370. | 4431. | 5292. |
| Kaysville | * 13541 | 442. | 375. | 817. | 652. | 1468. | 250. | 1718. | 3301. | 7317. | 12336. |
| Layton | 46758 | 4302. | 1680. | 5982. | 1258. | 7240. | 1520. | 8761. | 4828. | 17287. | 30876. |
| North Salt Lake | 8667 | 862. | 282. | 1144. | 910. | 2054. | 596. | 2650. | 1. | 3110. | 5761. |
| South Weber | 3788 | 438. | 118. | 556. | 10. | 567. | 221. | 788. | 1194. | 1396. | 3378. |
| Sunset | 5816 | 987. | 174. | 1161. | 208. | 1369. | 315. | 1684. | 322. | 0. | 2006. |
| Syracuse | * 8168 | 335. | 286. | 621. | 57. | 679. | 156. | 835. | 23650. | 2573. | 27058. |
| South Davis WID | 4825 | 217. | 183. | 400. | 42. | 442. | 86. | 526. | 972. | 1260. | 2758. |
| West Bountiful | 4588 | 512. | 149. | 661. | 217. | 878. | 202. | 1080. | 393. | 1188. | 2661. |
| West Point | * 3830 | 819. | 110. | 929. | 45. | 974. | 224. | 1199. | 5099. | 0. | 6298. |
| Woods Cross | 6182 | 654. | 209. | 863. | 417. | 1280. | 320. | 1600. | 80. | 5284. | 6964. |
| Bona Vista W.I.D. | 14873 | 1230. | 454. | 1684. | 1078. | 2763. | 276. | 3039. | 39196. | 4423. | 46658. |
| Hooper W.I.D. | 8106 | 1019. | 243. | 1262. | 36. | 1298. | 298. | 1596. | 25567. | 0. | 27163. |
| North Ogden | 12766 | 790. | 422. | 1212. | 71. | 1283. | 295. | 1578. | 1150. | 6817. | 9545. |
| Ogden | 59879 | 5273. | 2415. | 7688. | 6271. | 13959. | 4467. | 18426. | 2190. | 10683. | 31299. |
| Pleasant View | 4062 | 493. | 134. | 627. | 52. | 679. | 156. | 834. | 5449. | 2720. | 9003. |
| Riverdale | * 6630 | 1222. | 240. | 1462. | 692. | 2153. | 409. | 2562. | 0. | 0. | 2562. |
| Roy | 24216 | 1155. | 905. | 2060. | 396. | 2456. | 688. | 3143. | 5683. | 9012. | 17838. |
| South Ogden | 10229 | 645. | 520. | 1165. | 148. | 1313. | 302. | 1615. | 0. | 3922. | 5537. |
| Taylor West Weber | * 6626 | 1756. | 239. | 1995. | 58. | 2053. | 472. | 2525. | 40206. | 0. | 42731. |
| Unitah | * 888 | 149. | 36. | 185. | 59. | 244. | 56. | 300. | 704. | 0. | 1004. |
| Unitah Highland | * 4219 | 161. | 111. | 272. | 12. | 285. | 65. | 350. | 790. | 1531. | 2671. |
| Washington Terr. | * 8192 | 436. | 371. | 807. | 179. | 986. | 178. | 1164. | 637. | 3543. | 5344. |
| Hill Field Base | * 5148 | 0. | 0. | 0. | 5154. | 5154. | 0. | 5154. | 0. | 0. | 5154. |
| Total | 359329 | 30406. | 12766. | 43172. | 20467. | 63639. | 13769. | 77407. | 183940. | 111267. | 372614. |

Note :
 1.: * indicate Some of the current zoning condition in city can not contain the project population.
 Please Check the detail city report !
 2.: Taylor WID extended map includes the public water system and a large area of rural residence that are self-supplied.
 The current self-supplied water is estimated to be 1240 AF. Future water demand is assumed to be met from the public water supply system.
 There are also self-supplied rural residence in other western communities but these quantities are relatively small.

 * Allocation summary for entities in Weber Davis County:1992 *
 * *
 * Total Summer Rain = 3.76 inches (10.0%) *
 * Average Summer Temperature = 67.39 degree (90.0%) *
 * Surface stream drought probability (50%) *
 * *****

| CTY | SUMMER (AC-FT) | | | | | WINTER (AC-FT) | | | | | TOTAL | | | | |
|------|-----------------|-------------|---------|-----------|---------|-----------------|-------------|--------|-----------|---------|-----------------|-------------|---------|-----------|---------|
| | From Own Source | Whole Saler | Demand | Delivered | Deficit | From Own Source | Whole Saler | Demand | Delivered | Deficit | From Own Source | Whole Saler | Demand | Delivered | Deficit |
| BNT | 1963.9 | 590.0 | 2553.9 | 2553.9 | 0.0 | 1670.0 | 410.0 | 2080.0 | 2080.0 | 0.0 | 3633.9 | 1000.0 | 4633.9 | 4633.9 | 0.0 |
| CTV | 389.6 | 380.0 | 769.6 | 769.6 | 0.0 | 648.0 | 120.0 | 768.0 | 768.0 | 0.0 | 1037.6 | 500.0 | 1537.6 | 1537.6 | 0.0 |
| CLF | 407.7 | 2938.0 | 3345.7 | 3345.7 | 0.0 | 88.0 | 1320.0 | 1408.0 | 1408.0 | 0.0 | 495.7 | 4258.0 | 4753.7 | 4753.7 | 0.0 |
| CLT | 367.5 | 1023.0 | 1390.5 | 1390.5 | 0.0 | 13.0 | 288.0 | 301.0 | 301.0 | 0.0 | 380.5 | 1311.0 | 1691.5 | 1691.5 | 0.0 |
| FMT | 360.3 | 250.0 | 610.3 | 610.3 | 0.0 | 313.0 | 251.0 | 564.0 | 564.0 | 0.0 | 673.3 | 501.0 | 1174.3 | 1174.3 | 0.0 |
| FRH | 101.0 | 158.0 | 259.0 | 259.0 | 0.0 | 139.0 | 92.0 | 231.0 | 231.0 | 0.0 | 240.0 | 250.0 | 490.0 | 490.0 | 0.0 |
| KAY | 0.0 | 772.7 | 772.7 | 772.7 | 0.0 | 0.0 | 867.0 | 942.0 | 867.0 | 75.0 | 0.0 | 1639.7 | 1714.7 | 1639.7 | 75.0 |
| LYN | 2366.0 | 3124.0 | 5733.0 | 5490.0 | 243.0 | 2282.1 | 595.0 | 3030.0 | 2877.1 | 152.9 | 4648.1 | 3719.0 | 8763.0 | 8367.1 | 395.9 |
| NSL | 808.9 | 65.0 | 1678.2 | 873.9 | 804.3 | 809.8 | 65.0 | 972.0 | 874.8 | 97.2 | 1618.7 | 130.0 | 2650.2 | 1748.7 | 901.5 |
| SMB | 93.5 | 123.0 | 612.5 | 216.5 | 395.9 | 93.5 | 79.0 | 174.0 | 172.5 | 1.5 | 187.1 | 202.0 | 786.5 | 389.1 | 397.4 |
| SST | 233.3 | 1050.0 | 1283.3 | 1283.3 | 0.0 | 53.0 | 350.0 | 403.0 | 403.0 | 0.0 | 286.3 | 1400.0 | 1686.3 | 1686.3 | 0.0 |
| SYR | 74.3 | 362.0 | 436.3 | 436.3 | 0.0 | 35.0 | 363.0 | 398.0 | 398.0 | 0.0 | 109.3 | 725.0 | 834.3 | 834.3 | 0.0 |
| SDW | 86.3 | 195.0 | 281.3 | 281.3 | 0.0 | 79.0 | 165.0 | 244.0 | 244.0 | 0.0 | 165.3 | 360.0 | 525.3 | 525.3 | 0.0 |
| WBN | 122.2 | 275.0 | 760.0 | 397.2 | 362.8 | 122.7 | 175.0 | 319.0 | 297.7 | 21.3 | 244.9 | 450.0 | 1079.0 | 694.9 | 384.1 |
| WPT | 622.6 | 407.0 | 1029.6 | 1029.6 | 0.0 | 25.0 | 143.0 | 168.0 | 168.0 | 0.0 | 647.6 | 550.0 | 1197.6 | 1197.6 | 0.0 |
| WDC | 1004.7 | 61.0 | 1065.7 | 1065.7 | 0.0 | 496.0 | 39.0 | 535.0 | 535.0 | 0.0 | 1500.7 | 100.0 | 1600.7 | 1600.7 | 0.0 |
| BVD | 388.2 | 1178.5 | 1566.7 | 1566.7 | 0.0 | 363.8 | 1106.2 | 1470.0 | 1470.0 | 0.0 | 752.0 | 2284.7 | 3036.7 | 3036.7 | 0.0 |
| HPR | 1264.3 | 2.0 | 1266.3 | 1266.3 | 0.0 | 327.0 | 3.0 | 330.0 | 330.0 | 0.0 | 1591.3 | 5.0 | 1596.3 | 1596.3 | 0.0 |
| NOG | 996.2 | 0.0 | 1001.0 | 996.2 | 4.7 | 577.0 | 0.0 | 577.0 | 577.0 | 0.0 | 1573.2 | 0.0 | 1573.2 | 1573.2 | 4.7 |
| OGD | 6868.5 | 3640.0 | 10508.5 | 10508.5 | 0.0 | 5058.0 | 2860.0 | 7918.0 | 7918.0 | 0.0 | 11926.5 | 6500.0 | 18426.5 | 18426.5 | 0.0 |
| PLV | 472.4 | 0.0 | 623.1 | 472.4 | 150.6 | 210.0 | 0.0 | 210.0 | 210.0 | 0.0 | 682.4 | 0.0 | 833.1 | 682.4 | 150.6 |
| RVD | 1138.8 | 450.0 | 1857.6 | 1588.8 | 268.8 | 337.0 | 369.0 | 706.0 | 706.0 | 0.0 | 1475.8 | 819.0 | 2563.6 | 2294.8 | 268.8 |
| ROY | 0.0 | 1696.2 | 1696.2 | 1696.2 | 0.0 | 197.0 | 1248.0 | 1445.0 | 1445.0 | 0.0 | 197.0 | 2944.2 | 3141.2 | 3141.2 | 0.0 |
| SOG | 0.0 | 392.0 | 869.3 | 392.0 | 477.3 | 0.0 | 393.0 | 747.0 | 393.0 | 354.0 | 0.0 | 785.0 | 1616.3 | 785.0 | 831.3 |
| TW | 530.6 | 146.0 | 2181.3 | 676.6 | 1504.7 | 149.0 | 104.0 | 342.0 | 253.0 | 89.0 | 679.6 | 250.0 | 2523.3 | 929.6 | 1593.7 |
| UNT | 71.4 | 108.0 | 202.7 | 179.4 | 23.3 | 0.0 | 97.0 | 97.0 | 97.0 | 0.0 | 71.4 | 205.0 | 299.7 | 276.4 | 23.3 |
| UNH | 80.0 | 128.0 | 208.0 | 208.0 | 0.0 | 35.0 | 109.0 | 144.0 | 144.0 | 0.0 | 115.0 | 237.0 | 352.0 | 352.0 | 0.0 |
| WST | 59.7 | 540.0 | 599.7 | 599.7 | 0.0 | 105.0 | 460.0 | 565.0 | 565.0 | 0.0 | 164.7 | 1000.0 | 1164.7 | 1164.7 | 0.0 |
| HFD | 1676.7 | 977.0 | 2653.7 | 2653.7 | 0.0 | 2459.0 | 41.0 | 2500.0 | 2500.0 | 0.0 | 4155.7 | 1018.0 | 5153.7 | 5153.7 | 0.0 |
| NOG | | | | | | | | | | | | | | | |
| +PLV | 1469. | 0. | 1624. | 1469. | 155. | 787. | 0. | 787. | 787. | 0. | 2256. | 0. | 2411. | 2256. | 155. |
| WBWC | 21080. | 21031. | 46192. | 42111. | 4080. | 15898. | 12112. | 28801. | 28010. | 791. | 36978. | 33144. | 74993. | 70122. | 4871. |
| SUM | 22549. | 21031. | 47816. | 43580. | 4235. | 16685. | 12112. | 29588. | 28797. | 791. | 39234. | 33144. | 77404. | 72377. | 5026. |

Note: Deficits in city allocation may come from inadequate hydraulic equipments, such as valves or pumps. All the deficits and the demands to the whole saler will be collected and allocated latter for each whole saler.

 * Allocation summary for entities in Weber Davis County:1992 *
 * * * * *
 * Total Summer Rain = 3.76 inches (10.0%) *
 * Average Summer Temperature = 67.39 degree (90.0%) *
 * Surface stream drought probability (50%) *
 * * * * *

| CTY | SUMMER (AC-FT) | | | | | WINTER (AC-FT) | | | | | SURPLUS | | |
|------|-----------------|--------------------|-----------|---------|--------|-----------------|--------------------|-----------|---------|-------|---------|--------|--------|
| | From Own Source | Whole Saler Demand | Delivered | Deficit | | From Own Source | Whole Saler Demand | Delivered | Deficit | | Summer | Winter | Net |
| BNT | 1963.9 | 590.0 | 2553.9 | 2553.9 | 0.0 | 1670.0 | 410.0 | 2080.0 | 2080.0 | 0.0 | 4046. | 2172. | 4046. |
| CTV | 389.6 | 380.0 | 769.6 | 769.6 | 0.0 | 648.0 | 120.0 | 768.0 | 768.0 | 0.0 | 1226. | 485. | 1226. |
| CLF | 407.7 | 2938.0 | 3345.7 | 3345.7 | 0.0 | 88.0 | 1320.0 | 1408.0 | 1408.0 | 0.0 | 4255. | 2077. | 4255. |
| CLT | 367.5 | 1023.0 | 1390.5 | 1390.5 | 0.0 | 13.0 | 288.0 | 301.0 | 301.0 | 0.0 | 623. | 489. | 623. |
| FMT | 360.3 | 250.0 | 610.3 | 610.3 | 0.0 | 313.0 | 251.0 | 564.0 | 564.0 | 0.0 | 822. | 435. | 822. |
| FRH | 101.0 | 158.0 | 259.0 | 259.0 | 0.0 | 139.0 | 92.0 | 231.0 | 231.0 | 0.0 | 195. | 79. | 195. |
| KAY | 0.0 | 772.7 | 772.7 | 772.7 | 0.0 | 0.0 | 867.0 | 942.0 | 867.0 | 75.0 | 0. | 0. | 0. |
| LYN | 2366.0 | 3124.0 | 5733.0 | 5490.0 | 243.0 | 2282.1 | 595.0 | 3030.0 | 2877.1 | 152.9 | 209. | 147. | 209. |
| NSL | 808.9 | 65.0 | 1678.2 | 873.9 | 804.3 | 809.8 | 65.0 | 972.0 | 874.8 | 97.2 | 0. | 0. | 0. |
| SWB | 93.5 | 123.0 | 612.5 | 216.5 | 395.9 | 93.5 | 79.0 | 174.0 | 172.5 | 1.5 | 0. | 0. | 0. |
| SST | 233.3 | 1050.0 | 1283.3 | 1283.3 | 0.0 | 53.0 | 350.0 | 403.0 | 403.0 | 0.0 | 471. | 326. | 471. |
| SYR | 74.3 | 362.0 | 436.3 | 436.3 | 0.0 | 35.0 | 363.0 | 398.0 | 398.0 | 0.0 | 503. | 271. | 503. |
| SDW | 86.3 | 195.0 | 281.3 | 281.3 | 0.0 | 79.0 | 165.0 | 244.0 | 244.0 | 0.0 | 853. | 398. | 854. |
| MBN | 122.2 | 275.0 | 760.0 | 397.2 | 362.8 | 122.7 | 175.0 | 319.0 | 297.7 | 21.3 | 0. | 0. | 0. |
| WPT | 622.6 | 407.0 | 1029.6 | 1029.6 | 0.0 | 25.0 | 143.0 | 168.0 | 168.0 | 0.0 | 125. | 362. | 125. |
| WDC | 1004.7 | 61.0 | 1065.7 | 1065.7 | 0.0 | 496.0 | 39.0 | 535.0 | 535.0 | 0.0 | 526. | 518. | 526. |
| BVD | 388.2 | 1178.5 | 1566.7 | 1566.7 | 0.0 | 363.8 | 1106.2 | 1470.0 | 1470.0 | 0.0 | 0. | 0. | 0. |
| HPR | 1264.3 | 2.0 | 1266.3 | 1266.3 | 0.0 | 327.0 | 3.0 | 330.0 | 330.0 | 0.0 | 450. | 694. | 450. |
| NOG | 996.2 | 0.0 | 1001.0 | 996.2 | 4.7 | 577.0 | 0.0 | 577.0 | 577.0 | 0.0 | 452. | 437. | 452. |
| OGD | 6868.5 | 3640.0 | 10508.5 | 10508.5 | 0.0 | 5058.0 | 2860.0 | 7918.0 | 7918.0 | 0.0 | 6717. | 3268. | 6717. |
| PLV | 472.4 | 0.0 | 623.1 | 472.4 | 150.6 | 210.0 | 0.0 | 210.0 | 210.0 | 0.0 | 0. | 131. | 0. |
| RVD | 1138.8 | 450.0 | 1857.6 | 1588.8 | 268.8 | 337.0 | 369.0 | 706.0 | 706.0 | 0.0 | 0. | 401. | 0. |
| ROY | 0.0 | 1696.2 | 1696.2 | 1696.2 | 0.0 | 197.0 | 1248.0 | 1445.0 | 1445.0 | 0.0 | 1959. | 881. | 1959. |
| SDG | 0.0 | 392.0 | 869.3 | 392.0 | 477.3 | 0.0 | 393.0 | 747.0 | 393.0 | 354.0 | 0. | 0. | 0. |
| TWV | 530.6 | 146.0 | 2181.3 | 676.6 | 1504.7 | 149.0 | 104.0 | 342.0 | 253.0 | 89.0 | 0. | 191. | 0. |
| UNT | 71.4 | 108.0 | 202.7 | 179.4 | 23.3 | 0.0 | 97.0 | 97.0 | 97.0 | 0.0 | 0. | 36. | 0. |
| UNH | 80.0 | 128.0 | 208.0 | 208.0 | 0.0 | 35.0 | 109.0 | 144.0 | 144.0 | 0.0 | 292. | 169. | 292. |
| WST | 59.7 | 540.0 | 599.7 | 599.7 | 0.0 | 105.0 | 460.0 | 565.0 | 565.0 | 0.0 | 639. | 297. | 639. |
| HFD | 1676.7 | 977.0 | 2653.7 | 2653.7 | 0.0 | 2459.0 | 41.0 | 2500.0 | 2500.0 | 0.0 | 846. | 32. | 846. |
| NOG | | | | | | | | | | | | | |
| +PLV | 1469. | 0. | 1624. | 1469. | 155. | 787. | 0. | 787. | 787. | 0. | 452. | 568. | 452. |
| WBWC | 21080. | 21031. | 46192. | 42111. | 4080. | 15898. | 12112. | 28801. | 28010. | 791. | 24757. | 13728. | 24758. |
| SUM | 22549. | 21031. | 47816. | 43580. | 4235. | 16685. | 12112. | 29588. | 28797. | 791. | 25209. | 14296. | 25210. |

Note: Deficits in city allocation may come from inadequate hydraulic equipments, such as valves or pumps. All the deficits and the demands to the whole saler will be collected and allocated latter for each whole saler.

YEAR = 1992 Wholesaler exchange: NO

WINTER WATER BALANCE SUMMARY

| ENTITY | SUPPLY | | Carryover | Total (1) | DEMAND (2) | DELIVERED (3) | | SURPLUS (1)-(3) | DEFICIT (3)-(2) |
|------------|--------|--------|-----------|-----------|------------|---------------|-------|-----------------|-----------------|
| | Source | | | | | G.W. | OTR. | | |
| | G.W. | OTR. | | | | | | | |
| NOG + PLV | 1355. | 0. | 0. | 1355. | 787. | 787. | 0. | 568. | 0. |
| OTHER CTYS | 25095. | 4530. | 0. | 29625. | 28801. | 11368. | 4530. | 13727. | 12903. |
| WBWCD | 10496. | 40000. | 0. | 50496. | 12903. | 5161. | 7742. | 37593. | 0. |

SUMMER WATER BALANCE SUMMARY

| ENTITY | SUPPLY | | Carryover | Total (1) | DEMAND (2) | DELIVERED (3) | | SURPLUS (1)-(3) | DEFICIT (3)-(2) |
|------------|--------|--------|-----------|-----------|------------|---------------|--------|-----------------|-----------------|
| | Source | | | | | G.W. | OTR. | | |
| | G.W. | OTR. | | | | | | | |
| NOG + PLV | 1352. | 0. | 568. | 1921. | 1624. | 1469. | 0. | 452. | 155. |
| OTHER CTYS | 25591. | 6521. | 13727. | 45840. | 46192. | 14559. | 6521. | 24760. | 25112. |
| WBWCD | 10496. | 45000. | 38384. | 93880. | 25112. | 10045. | 15067. | 68768. | 0. |

ANNUAL COUNTY-WIDE M & I SUMMARY

| | SUPPLY | | DEMAND | DELIVERED | | SURPLUS | DEFICIT |
|------------|--------|--------|--------|-----------|--------|---------|---------|
| | G.W. | OTR. | | G.W. | OTR. | | |
| NOG + PLV | 2707. | 0. | 2411. | 2256. | 0. | 452. | 156. |
| OTHER CTYS | 50687. | 11051. | 74993. | 26652. | 10326. | 24760. | 38015. |
| Total | 53394. | 11051. | 77404. | 28908. | 10326. | 25211. | 38170. |
| WBWCD | 20992. | 85000. | 38015. | 15206. | 22809. | 67978. | 0. |

1. There is no agricultural demand in winter season.
2. A surplus and deficit may exist simultaneously:
- because of seasonal variation.
3. The WBWCD is considered as an area-wide generic supplier for potential groundwater development
4. MSC: Private wells (Domestic&Industrial)

**** 1992 Summary of Untreated Water in Weber/Davis County ****

| ENTITY | SUPPLY | DUAL | DEMAND AGR. | IND. | SURPLUS |
|---------|---------|---------|----------------|-------|---------|
| P_VIEW | 46230. | 27191. | 9764. | 0. | 9275. |
| D_Weber | 65000. | 9012. | 62738. | 0. | -6750. |
| WBWCD | 110000. | 75068. | 26302. | 5900. | 2730. |
| OTHERS | 85500. | 3136. | 85133. | 0. | -2769. |
| TOTAL | 306730. | 114407. | 183937. | 5900. | 2486. |

Note:

** All numbers shown are in Acre-Ft

P_View : Pine View Water System
D_Weber : Davis Weber Canal Company
WBWCD : Weber Basin Conservancy District
OTHERS :

 * 1992 Project Populat of 359131 *

| City | Service Zone | | | | | | Total |
|------|--------------|-------|-------|------|------|-----|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | |
| BNT | 14895 | 10243 | 8768 | 2502 | | | 36408 |
| CTV | 9832 | 3480 | | | | | 13312 |
| CLF | 10001 | 3964 | | | | | 13965 |
| CLT | 754 | 4335 | 2866 | | | | 7955 |
| FMT | 2765 | 2826 | 577 | 3352 | 1338 | | 10858 |
| FRH | 3236 | 1621 | | | | | 4857 |
| KAY | 1937 | 6453 | 2824 | 518 | 1815 | | 13547 |
| LYN | 22879 | 15130 | 8753 | | | | 46762 |
| NSL | 2015 | 4934 | 1722 | | | | 8671 |
| SWB | 3788 | | | | | | 3788 |
| SST | 5816 | | | | | | 5816 |
| SYR | 8168 | | | | | | 8168 |
| SDW | 1357 | 1015 | 1303 | 1154 | | | 4829 |
| WBN | 4589 | | | | | | 4589 |
| WPT | 2396 | 1434 | | | | | 3830 |
| WDC | 6184 | | | | | | 6184 |
| BVD | 4185 | 9307 | 1388 | | | | 14880 |
| HPR | 8107 | | | | | | 8107 |
| NOG | 2550 | 1681 | 2337 | 3108 | 2452 | 645 | 12773 |
| ODD | 21762 | 16814 | 13062 | 6066 | 2180 | | 59884 |
| PLV | 1097 | 814 | 542 | 1213 | 398 | | 4064 |
| RVD | 6633 | | | | | | 6633 |
| ROY | 2434 | 7722 | 14065 | | | | 24221 |
| SOG | 6402 | 3829 | | | | | 10231 |
| TW | 2107 | 4521 | | | | | 6628 |
| UNT | 888 | | | | | | 888 |
| UNH | 2000 | 606 | 809 | 809 | | | 4224 |
| WST | 1118 | 2545 | 4532 | | | | 8195 |
| HFD | 5149 | | | | | | 5149 |

 * 1992 Demand Forecast for Weber/Davis Coun (Acre-ft) *

| City | Popu. | Residential | | Ind/Comm | Res. Plus Ind/Com | Unmetered Public use & Loss | Total Non-Ag Demand | Agriculture | Dual | Grand Total | |
|-------------------|---------|-------------|--------|----------|-------------------|-----------------------------|---------------------|-------------|---------|-------------|---------|
| | | Summer | Winter | | | | | | | | Total |
| Bountiful | 36404 | 1726. | 1333. | 3059. | 743. | 3802. | 684. | 4487. | 5880. | 6733. | 17100. |
| Centerville | 13310 | 633. | 539. | 1172. | 320. | 1492. | 0. | 1492. | 386. | 5817. | 7695. |
| Clearfield | 13961 | 1932. | 421. | 2352. | 952. | 3304. | 1256. | 4560. | 6226. | 0. | 10786. |
| Clinton | 7952 | 1193. | 229. | 1421. | 85. | 1507. | 105. | 1612. | 8911. | 0. | 10523. |
| Farmington | 10851 | 456. | 412. | 868. | 271. | 1139. | 0. | 1139. | 753. | 12221. | 14113. |
| Fruit Height | 4854 | 194. | 175. | 369. | 17. | 387. | 89. | 475. | 370. | 4432. | 5277. |
| Kaysville | * 13541 | 415. | 375. | 791. | 638. | 1428. | 243. | 1671. | 3301. | 7318. | 12290. |
| Layton | 46758 | 4053. | 1681. | 5734. | 1234. | 6968. | 1463. | 8432. | 4828. | 17288. | 30547. |
| North Salt Lake | 8667 | 812. | 283. | 1095. | 885. | 1980. | 574. | 2554. | 1. | 3110. | 5665. |
| South Weber | 3788 | 413. | 118. | 531. | 10. | 541. | 211. | 752. | 1194. | 1396. | 3341. |
| Sunset | 5816 | 930. | 174. | 1105. | 206. | 1310. | 301. | 1612. | 322. | 0. | 1934. |
| Syracuse | * 8168 | 316. | 286. | 602. | 56. | 658. | 151. | 809. | 23650. | 2573. | 27032. |
| South Davis WID | 4825 | 204. | 183. | 387. | 41. | 428. | 81. | 509. | 972. | 1260. | 2740. |
| West Bountiful | 4588 | 482. | 149. | 631. | 211. | 842. | 194. | 1035. | 393. | 1188. | 2616. |
| West Point | * 3830 | 772. | 110. | 882. | 44. | 926. | 213. | 1138. | 5099. | 0. | 6238. |
| Woods Cross | 6182 | 616. | 209. | 825. | 407. | 1232. | 308. | 1539. | 80. | 5284. | 6904. |
| Bona Vista W.I.D. | 14873 | 1159. | 454. | 1613. | 1066. | 2679. | 268. | 2947. | 39195. | 4424. | 46566. |
| Hooper W.I.D. | 8106 | 960. | 243. | 1203. | 35. | 1238. | 285. | 1523. | 25567. | 0. | 27091. |
| North Ogden | 12766 | 744. | 422. | 1166. | 70. | 1236. | 284. | 1520. | 1149. | 6816. | 9485. |
| Ogden | 59879 | 4969. | 2415. | 7384. | 6116. | 13500. | 4320. | 17819. | 2190. | 10683. | 30692. |
| Pleasant View | 4062 | 464. | 134. | 598. | 51. | 648. | 149. | 798. | 5450. | 2720. | 8968. |
| Riverdale | * 6630 | 1151. | 240. | 1391. | 673. | 2064. | 392. | 2456. | 0. | 0. | 2456. |
| Roy | 24216 | 1087. | 905. | 1992. | 386. | 2377. | 666. | 3043. | 5603. | 9012. | 17738. |
| South Ogden | 10229 | 608. | 520. | 1128. | 145. | 1273. | 293. | 1566. | 0. | 3922. | 5488. |
| Taylor West Weber | * 6626 | 1654. | 239. | 1893. | 56. | 1949. | 448. | 2397. | 40206. | 0. | 42603. |
| Unitah | * 888 | 140. | 36. | 177. | 58. | 234. | 54. | 288. | 704. | 0. | 992. |
| Unitah Highland | 4219 | 152. | 110. | 262. | 13. | 276. | 63. | 339. | 791. | 1531. | 2661. |
| Washington Terr. | * 8192 | 411. | 371. | 781. | 176. | 957. | 172. | 1129. | 637. | 3543. | 5309. |
| Hill Field Base | * 5148 | 0. | 0. | 0. | 5000. | 5000. | 0. | 5000. | 0. | 0. | 5000. |
| Total | 359329 | 28644. | 12767. | 41411. | 19963. | 61374. | 13268. | 74642. | 183940. | 111269. | 369851. |

Note :

* Indicates some of the current zoning conditions in the city cannot contain the projected population.
 Please check the detail city report !

- Taylor W extended map includes the public water system and a large area of rural residence that are self-supplied.
- The current self-supplied water is estimated to be 1240 AF. Future water demand is assumed to be met from the public water supply system.
- There are also self-supplied rural residences in other western communities but these quantities are relatively small.
- Price increase factor set at 1.00000
- No indoor conservation (plumbing).
- No outdoor conservation (xeriscaping).
- No persons per household adjustment.

 * 1992 Untreated Water Summary for Weber/Davis Coun (Acre-ft) *

| City | Res. Dual | Ag. Dual | Ag. Canal | Total Dual | Total Ag. |
|-------------------|---------------|---------------|----------------|----------------|----------------|
| Bountiful | 6511. | 222. | 5880. | 6733. | 6102. |
| Centerville | 2823. | 2994. | 386. | 5817. | 3380. |
| Clearfield | 0. | 0. | 6226. | 0. | 6226. |
| Clinton | 0. | 0. | 8911. | 0. | 8911. |
| Farmington | 2465. | 9756. | 753. | 12221. | 10509. |
| Fruit Height | 1528. | 2904. | 370. | 4432. | 3274. |
| Kaysville | 3490. | 3828. | 3301. | 7318. | 7129. |
| Layton | 5756. | 11532. | 4828. | 17288. | 16360. |
| North Salt Lake | 602. | 2508. | 1. | 3110. | 2509. |
| South Weber | 454. | 942. | 1194. | 1396. | 2136. |
| Sunset | 0. | 0. | 322. | 0. | 322. |
| Syracuse | 2573. | 0. | 23650. | 2573. | 23650. |
| South Davis WID | 1260. | 0. | 972. | 1260. | 972. |
| West Bountiful | 390. | 798. | 393. | 1188. | 1191. |
| West Point | 0. | 0. | 5099. | 0. | 5099. |
| Woods Cross | 667. | 4617. | 80. | 5284. | 4697. |
| Bona Vista W.I.D. | 647. | 3777. | 39195. | 4424. | 42972. |
| Hooper W.I.D. | 0. | 0. | 25567. | 0. | 25567. |
| North Ogden | 4002. | 2814. | 1149. | 6816. | 3963. |
| Ogden | 7416. | 3267. | 2190. | 10683. | 5457. |
| Pleasant View | 563. | 2157. | 5450. | 2720. | 7607. |
| Riverdale | 0. | 0. | 0. | 0. | 0. |
| Roy | 6225. | 2787. | 5683. | 9012. | 8470. |
| South Ogden | 3610. | 312. | 0. | 3922. | 312. |
| Taylor West Weber | 0. | 0. | 40206. | 0. | 40206. |
| Utah | 0. | 0. | 704. | 0. | 704. |
| Utah Highland | 637. | 894. | 791. | 1531. | 1685. |
| Washington Terr. | 3138. | 405. | 637. | 3543. | 1042. |
| Hill Field Base | 0. | 0. | 0. | 0. | 0. |
| Total | 54755. | 56514. | 183940. | 111269. | 240454. |