

## Chapter 3 – Current M&I Demands

### 3.1 Introduction

This chapter presents current M&I water use information for the study area (including water for parks, golf courses, etc.). Agricultural water use is discussed in Chapter 4 as a part of the section on Projected Future Supplies. The data collected for the most recent update of the M&I Water Supplies Study (M&I Study) for the Weber River Basin has been used as a basis for this report. Some of the information considered includes data from related investigations recently completed by UDWR and the Utah Division of Water Rights.

### 3.2 Data Collection and Methodology

Each year, UDWR targets particular hydrologic basins or study areas for M&I water supply and use analysis. The Division of Water Right's water use data form sent to UDWR by the community water systems of the state is the primary tool for these analyses.

UDWR contacts the manager and/or operator(s) of each public community water system (as defined by UDDW) to schedule a data analysis meeting. During such meetings, UDWR attempts to retrieve any missing data as well as obtain an overall feeling of the supplies and demands of the water system, in case estimates are necessary. All of the community water systems for the various basins studied have cooperated and provided the necessary M&I water supply and use data.

An important 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 that is actually diverted into the distribution system from surface or subsurface sources.

The most recent M&I study for the Weber River Basin was started in May 2002 by UDWR. Data from the 2001 Municipal and Industrial Water Use Forms, distributed by the Division of Water Rights in cooperation with UDWR and UDDW, were used as a basis for the study. The data for the Snyderville Basin that is shown in this chapter was presented to local water providers in the fall of 2004 to identify significant discrepancies and ensure its accuracy.

### 3.3 M&I Water Use Classifications

M&I water use is divided into four categories: residential, commercial, institutional, and industrial. The residential category includes water used in residential homes for inside and outside uses. The commercial category includes water use for retail establishments and businesses. The institutional category includes water use for Government facilities, military facilities, schools, hospitals, churches, parks, cemeteries, golf courses, etc. The industrial category includes industrial and mining with a wide variety of water uses associated with businesses that produce a specific product.

### **3.3.1 Residential Use**

This use is associated with residential cooking, drinking water, clothes washing, personal grooming and sanitation, irrigation of lawns, gardens and landscapes, and miscellaneous inside and outside cleaning. Single family homes, apartments, duplexes, and condominiums are some examples of buildings with residential water use.

UDWR collects data from the system operator 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 indoor water use. When individual water meter readings are available, indoor water use can be estimated by looking at several individual homes' winter meter readings, totaling the water use, and dividing it by the number of households and/or residents. If this method yields an unreasonable value, then UDWR will use information from their December 2000 report of Identifying Residential Water Use. The report contains a graph that indicates the relationship of persons per household and the appropriate indoor water use in gallons per capita per day (GPCD). The person per household data is obtained from the Utah State Governor's Office of Planning and Budget. This data is retrieved for each county and used with the above-mentioned graph to obtain a GPCD value. This value is then multiplied by the community water system's customer population to yield the water system's total indoor water use.

Once indoor water use has been determined for the year, it is then subtracted from the total year's residential water use given by the system's operator. The result represents the amount of water used during the summer months for outdoor applications. This amount is then checked with the value calculated by using the average lot size within the water system's service area, percentage that is irrigated, the irrigation efficiency, and the consumptive water use for the type of landscaping in the area.

### **3.3.2 Commercial Use**

Commercial water uses are normally associated with small business operations that may include drinking water, food preparation, personal sanitation, facility cleaning and maintenance, and irrigation of facility landscapes. Retail businesses, restaurants, and hotels are some examples where commercial water use occurs.

For most systems, the system operator can separate metered commercial water use data from the total water use. In cases where this data is not available or is extremely difficult to obtain, UDWR attempts to estimate commercial water use by inventorying commercial businesses in the area and using published commercial water use estimates. These publications come from the UDDW and from reports published by the Utah State Water Laboratory. In some rural communities where there are a relatively small number of commercial connections, the businesses are individually visited by UDWR and asked about their water use.

### **3.3.3 Institutional Use**

Institutional water uses are normally associated with the general operation of various public agencies and institutions. Examples include water used for city, county, state and Federal Government facilities, parks, golf courses, schools, hospitals, churches, military facilities, fire

hydrant testing, and other municipal losses in the water system. Because this water use is rarely metered in total, the process to acquire this data is difficult. Again, the system operator is asked to provide information about city facilities such as number and size of parks, schools, churches, and golf courses. Water right duty rates for the area are used to calculate the amount of water these areas use. Also, the estimates made of leakage and testing of water system facilities is included in this category.

### **3.3.4 Industrial Use**

Industrial water use is associated with the manufacturing or production of products. The volume of water used by industrial businesses can be considerably greater than water used by commercial businesses. Manufacturing plants, oil and gas producers, mining companies, and dairies are some examples where industrial water use occurs. Industrial water use within community water systems is acquired with the same process used to obtain commercial water use data discussed earlier.

### **3.3.5 Private-Domestic 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. Due to the lack of records associated with this type of water use, quantities are usually estimated. Generally, a population assumed to be served by private wells is determined by taking the difference between the total population of a county or other jurisdiction and the number of people served by the public community water system(s) within the jurisdictional boundaries. Calculated gallons per capita water use rates for the area are then used to determine a total use for this category. A record of the number of active private well water rights is another method of determining private domestic water use. Each active water right is assumed to be a "typical" family, using approximately 1 acre-foot of water annually.

## **3.4 M&I Water Use Data**

By definition, municipal and industrial (M&I) water use is a combination of all residential, commercial, institutional, and industrial uses. It includes the total water (potable and non potable) supplied by public water systems (community and non community), self-supplied industries, private domestic systems, and secondary irrigation companies.

Within the study area are the following public community water systems: Community Water System, Gorgoza Mutual Water Company, High Valley Water Company, Mountain Regional Special Service District, Park City Water, Summit County Service Area No. 3, Summit Water Distribution Company, and Timberline Special Improvement District. Also included in the study area are the self-supplied industries Duke Energy Field Services and United Park City Mines Company, along with the Summit County Public Works facility.

### **3.4.1 Current Use Estimates**

Table 3-4 summarizes the 2001 total M&I water use for the study area which is further broken down by system and category of use in Tables 3-1 through 3-3 as explained below.

**Park City and Snyderville Basin Water Supply Study Special Report**

Table 3-1 shows a breakdown of the potable water use for each public community system for the base data year of 2001. This table shows that for the study area, the total current annual potable water use is 8,182 acre-feet. Given a service population of 23,065 people, the per capita daily potable water use of public community water systems in the study area is 317 gpcd.

Secondary water is another important aspect of total M&I water use. Table 3-2 shows the amount of secondary water use for public community systems. In the study area, secondary water is supplied for some residential uses, but mostly for commercial and institutional purposes, for a total use of 1,225 acre-feet.

Table 3-3 gives the estimated water use for public non-community systems and private domestic systems. Summit County Public Works is one of the three non-community systems within the study area. There are two self-supplied industries in the study area. Combined, these uses amount to 153 acre-feet of potable water and 274 acre-feet of non-potable water for the year 2001.

Total potable M&I water use in the study area for 2001 is 8,335 acre-feet, while non-potable water use is 1,499 acre-feet, giving a total M&I water use of 9,834 acre-feet.

**TABLE 3-1  
2001 Potable Water Use for Public Community Water Systems**

Summit County Water Supplier	POTABLE USAGE (Acre-Feet/Year)						TOTAL M&I	Service Population	Gallons Per Capita Per Day
	Residential Indoor	Residential Outdoor	Commercial Total	Institutional Total	Industrial Total				
Community Water Co.	77	44	42	0	0	<b>163</b>	200	727	
Gorgoza Mutual Water Co.	305	239	0	40	0	<b>583</b>	3,340	156	
High Valley Water Co.	30	45	0	0	0	<b>75</b>	450	149	
Mountain Regional SSD	576	1,021	60	15	5	<b>1,677</b>	5,760	260	
Park City Culinary Water	630	1,822	1,146	150	0	<b>3,748</b>	8,050	416	
Summit Co Service #3	34	46	0	0	0	<b>80</b>	420	170	
Summit Water Distribution	437	1,253	135	15	0	<b>1,840</b>	4,660	352	
Timberline Special Imp. Dist.	13	3	0	0	0	<b>16</b>	185	78	
<b>STUDY AREA TOTALS</b>	<b>2,102</b>	<b>4,472</b>	<b>1,384</b>	<b>220</b>	<b>5</b>	<b>8,182</b>	<b>23,065</b>	<b>317</b>	

Park City and Snyderville Basin Water Supply Study Special Report

**TABLE 3-2  
2001 Secondary Water Use in Public Community Systems**

Summit County Water Supplier	Residential Use (Ac-Ft/Yr)	Commercial Use (Ac-Ft/Yr)	Institutional Use (Ac-Ft/Yr)	Industrial/ Stockwater Use (Ac-Ft/Yr)	Total Secondary Use (Ac-Ft/Yr)
Community Water Company	0	0	0	0	0
Gorgoza Mutual Water Co.	0	0	0	0	0
High Valley Water Company	0	0	0	0	0
Mountain Regional SSD	20	0	0	0	20
Park City Culinary Water	100	650	230	0	980
Summit Co Service No.3	0	0	0	0	0
Summit Water Distribution	0	225	0	0	225
Timberline Special Service Dist.	0	0	0	0	0
<b>STUDY AREA TOTALS</b>	<b>120</b>	<b>875</b>	<b>230</b>	<b>0</b>	<b>1,225</b>

**TABLE 3-3  
2001 Water Use for Public Non-Community Water Systems,  
Self-Supplied Industries and Private Domestic Systems**

	POTABLE USAGE					Total Secondary Water Use (Ac-Ft/Yr)
	Residential Use (Ac-Ft/Yr)	Commercial Use (Ac-Ft/Yr)	Institutional Use (Ac-Ft/Yr)	Industrial/ Stockwater Use (Ac-Ft/Yr)	Total Potable Use (Ac-Ft/Yr)	
<b>County Facilities:</b>						
Summit County Public Works	0	0	2	0	2	0
<b>Subtotals</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>
Self-Supplied Industries <sup>1</sup>	0	0	0	1	1	274
Private Domestic Systems	150	0	0	0	150	0
<b>STUDY AREA TOTALS</b>	<b>150</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>153</b>	<b>274</b>

<sup>1</sup>Duke Energy Field Services, United Park City Mines Co.

Note: The estimated population served by private domestic systems is 500 persons.

**TABLE 3-4  
2001 M&I Water Use Summary**

Uses	Potable (Acre-Ft/Yr)	Secondary (Acre-Ft/Yr)	Total Use (Acre-Ft/Yr)
Water Use for Public Community Water Systems	8,182	1,225	9,407
Water Use for Non-Community, Self-Supplied Industries and Private Domestic Systems	153	274	427
<b>Total Water Use</b>	<b>8,335</b>	<b>1,499</b>	<b>9,834</b>

### 3.4.2 Comparison of Current Use with Available Water Supply

Figure 3-1 compares the current M&I water use in the study area with the basin safe yield and available water supply identified in Chapter 2. The area under the lower hydrograph is labeled as Current Uses and depicts the demand pattern of Park City (MWH, May 2002) multiplied by 2.3 to adjust it to the total water supply volume of 9,834 acre-feet (UDWR) delivered by all entities in the Basin during 2001. From this figure, it can be seen that the Available Supply exceeds the Current Uses during much of the year. However without significant storage, this excess supply cannot be used to meet the peak period requirements. The supply is limited by the connections it can serve during peak demand periods. The figure shows that the current uses nearly match the presently available supply from August through November.

**FIGURE 3-1**  
**Snyderville Basin Current M&I Use vs. Available Supply and Basin Safe**

