

**MUNICIPAL AND INDUSTRIAL
WATER SUPPLY AND USES
IN THE
CEDAR/BEAVER BASIN**

(Data Collected for Calendar Year 2005)

Prepared by

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

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Dennis J. Strong, Director

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EXECUTIVE SUMMARY

The purpose of this report is to document the municipal and industrial (M&I) water system supplies and uses within the Cedar/Beaver Basin during the calendar year of 2005. These water systems deliver culinary (potable) and/or secondary (non-potable) water and have been separated into four categories, as defined on page 18 of this report. The four categories are public community, public non-community, self-supplied industrial and private domestic water systems. Water supplies, under the current hydrologic and each systematic condition, are evaluated for only potable water service in public community water systems.

The base data for both water supply and uses of public community water systems was provided by each of the water systems. Data for the other categories of water systems was compiled by also using various other agencies and references.

M&I water uses, for the basin, were then totaled and tabulated by county. Portions of the four counties of Beaver, Iron, Millard and Washington are contained within the Cedar/Beaver Basin.

Public Community Water Systems

Of the aforementioned categories, public community systems serve about 95 percent of all residents in the State of Utah. Within the Cedar/Beaver Basin, approximately 90 percent of the population is served by 29 public community water systems. Refer to **Figure 3** on page 6 for a location map of these systems, as well as the general boundaries of the basin.

For planning purposes, accurate and detailed current water use and supply information is invaluable in determining the ability of the basin to meet future water demands. The Division of Water Resources (DWRe) uses the annual reliable potable water supply, as defined on page 9, as a tool to quantify the amount of water that can be delivered by each public community water system to satisfy current and projected peak day demands with present water supply conditions.

In the Cedar/Beaver basin, it was determined that the current annual reliable potable water supply is 17,739 acre-feet. Springs account for 36 percent and wells 64

percent of this supply. Currently, there are no developed surface water sources in the basin. The breakdown of this supply is presented in the following **Table I**.

Table I
CEDAR/BEAVER BASIN
Reliable Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

County	Springs	Wells	Surface	Total
Beaver	1,369.2	2,423.0	0.0	3,792.2
Iron	4,739.7	8,575.2	0.0	13,314.9
Millard	0.0	0.0	0.0	0.0
Washington	277.4	354.1	0.0	631.5
Basin Totals	6,386.3	11,352.3	0.0	17,738.6

Note: All values represent maximum system source capacities limited by water rights, hydrologic and/or distribution system constraints.

M&I water use, within these systems, can be subdivided by two types of water: potable (culinary) and non-potable (secondary). Potable water is delivered by the public community system itself. However, secondary water can be delivered not only by the system, but also by separate irrigation companies, exclusively in some locations.

Table II, on the following page, shows public community system water use data for both potable and non-potable categories within the Cedar/Beaver basin. Categorically, the percentage of total water use is 22% residential indoor, 45% residential outdoor, 13% commercial, 16% institutional, and 4% light industrial/stockwatering.

TABLE II
CEDAR/BEAVER BASIN
Water Use for Public Community Systems
(Acre-Feet/Year)

	Beaver County	Iron County	Millard County	Washington County	Total
Potable Use					
Residential Indoor	418.3	3,006.8	0.0	123.4	3,548.5
Residential Outdoor	323.6	3,200.7	0.0	348.5	3,872.8
Commercial	147.5	1,425.0	0.0	31.3	1,603.8
Institutional	187.7	788.6	0.0	146.5	1,122.8
Industrial/Stockwater	132.1	424.2	0.0	0.5	556.8
Total Potable Use	1,209.2	8,845.3	0.0	650.2	10,704.7
Secondary Use					
Residential	786.4	1,084.3	0.0	0.0	1,870.7
Commercial	0.0	0.0	0.0	0.0	0.0
Institutional	593.9	425.8	0.0	0.0	1,019.7
Industrial/Stockwater	0.0	0.0	0.0	0.0	0.0
Total Secondary Use	1,380.3	1,510.1	0.0	0.0	2,890.4
TOTALS	2,589.5	10,355.4	0.0	650.2	13,595.1

In general, and specifically for this report, all per capita water use figures refer to the water use within public community water systems only. Out of a total basin population of 47,690 in 2005, 43,350 people were served by the public community systems. For these systems, residential potable per capita water use calculates to 153 gallons per capita per day (gpcd). Similarly, non-potable residential water use calculated to 38 gpcd. The resultant total per capita water use is 191 gpcd for residential purposes within the public community systems of the basin. With the addition of water use in the commercial, institutional and industrial categories, the per capita water use for public community systems is 220 gpcd for potable and 60 gpcd for non-potable water, for an overall water use of approximately 280 gpcd. Comparatively, in 2005, the statewide average per capita water use was 190 gpcd potable and 70 gpcd non-potable, for a total of 260 gpcd.

Dry summer months, a long growing season and comparatively large lot sizes, in this basin, greatly increase the outside watering requirements compared with the more densely populated basins along the Wasatch Front. Additionally, secondary

(non-potable) water comprises a relatively high percentage of the residential and institutional outdoor use. Considering that secondary water is rarely metered, its use tends to far exceed outdoor watering needs. Combined, these factors all contribute to the above average per capita water use, in this basin. The per capita water use values for various combinations of categories and types of water are shown in the following **Table III**.

**TABLE III
CEDAR/BEAVER BASIN
Average Per Capita Use
(Supplied by Public Community Systems)**

CATEGORY	Average Per Capita Use (Ac-Ft/Yr)	Average Per Capita Use (GPCD)
Residential Potable Use	0.171	153
Residential Potable Plus Secondary Use	0.214	191
Total Potable Use	0.247	220
Total Potable Plus Secondary Use	0.314	280

Note: Total potable categories include residential, commercial, institutional and industrial uses.

Total M&I Water Use

Table IV, on the following page, shows the total potable and non-potable M&I water use for all system types in the Cedar/Beaver Basin for the year 2005. As can be seen, public community systems deliver the majority of the potable water used within the basin. However, as in this basin, self-supplied industries can also use significant amounts of water. The table indicates that the total potable M&I water use in 2005 was 14,233 acre-feet. Total non-potable M&I water use in 2005 for the basin was 8,320 acre-feet. Therefore, total M&I water use for all system categories and types of water in 2005, for the Cedar/Beaver basin, was 22,552 acre-feet.

**TABLE IV
CEDAR/BEAVER BASIN
Total M&I Water Use for all Categories
(Acre-Feet/Year)**

	Beaver County	Iron County	Millard County	Washington County	Total
Potable Use					
Public Community Systems	1,209.2	8,845.3	0.0	650.2	10,704.7
Public Non-Community Systems	40.4	78.4	53.2	0.1	172.1
Self-Supplied Industries	2,060.7	596.0	0.0	0.0	2,656.7
Private Domestic	166.6	527.7	1.7	3.1	699.1
Total Potable	3,476.9	10,047.4	54.9	653.4	14,232.6
Secondary Use					
Secondary Irrigation Companies	1,380.3	1,510.1	0.0	0.0	2,890.4
Public Non-Community Systems	0.0	0.0	6.4	0.0	6.4
Self-Supplied Industries	3,629.0	1,794.0	0.0	0.0	5,423.0
Total Secondary	5,009.3	3,304.1	6.4	0.0	8,319.8
TOTALS	8,486.2	13,351.5	61.3	653.4	22,552.4

M&I Water Deliveries and Depletions

On the following page, **Table V** shows both the deliveries and depletions for all the M&I water in the basin. The information contained in the table is very useful for overall water planning purposes. See pages 20 and 21 for detailed definitions of the terms used. In **Appendix B**, there is a table that contains a breakdown of all the deliveries and depletions of each public community water system, as well as all other categories of water systems, within the basin.

TABLE V
CEDAR/BEAVER BASIN
M&I Deliveries and Depletions
(Acre-Feet/Year)

COUNTY	Deliveries			Depletions		
	Indoor Use	Outdoor Use	Total	Indoor Use	Outdoor Use	Total
Beaver	6,474.1	2,012.1	8,486.2	6,020.1	1,341.4	7,361.5
Iron	7,312.6	6,038.9	13,351.5	4,247.2	4,025.9	8,273.1
Millard	15.1	46.2	61.3	1.1	30.8	31.9
Washington	179.4	474.0	653.4	65.5	317.0	382.5
Basin Totals	13,981.2	8,571.2	22,552.4	10,333.9	5,715.1	16,049.0

INTRODUCTION

Authority

The Utah Division of Water Resources (DWR_e) has the overall responsibility for completing studies, investigations, and plans to assist the responsible development and utilization of the water resources of the state of Utah. The State Water Plan, prepared and distributed in early 1990 by the DWR_e, 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, the DWR_e prepares detailed plans for each of the 11 hydrologic basins in the state. The KCVR Basin is one of these 11 basins. A location map of the KCVR Basin is shown in **Figure 1** on the next page.

Each basin water plan identifies potential conservation and development projects and describes alternatives to efficiently satisfy the water needs of that basin. As part of this effort, background data reports are completed for each river basin. These include a Water-Related Land Use Report and a Municipal & Industrial Water Supply & Use Report.

Scope

As stated earlier, the subject of this M&I report is a determination of present M&I water supplies and uses within this basin. The data presented in this report may be used in the State Water Plan for the Cedar/Beaver Basin as well as other DWR_e reports and studies. Information considered for this report also includes related investigations recently completed by the DWR_e and the Utah Division of Water Rights (DWR_i).

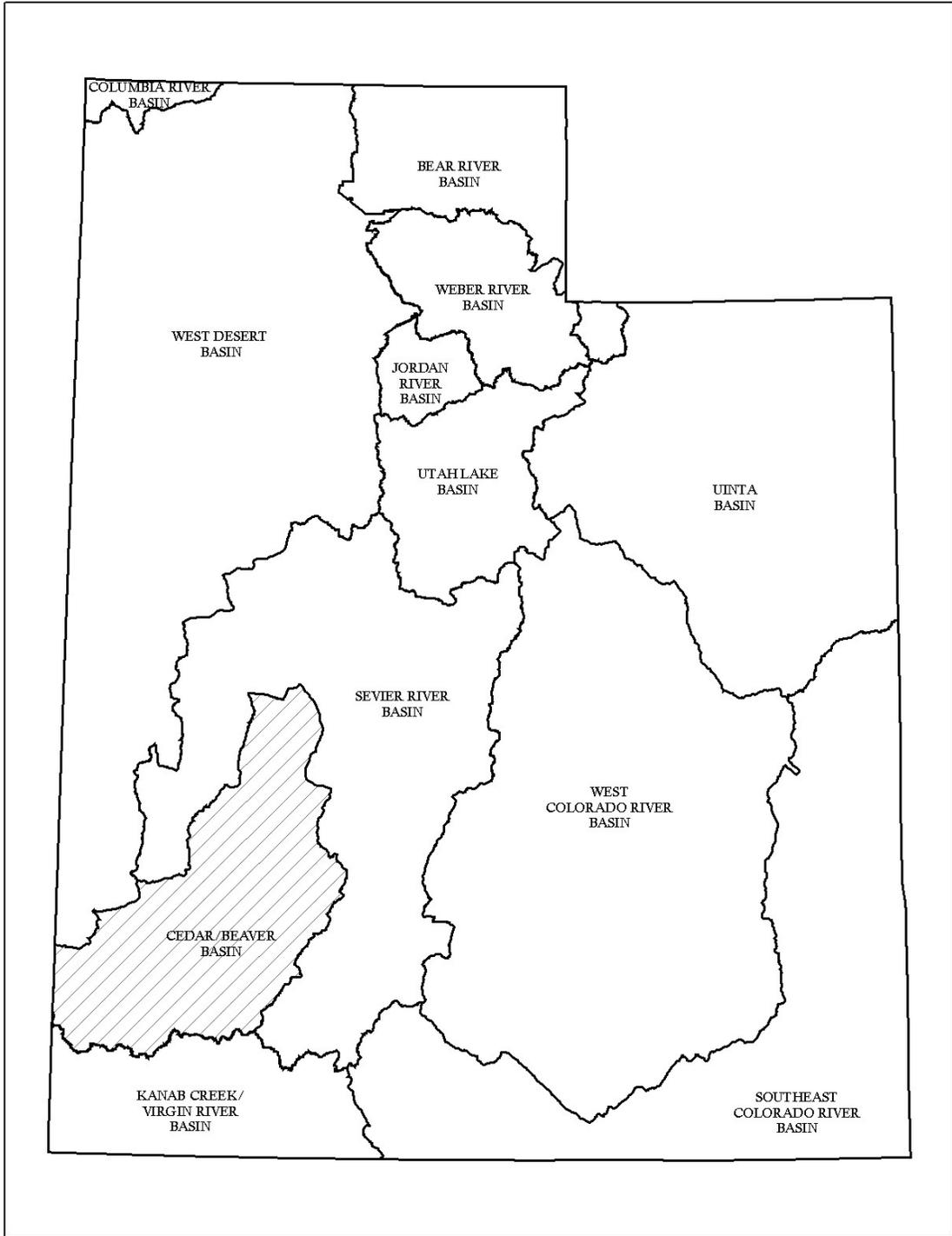


Figure 1. Location of Cedar/Beaver Basin

Data Collection

This study was initiated in March 2006. The 2005 *Municipal and Industrial Water Use Forms*, distributed by the DWRe, in cooperation with the DWRi and the Utah Division of Drinking Water (DDW), were used as the basis for the study. In all counties, 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 information obtained from the DWRi.

General Description of the Basin

The Cedar/Beaver Basin includes approximately 5,650 square miles of land in the southwest area of the state. Utah's portion of the basin extends from the Utah/Nevada state line on the southwestern tip and by the Needle Range and the Cricket Mountains along the southwest to northeast line. The northern tip opens up into the Sevier Desert. On the east, the Mineral Mountains, the Tushar Mountains, and the Hurricane Cliffs bound the basin. The basin spans most of Iron County as well as part of Beaver and Millard counties. The basin consists of four valleys (Beaver, Cedar City, Escalante, and Parowan) that are bounded by mountains and form closed basins.

Elevations within the basin vary from high points of 12,170 feet in the Tushar Mountains to a low of 4,560 feet where the Beaver River leaves the Escalante Valley drainage. Notable features of the basin include Historic Old Cove Fort, Cedar Breaks National Monument, and Iron Mission and Minersville State Parks. **Figure 2**, on page 5, is a detailed map of the basin.

The basin has 29 public community water systems. These systems serve 39,150 people (almost all of the 43,440 total basin population). In addition, the basin has 24 public non-community systems. **Figure 3**, on page 6, shows the location of these systems. These systems serve National Monuments, State Parks, summer home communities, campgrounds, isolated commercial establishments, and roadside rest stops and parks. The basin also has eight self-supplied industries.

M&I water use is steadily increasing within the basin as the entire basin is currently experiencing accelerated growth. Tourism, industry and quality of life are driving most of this growth, which is likely to continue well into the future.

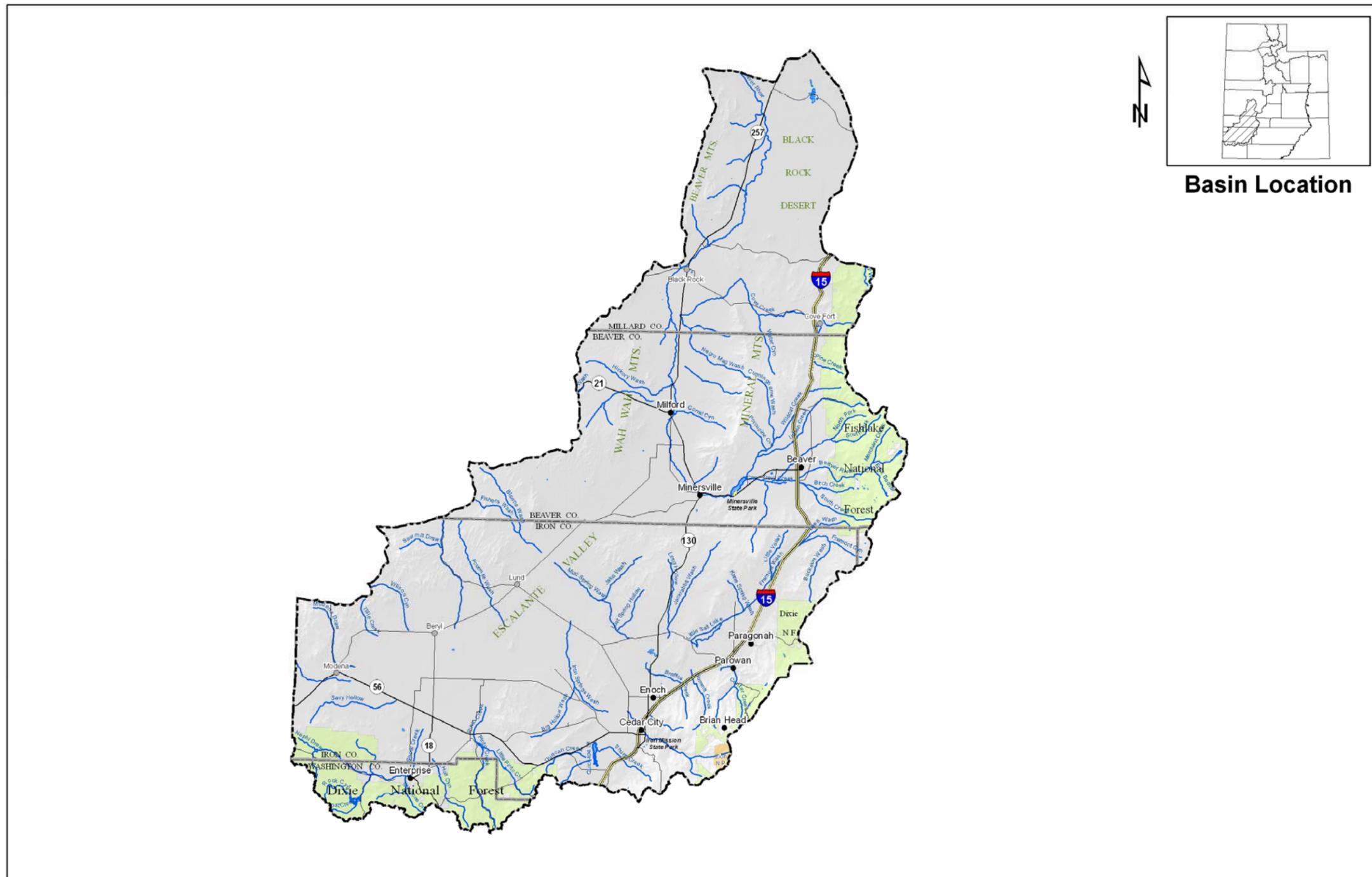


Figure 2. Cedar/Beaver Basin Drainage Map

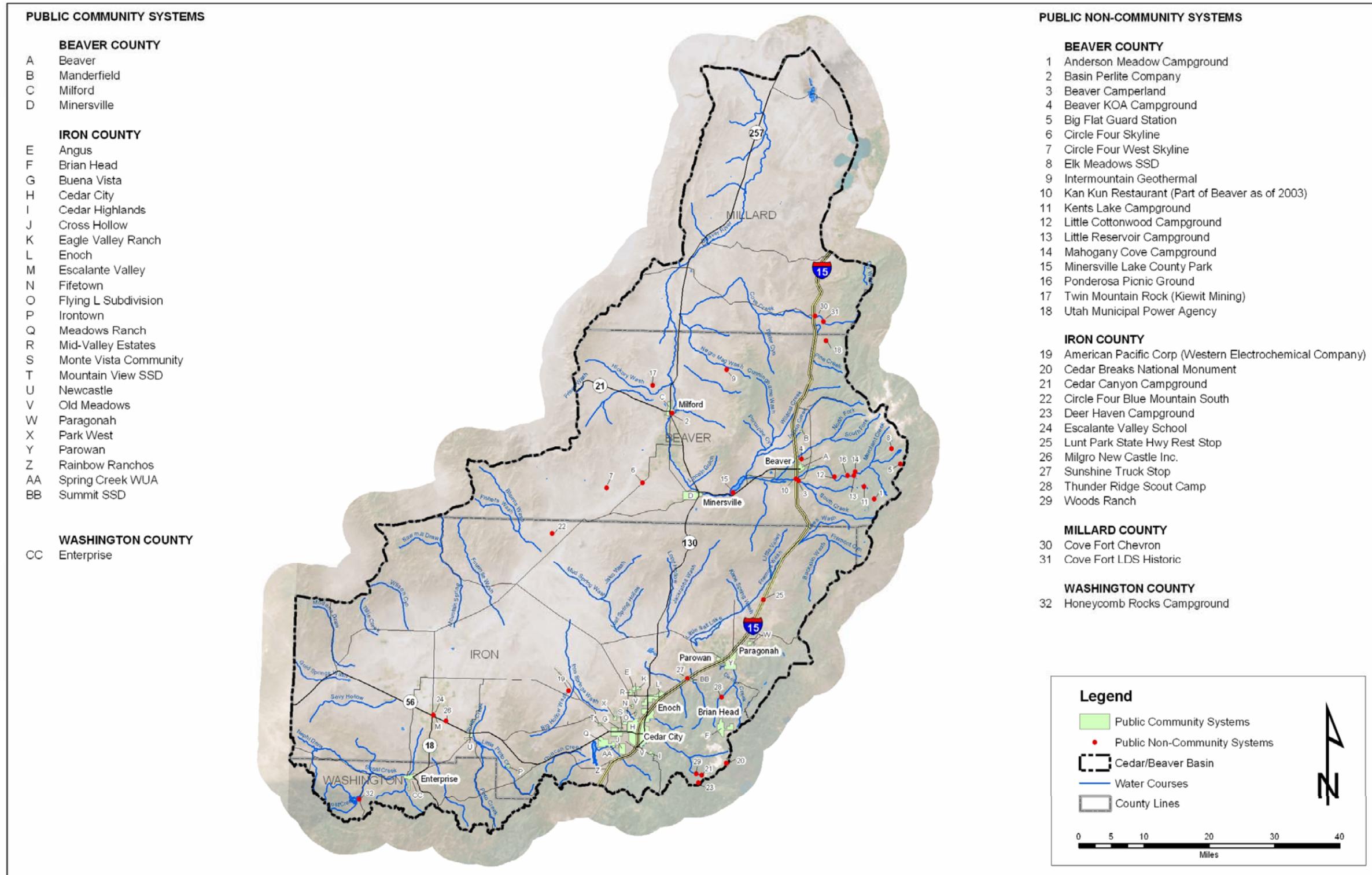


Figure 3. Locations of Public Community and Non-Community Systems

WATER SUPPLY AND USE METHODOLOGY

Background

Over the past 45 years, the Division of Water Resources (DWR_e) has employed various procedures to obtain municipal and industrial (M&I) water use data. In recent years, these procedures have become more comprehensive. When the DWR_e began water planning in the 1960's, available data consisted mainly of supplies and uses for the state as a whole. At that time, Utah's agricultural water uses far exceeded M&I uses. M&I water use was calculated simply by multiplying estimated per capita water use rates by census population data.

By the early 1980's, M&I diversions made up a larger percent of all statewide water uses and the entire water community increased their focus on M&I water supplies and uses. The Division of Water Rights (DWR_i) and the Division of Drinking Water (DDW) launched a program to collect yearly, statewide M&I data from each public community water system. The procedure involved mailing a survey designed to query major public water suppliers about their sources of water supply. Additionally, the United States Geological Survey (USGS) began M&I water use studies. The DWR_e relied on both data sources in its planning efforts by the late 1980's.

With the preparation of the State Water Plan Basin reports, and the increasing focus on water conservation, the DWR_e saw the need to verify and improve the quality and quantity of the available data. The first method used included assisting the DWR_i and the DDW in the improvement of their M&I data collection program. Currently, the collection of water use data is a joint effort between all three divisions, administered by the DWR_i. Additionally, the DWR_e began verifying the accuracy of the data through yearly field surveys, as described in the following four sections.

Data Collection Methodology for Public Community Water Systems

Each year, the DWRe targets several hydrologic basins for M&I water supply and use analysis. The most recent water use information supplied by the DWRi is the basis used to begin the study. Prior to 2003, this information was submitted using a standard form by each water supplier. An example of the water use data form for Enoch is found in **Appendix A**. Since 2003, the program has been updated, allowing for the water suppliers to electronically submit their data.

The DWRe staff contact the manager or operator of each community water system (as defined by the DDW) to schedule a data collection and analysis meeting. These meetings are necessary because data often is not reported (either on the water use forms or electronically) in the detail required for a complete M&I water use study. During these meetings, staff clarifies and collects additional data as needed. Total water supply and usage of the water systems are calculated based on information gathered during these meetings. When data is not available, it is necessary to estimate a part or all of the system use.

A secondary objective of these meetings is to instruct the operator or manager on how to most accurately and effectively complete the water use data form and/or submit their information electronically. This methodology has been used since 1992.

Water Supply

Potable Water

Two factors define the potable water supply for public community water systems: maximum developed potable water supply available under present conditions and reliable potable water supply. The maximum developed potable water supply available under present conditions is defined as the water resource that is presently being utilized. It is limited by 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 a water right or legal contract).

The lesser amount of water supply, due to these three constraints, is considered to be the maximum developed potable water supply available under present conditions used in this analysis.

The determination of well pump capacities, average annual spring flow estimates, treatment plant capacities, and water right information aid in the calculation of this value. It should be noted that, due to the complexity of water rights, contracts, exchanges, etc., a detailed search of water right limitations associated with each entity is not within the scope of this study.

The reliable potable water supply is defined as the capacity to meet peak day demands, expressed as an annual volume. It is valuable in determining future water supply capacities of the particular community water system sources (wells, springs, etc.). **The reliable potable water supply is calculated by adding together the maximum developed water supply capacity of surface sources, one-half of the maximum yield of wells or their pump capacities (unless otherwise indicated by the system manager), and a percentage of the average annual flow of spring sources.** The percentage of the spring source flows range between 50% and 100%. The determination of the percentage is based on information provided by the water supplier.

On page 11, **Figure 4** graphically presents the relationship between the maximum developed potable water supply and the reliable potable water supply of a system. By quantifying the maximum developed and the reliable potable water supply of a system, the total population that a system may potentially support can be determined. The current total yearly water use is the volume under the lower curve (*Present Water Use Pattern*). The future total yearly water use is the volume under the upper curve (*Future Water Use Pattern*). The latter volume is equivalent to the reliable developed potable water supply.

The maximum developed potable water supply under present conditions is the volume under the upper line (*Maximum Water Supply*) in **Figure 4**. This amount is a

theoretical annual volume based upon a maximum daily flow rate (limited by the water right or system capacity). Consequently, the peak day demand point on the future water use curve (*Future Peak Day Demand*) cannot exceed this upper limit. Due to the fluctuating nature of some sources (particularly springs), and the fact that most culinary water system storage tanks are designed to store only about one day of water demand, not all of the total maximum developed potable water supply is available to meet future water needs.

It is important to note that the reliable potable water supply is a theoretical annual volume based upon the current daily peak demand flow rate of any one system, under its current demand conditions. Additional supply may be made available by lowering and/or increasing the size of existing well pumps, pumping existing wells for longer durations, increasing storage capacity and/or distribution pipe sizes. However, being based only on current conditions, these systematic changes may cause operational problems during times of peak demand. Therefore, the DWRe uses the reliable potable water supply only as a reference tool to quantify the annual amount of water that can be delivered by each community water system.

For planning purposes, the reliable potable water supply is essential for estimating what population base each system can theoretically support with current demand patterns. It is also a guideline to help predict the approximate timing of future system improvements in order to meet any increase in demand.

Secondary Water

Deliveries of non-potable (secondary) water are an important component of the water use within the boundaries of public community water systems. However, quantifying the available supply of this water is difficult. In Utah, many of the secondary water systems are part of a larger agricultural irrigation system. Hence, the theoretical supply includes both agricultural and M&I water. Currently, separating

M&I secondary from agricultural water is mostly estimated, due to the lack of and/or absence of metering, particularly at the level of individual property connections.

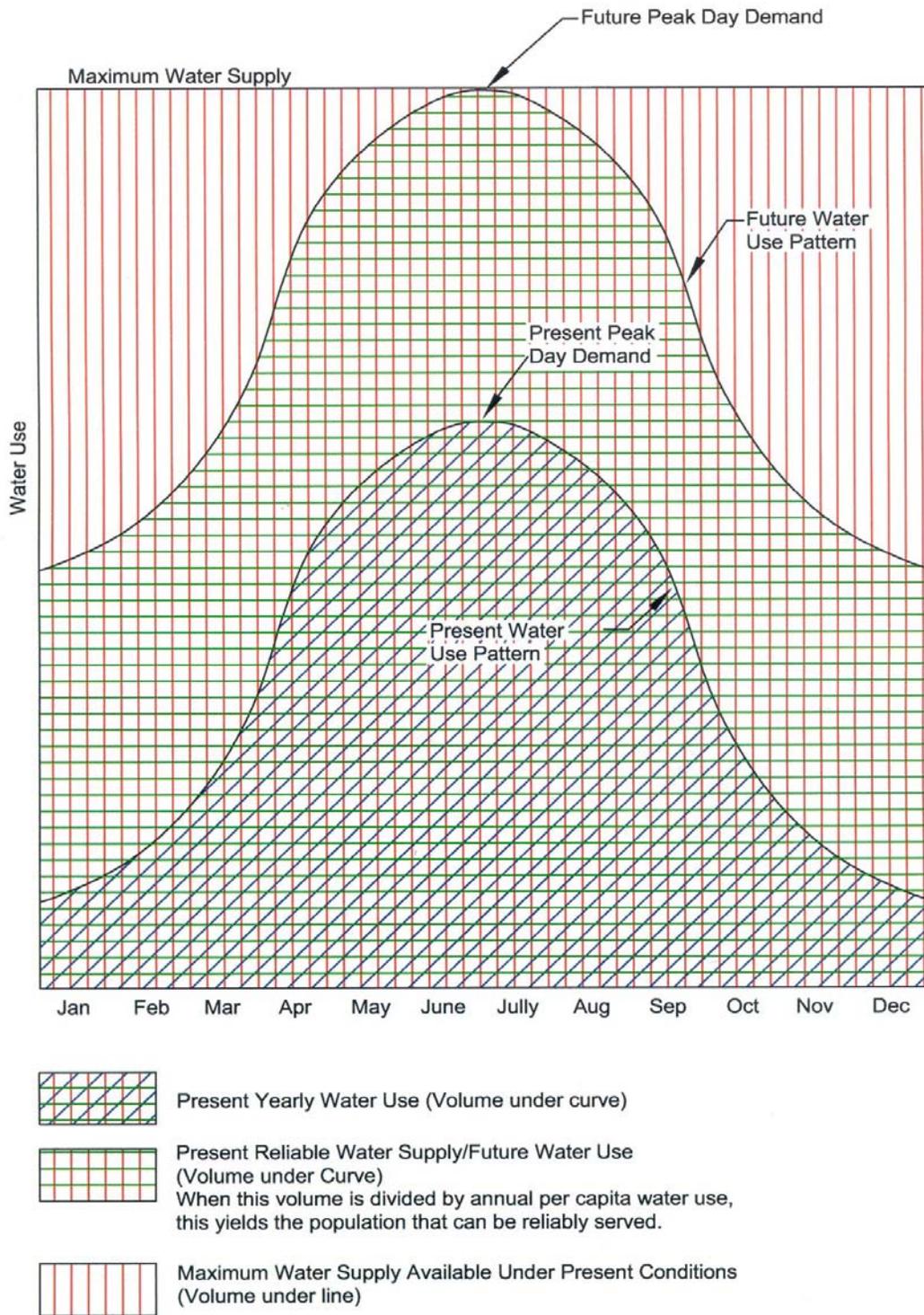


Figure 4. Water Supply and Use Hydrograph

With secondary water use becoming more prevalent for outdoor landscaping, estimating the available supply of this water is becoming increasingly more important. **For planning purposes, the DWRe assumes that the supply for M&I secondary irrigation is simply equal to the current use.**

Water Use

Present water use, as defined herein, is the developed water supply that is actually delivered by the distribution system from surface or subsurface sources. Water use is divided into four categories: residential, commercial, institutional and industrial.

Residential

The staff collects data about the number of residential connections and the amount of water used by those connections from a water system representative. Water use in this category is divided into three subcategories: culinary-outdoor, culinary-indoor, and secondary-outdoor. While most systems will meter the total culinary residential water use, indoor and outdoor use are rarely metered separately. Secondary water use is rarely metered. Therefore, the DWRe usually estimates these subcategory totals.

Typically, culinary indoor use will be estimated first. One method to estimate the indoor use is to review residential meter reading totals for the system from the winter months, if available. Since outdoor watering typically does not occur during the winter months, it can be assumed that the water used in winter months is for indoor use only. The winter water use is then used to determine the total yearly indoor use.

When the above method does not yield a reasonable value for indoor use, the per capita indoor water use for a system can be estimated by using an equation that was developed in a detailed residential study, "Identifying Residential Water Use",

completed by the DWRe in 2001. The mathematical equation that was developed is as follows:

$$\text{GPCD}_{\text{Indoor}} = 90.3 / P_{\text{PH}} + 42.3$$

where:

$\text{GPCD}_{\text{Indoor}}$ = gallons per capita day (per capita indoor water use)

P_{PH} = persons per household (US Census Bureau)

The total yearly indoor water use is then calculated for the system by multiplying the result of the above equation by the current population. Outdoor culinary water use can then be estimated by subtracting the total yearly indoor water use from the given total residential culinary water use.

Because very few entities meter secondary outdoor water use, the DWRe staff estimates the outdoor secondary water use by using the average lot size, percent irrigated, percent of residences that are supplied by separate secondary (pressurized and ditch) irrigation systems, water right-duty rates (volume of water required for turf growth) in the area, and other related information for each system. In determining residential secondary use, care is taken to not include irrigation water use for small pastures or farm fields that can often be found adjacent to residences, particularly in rural communities.

Commercial

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, the DWRe staff attempts to estimate commercial water use by inventorying commercial businesses in the area and using published commercial water use estimates. The DDW and the Utah State Water Lab, among others, publish these estimates. In some rural communities where there are a relatively small number of commercial connections, the businesses are visited individually by the DWRe staff and asked about their water use.

Some commercial facilities use secondary water to irrigate outside landscapes. This is especially typical for commercial golf courses. Again, it is typical that secondary water is not metered. The DWRe staff estimates this use by multiplying the size of the irrigated area by a water right-duty rate or the evapotranspiration (ET) rate with assumed application efficiency percentage. The ET used is indicative of the amount of water, in inches, necessary for turf growth.

Institutional

Institutional water use is water used for city, county, state and federal government facilities, parks, municipal golf courses, schools, hospitals, churches, military facilities, as well as fire hydrant testing and other municipal losses in the water system. Because this water use is often not metered, the process to acquire this data is difficult. The system operator is asked to provide information about city facilities such as the number and size (irrigated acreage) of parks, schools, churches, and municipal golf courses. Water right-duty rates and/or the ET, with appropriate efficiencies, are used to calculate the amount of water that is needed to irrigate these areas. Estimates of leakage and water use for testing of system facilities are also included in this category.

Industrial

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

Data Collection Methodology for Public Non-Community Water Systems

The DWRe staff attempts to contact each non-community system and/or make a personal visit to these systems. Non-community systems rarely meter their water use, so the DWRe staff estimate the annual water use. Questions are asked to determine the types of facilities on the system, population served, water source information, irrigation of outside areas, etc. This data, along with information found in water-related publications, is used to determine water use. The maximum and reliable water supplies for these systems are relatively small, often not available and are therefore not included in this study. However, for planning purposes, the DWRe assumes that the water supply for these systems is equal to their water use.

Data Collection Methodology for Self-Supplied Industrial Water Systems

Although self-supplied industries are included in the Non-Community Water Systems category as defined by the DDW, the DWRe has divided them into a separate category due to their importance. The category is equivalent to the DDW's Non-Community, Non-Transient category.

Water use is acquired for self-supplied industries by using data from the DWRi's Industrial Water Use Form and/or electronically submitted data. The DWRi collects

annual water use data from most of the major self-supplied industrial water users in the state. This data is confidential. Therefore, the data presented in this M&I study is only presented as county totals. As with other non-community systems, the maximum and reliable water supplies are often not available and are not in the scope of this study. For planning purposes, the DWRe assumes that the water supply for these systems is equal to their water use.

Data Collection Methodology for Private Domestic Water Systems

Private domestic systems are residences that are not connected to any public community or non-community water system. They are usually supplied by individual wells. To determine the water use data for this category, the population of those served by private domestic systems is estimated. This population is estimated by subtracting the population served by community water systems from the county population data acquired from the Governor's Office of Planning and Budget (GOPB). The remainder is assumed to be the population that is served by private domestic systems. The per capita water use rate for this category is assumed to be the same as the rate for the public community system residential category for that county. To determine the total water use by private domestic systems, the estimated population is then multiplied by this rate. Again, the maximum and reliable water supplies for private wells, being relatively small, are not in the scope of this study. Similarly, for planning purposes, the DWRe assumes that the water supply for these systems is equal to their water use.

DEFINITIONS OF WATER TERMS

Water is supplied by a variety of systems for many types of users. The general term supply is defined as the amount of water available. Municipalities own most of the individual water supply systems. However, in some cases the owner/operator is a private company, state or federal agency. Thus, a "public" water supply may be either publicly or privately owned and supply treated and/or untreated water.

Water Supply Terms

Maximum Developed Potable Water Supply - The annual volume of potable (culinary) water which is the lesser of the hydrologic capacity of the water source, the physical capacity of the water system, or the amount allowed by the collective water rights. (See pages 8-10 for a more detailed explanation)

Reliable Potable Water Supply - The annual volume within the maximum developed water supply that is available to meet peak demands. This is generally calculated as 100% of the maximum supply from surface water sources, 50% of the maximum yield of wells, and between 50% and 100% of the average annual spring flows. When this number is divided by the average per capita usage, the resulting number represents the theoretical maximum population that the water source can serve. (See pages 8-10 for a more detailed explanation)

Municipal and Industrial Water Supply - Includes all water (potable and non-potable) supplied for residential, commercial, institutional, light industry, and self-supplied industries. This supply is delivered by public community systems, public non-community (transient and non-transient) systems, self-supplied industrial systems, unregulated Indian water systems and private wells.

Types of Water

Potable Water – Includes water meeting all applicable Federal, State, and Local drinking water requirements for residential, commercial, institutional and industrial uses. It is also referred to as culinary water supply.

Secondary Water – Includes water not meeting safe drinking water requirements. It is also referred to as non-potable (non-culinary) water. This water is usually delivered by pressurized or open ditch systems for irrigation of privately and publicly owned landscapes, gardens, parks, cemeteries, golf courses and other open areas. Sometimes called "dual" water systems, they are installed to provide an alternative to irrigating with culinary water for these outdoor areas. Although Irrigation companies most often provide this water, public community systems may deliver this water as well. Self-supplied industries can also use secondary water for industrial processes.

Water System Categories

Public Community Water System - Provides potable and/or non-potable water by either a privately or publicly owned water system serving at least 15 connections or 25 individuals year round. Water from the public community water supplies may be used in both indoor and outdoor applications for residential, commercial, institutional, and industrial purposes.

Public Non-Community Water System - Provides potable and/or non-potable water by either a privately or publicly owned water system of one of two types: transient and non-transient. Transient systems are systems that do not serve 25 of the same non-resident persons per day for more than six months per year. Examples include campgrounds, RV parks, restaurants, convenience stores, etc. Non-transient systems are systems that regularly serve 25 of the same non-resident persons per day for more than six months per year. Examples include churches, schools and industries. This report categorizes industrial non-transient systems as self-supplied industries.

Self-Supplied Industrial System - Provides potable and/or non-potable water for use by individual privately owned industries (usually from their own wells or springs).

Private Domestic System – Provides potable and/or non-potable water from privately owned wells and/or springs for use by individual homes.

Water Use Terms

Water is used in a variety of ways and for many purposes. It is often said that water is "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. **Water use in this report is defined as “delivered” water.**

A table that shows the basin’s M&I water deliveries and depletions is provided in **Appendix B.**

In the previous water supply section, the word “use” can be interchanged with the word “supply” to define the current demand associated with those definitions. Some additional water use terms are as follows:

Commercial Use - Use normally associated with small business operations that may include drinking water, food preparation, personal sanitation, facility cleaning and maintenance and irrigation of facility landscapes. Examples include retail businesses, restaurants and hotels.

Industrial Use - Use 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. Examples include manufacturing plants, oil and gas producers, mining companies, mink farms and dairies.

Institutional Use - Use normally associated with general operation of various public agencies and institutions (i.e. schools, municipal buildings, churches) including drinking water, personal sanitation, facility cleaning and maintenance and irrigation of

parks, cemeteries, playgrounds, recreational areas, golf courses, and other facilities. The amount of water used by cities for outside irrigation of public areas typically is not metered.

Residential Use - 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 residential facilities. Examples include single-family homes, apartments, duplexes and condominiums.

Other Water Terms

Consumption - Water evaporated, transpired or irreversibly bound in either a physical, chemical or biological process. Consumed water results in a loss of the original water supplied.

Consumptive Use - Losses of water brought about by human endeavors when used for residential, commercial, institutional, industrial, agricultural, power generation, and recreation. Naturally occurring vegetation, fish and wildlife also consumptively use water.

Deliveries - Water already within a system that is being provided to an individual connection, whether potable or non-potable and/or metered or not. The connection can be for residential, commercial, institutional, and/or industrial uses. **For the purpose of this report, the delivered water amount is equivalent to water use.**

Depletion - Water consumed and 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 from the basin system but is not consumed in the basin. The exported water is available for use (consumption) in another basin or system. Water diverted to irrigate 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 depletion from the system.

Diversion - Water diverted from supply sources such as streams, lakes, reservoirs or groundwater for a variety of purposes, including cropland irrigation, as well as residential, commercial, institutional and industrial uses.

Withdrawal - Water withdrawn from supply sources such as lakes, streams, reservoirs or groundwater. This term is normally used in association with groundwater withdrawal. The terms *diversion* and *withdrawal* are often used interchangeably.

WATER RIGHTS IN THE CEDAR/BEAVER BASIN

Although a detailed analysis of water rights is not part of this report, a water supply and use study would not be complete without at least a discussion on the current water right regulations in the area. The following discussion was obtained from the DWRI. It explains the current general water right regulations in the Cedar/Beaver Basin with regards to M&I uses. For more details on these areas, please refer: <http://www.waterrights.utah.gov/wrinfo/policy/wrareas/default.asp>.

Beaver Valley (Area 77)

Surface and ground waters are considered to be fully appropriated at this time. New diversions and uses must be accomplished by change applications based on existing water rights. Changes between surface and underground sources will be critically reviewed to assure hydrologic connection, that underlying rights are not enlarged or that there will be no impairment of other rights. Water rights for the Beaver Mountain and Elk Meadows resort areas are generally restricted to change applications on existing “first priority” rights already established on the Beaver River or its direct tributaries. Applications proposing transfers of rights between the Beaver River and other streams tributary to Beaver Valley are not approved.

Cedar City Valley (Area 73)

Surface and ground waters are considered to be fully appropriated at this time. New diversions and uses must be accomplished by change applications based on existing water rights. The basin is divided into two subareas delineated by State Highway 56 through the valley. No change applications between subareas are allowed. Changes between surface and underground sources will be critically reviewed to assure hydrologic connection, that underlying rights are not enlarged or that there will be no impairment of other rights.

Escalante Valley (Area 71)

Surface waters are considered to be fully appropriated at this time. New surface diversions and uses must be accomplished by change applications based on existing water rights. The basin is divided into two subareas delineated by State Highway 56 through the valley. No change applications between subareas are allowed. Changes between surface and underground sources are generally not allowed.

Most of the area is closed to new appropriations with the exception of the northernmost portion. New groundwater diversions and uses must be accomplished by change applications based on valid existing water rights. For groundwater administration, the area has been divided into five districts, each with some unique policies. For more detailed information about these policies, please refer to DWRi's website at: <http://www.waterrights.utah.gov/wrinfo/policy/wrareas/area71.html>.

Parowan Valley (Area 75)

Surface and ground waters are considered to be fully appropriated at this time. New diversions and uses must be accomplished by change applications based on existing water rights. The basin is divided into two subareas delineated by the southern boundary line of T32S. No change applications between subareas are allowed. Changes between surface and underground sources will be critically reviewed to assure hydrologic connection, that underlying rights are not enlarged, or that there will be no impairment of other rights.

Water rights for the mountain headwaters and Brian Head resort area are generally restricted to change applications on existing "first priority" rights already on Parowan/Main Creek or Summit Creek. Applications proposing transfers of rights between the Parowan/Main Creek and Summit Creek drainages are not approved.

BEAVER COUNTY M&I WATER SUPPLIES AND USES

The Beaver County portion of the Cedar/Beaver Basin claims Beaver, Milford, and Minersville as its incorporated communities. Within this portion of the basin, there are 4 public community systems, 12 public non-community systems and 5 self-supplied industries. The locations of the public community and non-community systems are shown in **Figure 3** on page 6.

As shown in the following **Table 1**, the maximum annual potable water supply for public community systems in this portion of Beaver County is 6,215 acre-feet: about 22% from springs and 78% from wells.

TABLE 1
BEAVER COUNTY
Maximum Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

WATER SUPPLIER	Springs	Wells	Surface	Total
BEAVER COUNTY				
Beaver City Water System	645.2	1,345.6	0.0	1,990.8
Manderfield Culinary Water System	0.0	169.9	0.0	169.9
Milford City Water System	0.0	2,903.4	0.0	2,903.4
Minersville Water System	724.0	427.1	0.0	1,151.1
BEAVER COUNTY TOTALS				
	1,369.2	4,846.0	0.0	6,215.2

Note: All values represent maximum system source capacities limited by water rights, hydrologic constraints, and/or system constraints.

The reliable potable water supply for public community systems in the Beaver County portion of the Cedar/Beaver Basin is 3,792 acre-feet. The reliable supply is 61% of the maximum supply. The breakdown of this supply is presented in **Table 2** on the following page.

TABLE 2
BEAVER COUNTY
Reliable Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

WATER SUPPLIER	Springs	Wells	Surface	Total*
BEAVER COUNTY				
Beaver City Water System	645.2	672.8	0.0	1,318.0
Manderfield Culinary Water System	0.0	85.0	0.0	85.0
Milford City Water System	0.0	1,451.7	0.0	1,451.7
Minersville Water System	724.0	213.5	0.0	937.5
BEAVER COUNTY TOTALS	1,369.2	2,423.0	0.0	3,792.2

* Wells are limited to 50% of their "maximum" capacity for reliable supply when well/pump capacity is the limiting factor. Springs and surface water supplies are equal to their respective "maximum" capacities.

Table 3, on the following page, shows the breakdown of potable water use for each public community system. This table indicates that for Beaver County, the current annual use of 1,209 acre-feet of water (within the public community systems) is about 33% of the reliable supply.

**TABLE 3
BEAVER COUNTY
Water Use for Public Community Systems**

BEAVER COUNTY WATER SUPPLIER	POTABLE USAGE (Ac-Ft/Yr)							Service Population	Gallons Per Capita Per Day
	Residential Indoor	Residential Outdoor	Commercial Total	Institutional Total	Industrial Total	TOTAL M&I			
Beaver City Water System	220.2	10.0	109.7	43.9	11.0	394.8	2,700	130.5	
Manderfield Culinary Water System	4.9	15.0	0.0	0.0	6.3	26.2	60	389.8	
Milford City Water System	122.0	186.6	36.3	137.9	1.0	483.8	1,490	289.9	
Minersville Water System	71.2	112.0	1.5	5.9	113.8	304.4	870	312.4	
BEAVER COUNTY TOTALS	418.3	323.6	147.5	187.7	132.1	1,209.2	5,120	210.8	
A	B	C	D	E	F	G	H	J	

A, B, C, D, E, F, H

G=B+C+D+E+F

J=G*(325,851 gallons per acre-foot)/(365 days per year)/H

Input data

Potable M&I Water Use

Average gallons per capita per day potable water use

Table 4, below, presents the annual amount of secondary water used for various categories within the boundaries of the public community systems. In Beaver County, both the municipalities and a separate irrigation company deliver secondary water within the public community systems. Total secondary use is estimated to be 1,380 acre-feet.

**TABLE 4
BEAVER COUNTY
Secondary (Non-Potable) Water Use Within Public Community Systems
(Acre-Feet/Year)**

WATER SUPPLIER	Residential Use	Commercial Use	Institutional Use	Industrial/ Stockwater Use	Total Secondary Use
BEAVER COUNTY					
Beaver City Water System	617.8	0.0	342.0	0.0	959.8
Manderfield Culinary Water System	0.0	0.0	0.0	0.0	0.0
Milford City Water System	0.0	0.0	251.9	0.0	251.9
Minersville					
Minersville Irrigation	168.6	0.0	0.0	0.0	168.6
BEAVER COUNTY TOTALS	786.4	0.0	593.9	0.0	1,380.3

Table 5, below, presents various per capita rates for the public community system in the Beaver County portion of the Cedar/Beaver Basin.

**TABLE 5
BEAVER COUNTY
Average GPCD Water Use
for Public Community Systems**

Water Supplier	Service Population	Residential Water Use			CII Water Use*			TOTAL WATER USE		
		Potable	Non-Potable	Sub Total	Potable	Non-Potable	Sub Total	Potable	Non-Potable	TOTAL
Beaver City Water System	2,700	76	204	280	54	113	168	131	317	448
Manderfield Culinary Water System	60	296	0	296	94	0	94	390	0	390
Milford City Water System	1,490	185	0	185	105	151	256	290	151	441
Minersville Water System	870	188	0	188	124	0	124	312	0	312
BEAVER COUNTY TOTALS	5,120	129	137	266	81	104	185	211	241	452

*Commercial, Institutional, and Industrial

The following, **Table 6** indicates water use for public non-community, self-supplied industries and private domestic systems in this portion of the Cedar/Beaver Basin. Several large self-supplied industries are in this area. All of these uses amount to about 2,268 acre-feet of potable water and 3,629 acre-feet of secondary water.

**TABLE 6
BEAVER COUNTY
Water Use for Public Non-Community Systems,
Self-Supplied Industries, and Private Domestic Systems
(Acre-Feet/Year)**

BEAVER COUNTY WATER SUPPLIER	POTABLE USAGE (Ac-Ft/Yr)					Total Secondary Water Use
	Residential	Commercial	Institutional	Industrial	Total Potable Use	
Non-Communties						
Anderson Meadow Campground	0.0	0.0	0.1	0.0	0.1	0.0
Beaver Camperland	0.0	14.9	0.0	0.0	14.9	0.0
Beaver KOA Campground	0.2	6.8	0.0	0.0	7.0	0.0
Big Flat Guard Station	0.0	0.0	0.1	0.0	0.1	0.0
Elk Meadows SSD	3.8	1.8	0.0	0.0	5.6	0.0
Kan Kun Restaurant	0.0	0.5	0.0	0.0	0.5	0.0
Kents Lake Campground	0.0	0.0	0.1	0.0	0.1	0.0
Little Cottonwood Campground	0.0	0.0	10.3	0.0	10.3	0.0
Little Reservoir Campground	0.0	0.0	0.1	0.0	0.1	0.0
Mahogany Cove Campground	0.0	0.0	0.1	0.0	0.1	0.0
Minersville Lake County Park	0.0	0.0	1.5	0.0	1.5	0.0
Ponderosa Picnic Ground	0.0	0.0	0.1	0.0	0.1	0.0
	4.0	24.0	12.4	0.0	40.4	0.0
Self-Supplied Industries*	0.0	0.0	0.0	2,060.7	2,060.7	3,629.0
Private Domestic	166.6	0.0	0.0	0.0	166.6	0.0
BEAVER COUNTY TOTALS	170.6	24.0	12.4	2,060.7	2,267.7	3,629.0

* Basin Perlite Company, Circle Four Corporation, Intermountain Geothermal, Tw in Mountain Rock (Kiewit Mining), Utah Municipal Power Agency

Collectively, the total potable M&I water use from all systems in this portion of the Cedar/Beaver Basin is about 3,477 acre-feet, while secondary use is 5,009 acre-feet; giving a total M&I water use of 8,486 acre-feet.

IRON COUNTY M&I WATER SUPPLIES AND USES

The Iron County portion of the Cedar/Beaver Basin claims Brian Head, Cedar City, Enoch, Paragonah, and Parowan as its incorporated communities. Within this portion of the basin, there are 24 public community systems, 9 public non-community systems, and 3 self-supplied industries in this area. The locations of the public community and non-community systems are shown in **Figure 3** on page 6.

TABLE 7
IRON COUNTY
Maximum Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

WATER SUPPLIER	Springs	Wells	Surface	Total
Angus Water Co., Inc.	0.0	96.2	0.0	96.2
Brian Head Water Supply	331.0	784.7	0.0	1,115.7
Buena Vista Community	0.0	135.0	0.0	135.0
Cedar City Municipal Water	3,750.6	10,368.4	0.0	14,119.0
Cedar Highlands Homeowners Assoc.	49.0	0.0	0.0	49.0
Cross Hollow Hills Water Users Assoc.	0.0	253.0	0.0	253.0
Eagle Valley Ranch	0.0	30.0	0.0	30.0
Enoch Municipal Water System	0.0	1,515.0	0.0	1,515.0
Escalante Valley Water System	0.0	32.2	0.0	32.2
Fifetown Water System	0.0	0.0	0.0	0.0
Flying L Subdivision	0.0	60.0	0.0	60.0
Irontown	0.0	81.0	0.0	81.0
Meadows Ranches Homeowners Assoc., Inc.	0.0	235.0	0.0	235.0
Mid Valley Estates Water Co.	0.0	347.4	0.0	347.4
Monte Vista Community & Water Co.	0.0	83.6	0.0	83.6
Mt. View SSD	0.0	100.0	0.0	100.0
Newcastle Water Co.	0.0	124.0	0.0	124.0
Old Meadow Ranchos Community & Water Co.	0.0	93.7	0.0	93.7
Paragonah Municipal Water System	415.5	0.0	0.0	415.5
Park West Water Company	0.0	74.0	0.0	74.0
Parowan Municipal System	193.6	1,019.0	0.0	1,212.6
Rainbow Ranchos Water Co.	0.0	149.7	0.0	149.7
Spring Creek Water Users	0.0	110.0	0.0	110.0
Summit SSD	0.0	161.3	0.0	161.3
IRON COUNTY TOTALS	4,739.7	15,853.2	0.0	20,592.9

Note: All values represent maximum system source capacities limited by water rights, hydrologic constraints, and/or system constraints.

As shown in **Table 7**, on the previous page, the maximum annual potable water supply for public community systems in this portion of Iron County is 20,593 acre-feet: about 23% from springs and 77% from wells.

The reliable potable water supply for public community systems in the Iron County portion of the Cedar/Beaver Basin is 13,315 acre-feet. The reliable supply is 65% of the maximum supply. A breakdown of this supply is shown below in **Table 8**.

**TABLE 8
IRON COUNTY
Reliable Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)**

WATER SUPPLIER	Springs	Wells	Surface	Total*
Angus Water Co., Inc.	0.0	66.0	0.0	66.0
Brian Head Water Supply	331.0	392.3	0.0	723.3
Buena Vista Community	0.0	113.1	0.0	113.1
Cedar City Municipal Water	3,750.6	5,184.2	0.0	8,934.8
Cedar Highlands Homeowners Assoc.	49.0	0.0	0.0	49.0
Cross Hollow Hills Water Users Assoc.	0.0	126.6	0.0	126.6
Eagle Valley Ranch	0.0	16.6	0.0	16.6
Enoch Municipal Water System	0.0	1,127.2	0.0	1,127.2
Escalante Valley Water System	0.0	16.1	0.0	16.1
Fifetown Water System	0.0	43.6	0.0	43.6
Flying L Subdivision	0.0	30.0	0.0	30.0
Irontown	0.0	40.5	0.0	40.5
Meadows Ranches Homeowners Assoc., Inc.	0.0	157.3	0.0	157.3
Mid Valley Estates Water Co.	0.0	173.7	0.0	173.7
Monte Vista Community & Water Co.	0.0	48.7	0.0	48.7
Mt. View SSD	0.0	50.0	0.0	50.0
Newcastle Water Co.	0.0	168.1	0.0	168.1
Old Meadow Ranchos Community & Water Co.	0.0	46.8	0.0	46.8
Paragonah Municipal Water System	415.5	0.0	0.0	415.5
Park West Water Company	0.0	37.0	0.0	37.0
Parowan Municipal System	193.6	509.5	0.0	703.1
Rainbow Ranchos Water Co.	0.0	74.9	0.0	74.9
Spring Creek Water Users	0.0	55.0	0.0	55.0
Summit SSD	0.0	98.0	0.0	98.0
IRON COUNTY TOTALS	4,739.7	8,575.2	0.0	13,314.9

* Wells are limited to 50% of their "maximum" capacity for reliable supply when well/pump capacity is the limiting factor. Springs and surface water supplies are equal to their respective "maximum" capacities.

Table 9, on the following page, shows the breakdown of potable water use for each public community system. This table indicates that for Iron County, the current annual use of 8,845 acre-feet of water (within the public community systems) is about 66% of the reliable supply.

**TABLE 9
IRON COUNTY
Water Use for Public Community Systems**

IRON COUNTY WATER SUPPLIER	POTABLE USAGE (Ac-Ft/Yr)							TOTAL M&I	Service Population	Gallons Per Capita Per Day
	Residential Indoor	Residential Outdoor	Commercial Total	Institutional Total	Industrial Total					
Angus Water Co., Inc.	12.0	54.0	0.0	12.0	0.6		78.6	150	467.8	
Brian Head Water Supply	21.5	0.0	10.8	1.5	138.1		171.9	120	1,278.9	
Buena Vista Community	32.7	91.0	0.0	0.8	0.7		125.2	410	272.6	
Cedar City Municipal Water	1,971.9	2,158.5	1,330.1	636.4	149.5		6,246.4	24,000	232.4	
Cedar Highlands Homeowners Assoc.	24.5	0.0	0.0	0.0	0.0		24.5	60	364.5	
Cross Hollow Hills Water Users Assoc.	16.7	25.8	0.0	0.5	2.1		45.1	210	191.7	
Eagle Valley Ranch	8.0	10.0	0.0	0.0	0.6		18.6	100	166.1	
Enoch Municipal Water System	389.7	480.1	6.4	80.0	100.1		1,056.3	4,900	192.4	
Escalante Valley Water System	8.8	2.0	0.0	0.0	0.0		10.8	110	87.7	
Fifetown Water System	20.0	22.8	0.0	0.0	0.8		43.6	250	155.7	
Flying L Subdivision	4.8	7.2	0.0	0.0	0.2		12.2	60	181.5	
Irontown	5.6	0.0	0.0	0.0	0.0		5.6	70	71.4	
Meadows Ranches Homeowners Assoc., Inc.	31.0	46.4	0.0	0.1	0.5		78.0	390	178.5	
Mid Valley Estates Water Co.	61.2	44.3	0.0	0.7	0.6		106.8	770	123.8	
Monte Vista Community & Water Co.	15.9	27.4	0.0	2.0	0.4		45.7	200	204.0	
Mt. View SSD	15.2	25.2	0.0	0.0	0.2		40.6	190	190.8	
Newcastle Water Co.	36.6	58.3	1.7	21.1	8.8		126.5	460	245.5	
Old Meadow Ranchos Community & Water Co.	2.4	16.0	0.0	0.0	0.5		18.9	30	562.4	
Paragonah Municipal Water System	33.9	0.0	0.0	0.2	0.0		34.1	520	58.5	
Park West Water Company	9.6	18.1	0.0	0.6	0.7		29.0	120	215.7	
Parowan Municipal System	226.7	50.2	76.0	20.0	3.0		375.9	2,850	117.7	
Rainbow Ranchos Water Co.	20.7	5.6	0.0	2.7	0.8		29.8	260	102.3	
Spring Creek Water Users	18.3	18.1	0.0	0.0	1.0		37.4	230	145.2	
Summit SSD	19.1	39.7	0.0	10.0	15.0		83.8	240	311.7	
IRON COUNTY TOTALS	3,006.8	3,200.7	1,425.0	788.6	424.2		8,845.3	36,700	215.2	
A	B	C	D	E	F	G	H	J		

A, B, C, D, E, F, H Input data
G=B+C+D+E+F Potable M&I Water Use
J=G*(325,851 gallons per acre-foot)/(365 days per year)/H Average gallons per capita per day potable water use

The following **Table 10** presents the amount of secondary water used in the Iron County portion of the Cedar/Beaver Basin. Total secondary water use in this area of the Basin is 1,510 acre-feet.

**TABLE 10
IRON COUNTY
Secondary (Non-Potable) Water Use Within Public Community Systems
(Acre-Feet/Year)**

WATER SUPPLIER	Residential Use	Commercial Use	Institutional Use	Industrial/ Stockwater Use	Public Total Secondary Use
IRON COUNTY					
Angus Water Co., Inc.	0.0	0.0	0.0	0.0	0.0
Brian Head Water Supply	0.0	0.0	0.0	0.0	0.0
Buena Vista Community	0.0	0.0	0.0	0.0	0.0
Cedar City Municipal Water					
City Operated	0.0	0.0	337.8	0.0	337.8
South & West Field	427.5	0.0	0.0	0.0	427.5
Cedar Highlands Homeowners Assc.	0.0	0.0	0.0	0.0	0.0
Cross Hollow Hills Water Users Assc.	0.0	0.0	0.0	0.0	0.0
Eagle Valley Ranch	0.0	0.0	0.0	0.0	0.0
Enoch City Water System	0.0	0.0	0.0	0.0	0.0
Escalante Valley Water System	0.0	0.0	0.0	0.0	0.0
Fifetown Water System	0.0	0.0	0.0	0.0	0.0
Flying L Subdivision	0.0	0.0	0.0	0.0	0.0
Irontown	0.0	0.0	0.0	0.0	0.0
Meadows Ranches	0.0	0.0	0.0	0.0	0.0
Mid Valley Estates	0.0	0.0	0.0	0.0	0.0
Monte Vista Com. Water Co.	0.0	0.0	0.0	0.0	0.0
Mt. View SSD	0.0	0.0	0.0	0.0	0.0
Newcastle Water Company	30.4	0.0	0.0	0.0	30.4
Old Meadows Water Co.	0.0	0.0	0.0	0.0	0.0
Paragonah Municipal Water System	125.0	0.0	28.0	0.0	153.0
Paragonah Canal Company	33.4	0.0	0.0	0.0	33.4
Park West Water Company	0.0	0.0	0.0	0.0	0.0
Parowan Municipal System	451.0	0.0	60.0	0.0	511.0
Rainbow Ranchos	0.0	0.0	0.0	0.0	0.0
Spring Creek Water Users	0.0	0.0	0.0	0.0	0.0
Summit SSD					
Summit Irr. Stock Co.	17.0	0.0	0.0	0.0	17.0
IRON COUNTY	1,084.3	0.0	425.8	0.0	1,510.1

Below in **Table 11** is presented the various per capita rates for the public community system in the Iron County portion of the Cedar/Beaver Basin.

TABLE 11
IRON COUNTY
Average Per Capita Water Use
for Public Community Systems

Water Supplier	Service Population	Residential Water Use			CII Water Use*			TOTAL WATER USE		
		Potable	Non-Potable	Sub Total	Potable	Non-Potable	Sub Total	Potable	Non-Potable	TOTAL
Angus Water Co., Inc.	150	393	0	393	75	0	75	468	0	468
Brian Head Water Supply	120	160	0	160	1,119	0	1,119	1,279	0	1,279
Buena Vista Community	410	269	0	269	3	0	3	273	0	273
Cedar City Municipal Water	24,000	154	16	170	79	13	91	232	28	261
Cedar Highlands Homeowners Assoc.	60	365	0	365	0	0	0	365	0	365
Cross Hollow Hills Water Users Assoc.	210	181	0	181	11	0	11	192	0	192
Eagle Valley Ranch	100	161	0	161	5	0	5	166	0	166
Enoch Municipal Water System	4,900	158	0	158	34	0	34	192	0	192
Escalante Valley Water System	110	88	0	88	0	0	0	88	0	88
Fifetown Water System	250	153	0	153	3	0	3	156	0	156
Flying L Subdivision	60	179	0	179	3	0	3	182	0	182
Irontown	70	71	0	71	0	0	0	71	0	71
Meadows Ranches Homeowners Assoc., Inc	390	177	0	177	1	0	1	179	0	179
Mid Valley Estates Water Co.	770	122	0	122	2	0	2	124	0	124
Monte Vista Community & Water Co.	200	193	0	193	11	0	11	204	0	204
Mt. View SSD	190	190	0	190	1	0	1	191	0	191
Newcastle Water Co.	460	184	59	243	61	0	61	246	59	305
Old Meadow Ranchos Community Water Co.	30	548	0	548	15	0	15	562	0	562
Paragonah Municipal Water System	520	58	272	330	0	48	48	59	320	379
Park West Water Company	120	206	0	206	10	0	10	216	0	216
Parowan Municipal System	2,850	87	141	228	31	0	31	118	141	259
Rainbow Ranchos Water Co.	260	90	0	90	12	206	218	102	206	308
Spring Creek Water Users	230	141	0	141	4	0	4	145	0	145
Summit SSD	240	219	63	282	93	0	93	312	63	375
IRON COUNTY TOTALS	36,700	151	26	177	64	10	75	215	37	252

*Commercial, Institutional, and Industrial

The following **Table 12** indicates annual water use for public non-community systems, self-supplied industries, and private domestic systems in this portion of the Cedar/Beaver Basin. Cedar Breaks National Park Monument is among the 9 listed non-community systems. All of these uses amount to 1,202 acre-feet of potable water and 1,794 acre-feet of secondary water.

TABLE 12
IRON COUNTY
Water Use for Public Non-Community Systems,
Self-Supplied Industries, and Private Domestic Systems
(Acre-Feet/Year)

IRON COUNTY WATER SUPPLIER	POTABLE USAGE (Ac-Ft/Yr)					Total Secondary Water Use
	Residential	Commercial	Institutional	Industrial	Total Potable Use	
Non-Communities						
Cedar Breaks National Monument	0.2	0.0	19.7	0.0	19.9	0.0
Cedar Canyon Campground	0.0	0.0	0.1	0.0	0.1	0.0
Deer Haven Campground	0.0	0.0	0.3	0.0	0.3	0.0
Escalante Valley School	0.0	0.0	21.4	0.0	21.4	0.0
Lunt Park State Highway Rest Stop	0.0	0.0	32.1	0.0	32.1	0.0
Rainbow Meadows Ranchos	0.2	0.0	0.0	0.0	0.2	0.0
Sunshine Truck Stop	0.2	3.7	0.0	0.0	3.9	0.0
Thunder Ridge Scout Camp	0.0	0.0	0.4	0.0	0.4	0.0
Woods Ranch	0.0	0.0	0.1	0.0	0.1	0.0
Total Non-Community	0.6	3.7	74.1	0.0	78.4	0.0
Self-Supplied Industries*	0.0	0.0	0.0	596.0	596.0	1,794.0
Private Domestic	527.7	0.0	0.0	0.0	527.7	0.0
IRON COUNTY TOTALS	528.3	3.7	74.1	596.0	1,202.1	1,794.0

*American Pacific Corp (Western Electrochemical Company), Milgro New Castle, Inc., Circle Four Blue Mountain South

Collectively, the total potable M&I water use from all systems in this portion of the Cedar/Beaver Basin is about 10,047 acre-feet, while secondary use is 3,304 acre-feet; giving a total M&I water use of 13,351 acre-feet.

MILLARD COUNTY M&I WATER SUPPLIES AND USES

The Millard County portion of the Cedar/Beaver Basin includes no incorporated communities. Within this area, there are no public community systems or self-supplied industries. There are 2 public non-community systems and only a few private domestic wells. The locations of the public non-community systems are shown in **Figure 3** on page 6.

Table 13, below, shows annual water use for public non-community systems and private domestic systems in this portion of the Cedar/Beaver Basin. Historic LDS Cove Fort is among the 2 listed non-community systems. This water use amounts to 55 acre-feet of potable water and 6 acre-feet of secondary water.

TABLE 13
MILLARD COUNTY
Water Use for Public Non-Community Systems,
Self-Supplied Industries and Private Domestic Systems
(Acre-Feet/Year)

MILLARD COUNTY WATER SUPPLIER	POTABLE USAGE (Ac-Ft/Yr)					Total Secondary Water Use
	Residential	Commercial	Institutional	Industrial/ Stockwater	Total Potable Use	
Non-Communities						
Cove Fort Chevron	1.7	5.7	0.0	0.0	7.4	0.0
Cove Fort LDS Historic	1.3	0.0	44.5	0.0	45.8	6.4
	3.0	5.7	44.5	0.0	53.2	6.4
Self-Supplied Industries	0.0	0.0	0.0	0.0	0.0	0.0
Private Domestic	1.7	0.0	0.0	0.0	1.7	0.0
MILLARD COUNTY TOTALS	4.7	5.7	44.5	0.0	54.9	6.4

With no public community systems in the Cedar/Beaver portion of Millard County, the total potable M&I water use of all systems in this portion of the Cedar/Beaver Basin is 55 acre-feet, while secondary use is 6 acre-feet; giving a total M&I water use of 61 acre-feet.

WASHINGTON COUNTY M&I WATER SUPPLIES AND USES

The Washington County portion of the Cedar/Beaver Basin includes the incorporated community of Enterprise. Within this area there is one public community system, one public non-community system, and a few private domestic wells. There are no self-supplied industries in this area. Locations of the public community and non-community systems are shown in **Figure 3** on page 6.

As shown in **Table 14**, the maximum annual potable water supply for public community systems in the Cedar/Beaver portion of Washington County is 985 acre-feet; 28% from springs and 72% from wells.

TABLE 14
WASHINGTON COUNTY
Maximum Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

WATER SUPPLIER	Springs	Wells	Surface	Total
WASHINGTON COUNTY				
Enterprise	277.4	707.7	0.0	985.1
WASHINGTON COUNTY TOTALS	277.4	707.7	0.0	985.1

Note: All values represent maximum system source capacities limited by water rights, hydrologic constraints, and/or system constraints.

The reliable potable water supply for public community systems in the Washington County portion of the Cedar/Beaver Basin was determined to be equal to the current annual potable use. Therefore, the reliable potable supply is 632 acre-feet or 64% of the maximum supply. The breakdown of this supply is indicated in **Table 15**, on the following page.

TABLE 15
WASHINGTON COUNTY
Reliable Potable Water Supplies for Public Community Systems
(Acre-Feet/Year)

WATER SUPPLIER	Springs	Wells	Surface	Total*
WASHINGTON COUNTY				
Enterprise	277.4	354.1	0.0	631.5
WASHINGTON COUNTY TOTALS	277.4	354.1	0.0	631.5

* Wells are limited to 50% of their "maximum" capacity for reliable supply when well/pump capacity is the limiting factor. Springs and surface water supplies are equal to their

The following **Table 16**, on the next page, presents the breakdown of the potable water use for the public community system. The current annual potable use is 650 acre-feet of water.

TABLE 16
WASHINGTON COUNTY
Water Use for Public Community Systems

WASHINGTON COUNTY WATER SUPPLIER	POTABLE USAGE (Ac-Ft/Yr)						Service Population	Gallons Per Capita Per Day
	Residential Indoor	Residential Outdoor	Commercial Total	Institutional Total	Industrial Total	TOTAL M&I		
Enterprise Culinary Water System	123.4	348.5	31.3	146.5	0.5	650.2	1,530	379.4
WASHINGTON COUNTY TOTALS A	123.4 B	348.5 C	31.3 D	146.5 E	0.5 F	650.2 G	1,530 H	379.4 J

A, B, C, D, E, F, H

G=B+C+D+E+F

J=G*(325,851 gallons per acre-foot)/(365 days per year)/H

Input data

Potable M&I Water Use

Average gallons per capita per day potable water use

There currently is no secondary use within the public community system of Enterprise.

Various per capita rates for the public community system in the Washington County portion of the Cedar/Beaver Basin are given in the following **Table 17**.

**TABLE 17
WASHINGTON COUNTY
Average Per Capita Water Use
for Public Community Systems**

Water Supplier	Service Population	Residential Water Use			CII Water Use*			TOTAL WATER USE		
		Potable	Non-Potable	Sub Total	Potable	Non-Potable	Sub Total	Potable	Non-Potable	TOTAL
Enterprise Culinary Water System	1,530	275	0	275	0	0	0	0	0	0
WASHINGTON COUNTY TOTALS	1,530	275	0	275	0	0	0	0	0	0

*Commercial, Institutional, and Industrial

Table 18, on the following page indicates water use for public non-community and private domestic systems in this portion of the Cedar/Beaver Basin. All of these uses amount to about 3 acre-feet of potable water.

TABLE 18
WASHINGTON COUNTY
Water Use for Public Non-Community Systems,
Self-Supplied Industries, and Private Domestic Systems
(Acre-Feet/Year)

WASHINGTON COUNTY WATER SUPPLIER	POTABLE USAGE (Ac-Ft/Yr)					Total Secondary Water Use (Ac-Ft/Yr)
	Residential	Commercial	Institutional	Industrial	Total Potable Use	
Non-Communities						
Honeycomb Rocks Campground	0.0	0.0	0.1	0.0	0.1	0.0
Self-Supplied Industries	0.0	0.0	0.0	0.0	0.0	0.0
Private Domestic	3.1	0.0	0.0	0.0	3.1	0.0
WASHINGTON COUNTY TOTALS	3.1	0.0	0.1	0.0	3.2	0.0

Collectively, the total potable M&I water use for all systems in Washington County is 653 acre-feet. There is no M&I non-potable use in this area. This amounts to a total M&I water use of 653 acre-feet for the county.

APPENDIX A
ENOCH WATER USE
DATA FORM

AR=1
1/31/03

Information jointly requested by:
Utah Division of Water Resources, 538-7264
Utah Division of Drinking Water, 536-4200; and
Utah Division of Water Rights, 538-7392.

UTAH WATER USE DATA FORM DATA FOR 2002

Return completed form to:
Utah Division of Water Rights
PO Box 146300
Salt Lake City, UT 84114-6300

System Name: Enoch Municipal Water System
Address: 900 East Midvalley Rd
Enoch, UT 84720

Population Served: 3650 DEQ#: 11004
County: Iron
E-Mail Address: enoche@netutah.com

Contact Person: Ray Ross
Form filled out by: Ray Ross, Gaylen Matheson

Phone Number: (801) 586-1119
Phone Number:

I. STORAGE INVENTORY: Total treated storage capacity: 4,250,000 in gallons. Number of Tanks: 3

II. SOURCE INVENTORY:

1 Source Name: Anderson Well Type: Well Location: Sec 07, T35S, R10W, SLB&M MR Number: 73-99 73-303 73-304 73-491 73-522 73-524
Method of Measurement: Master Meter, () Estimate, () Other
Units of Measurement: X 1,000,000 Gal
Date of Last Pump Test: March 25, 1994 Yield of Well 400 gpm, () cfs
Rated Pump Capacity: 500 gpm, () cfs

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1.8	1.7	1.6	0	9.2	9.4	10.1	7.6	8.0	2.5	0.1	0	52.0

2 Source Name: Homestead Well (12') Type: Well Location: Sec 18, T35S, R10W, SLB&M MR Number: 73-99 73-303 73-304 73-491 73-522 73-524
Method of Measurement: Master Meter, () Estimate, () Other
Units of Measurement: X 1,000,000 Gal
Date of Last Pump Test: Aug. 20, 1973 Yield of Well 780 gpm, () cfs
Rated Pump Capacity: 1970 gpm, () cfs

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
0	0	0	0	0.7	12.8	27.7	9.5	5.8	1.6	1.6	0	59.7

3 Source Name: Ravine Well Type: Well Location: Sec , T, R, B&M MR Number: 73-303 73-298 73-2532
Method of Measurement: Master Meter, () Estimate, () Other
Units of Measurement: X 1,000,000 Gal
Date of Last Pump Test: Mar. 23, 1999 Yield of Well 400 gpm, () cfs
Rated Pump Capacity: 750 gpm, () cfs

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
6.8	6.8	6.3	8.0	7.0	3.8	7.6	1.2	0.2	0	0	0	47.7

RECEIVED
JAN 31 2003
WATER RIGHTS
SALT LAKE

4 Source Name: Woolsey Well (12') Type: Well Location: Sec 07, T35S, R10W, S18E&M NR Number: 73-99 73-303 73-304 73-491 73-522 73-524

Method of Measurement: Master Meter, () Estimate, () Other _____
 Units of Measurement: 1,000 cfs Gal. _____
 Date of Last Pump Test: Feb 21, 1986 Yield of Well _____
 Rated Pump Capacity: 500 gpm, () cfs
 400 gpm, () cfs

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1.2	0	0	2.8	9.5	10.8	12.0	4.7	3.8	0.4	0.1	0	45.3

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

5 Source Name: Iron Works Well Type: Well Location: _____
 Method of Measurement: Master Meter, () Estimate, () Other _____
 Units of Measurement: 1,000,000 _____
 Yield of Well: 1000 gpm
 Rated Pump 1800 gpm

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
0	0	0	0	0	0	10.0	38.1	41.6	35.5	26.4	11.0	162.6

6 Source Name: _____ Type: _____ Location: _____
 Method of Measurement: () Master Meter, () Estimate, () Other _____
 Units of Measurement: _____

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL

7 Source Name: _____ Type: _____ Location: _____
 Method of Measurement: () Master Meter, () Estimate, () Other _____
 Units of Measurement: _____

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL

SOURCE COMMENTS: Water supply conditions were: () Above normal, Below normal

water table dropped 20 feet.

III. WATER USE BREAKDOWN: (Please use sum of the readings from individual meters, not master meter readings at source. If quantities are not known, please estimate. See instructions for definition of uses shown in bold).
 Units of measurement: x 1,000,000 Gal

Residential: Annual quantity of water delivered for residential purposes 338.2. Total number of residential connections 1161.
 Meter readings at individual connections [] or Estimated []
 Number of connections serving multiple units (apartments) from a single connection _____ Units per connection (avg) _____
Commercial: Annual quantity of water delivered for commercial purposes 1.5. Total number of commercial connections 8.
 Meter readings at individual connections [] or Estimated []
Industrial: Annual quantity of water delivered for industrial purposes _____ Total number of industrial connections _____
 Meter readings at individual connections [] or Estimated []
Institutional: Annual quantity of water delivered for institutional purposes 26.7. Total number of institutional connections 16.
 Meter readings at individual connections [] or Estimated []
Stockwatering: Annual quantity of water delivered for stockwatering purposes .9. Total number of stockwatering connections 6.
 Meter readings at individual connections [] or Estimated []
Wholesale: Annual quantity of water delivered for wholesale purposes _____ Please attach a listing of those supplied.
 Meter readings at individual connections [] or Estimated []
Other Uses: Annual quantity of water delivered for other purposes _____ Total number of other connections _____
 Meter readings at individual connections [] or Estimated []
 Describe other uses _____
Unmetered: Annual estimate of water delivered by unmetered connections _____ Total number of unmetered connections _____
 Unmetered connections used for _____

Total annual quantity of water delivered for all purposes 367.3. **Total number of all connections** 1191.
 Of this total, how many connections are active? 36 vacant
1155 active

IV. IRRIGATION SYSTEM (Separate lawn and garden irrigation system, whether controlled by the drinking water supplier or not)

Is any of your area served by a separate ditch or pipe fed irrigation water system? [] Yes, [] No If yes, please provide the following information:
 What percent of your customers are served by a separate irrigation system? _____ %
 Of these customers, what percent are served by ditch? _____ %
 What percent are served by pressurized-pipe? _____ %
 Do you operate and maintain the separate lawn and garden irrigation water system? [] Yes, [] No
 If the separate irrigation system is operated by other entities, please give name of companies, contact person & phone number:

NA

APPENDIX B

**2005 CEDAR/BEAVER RIVER BASIN
DELIVERIES AND DEPLETIONS**

2005 CEDAR/BEAVER BASIN M&I DELIVERIES AND DEPLETIONS TABLE
(Acre-Foot/Year)

WATER SUPPLIER	Potable Residential Indoor Use	Potable Residential Outdoor Use	Potable Commercial Use	Potable Institutional Use	Potable Industrial/Stockwater Use	Total Potable Use	Total Secondary Water Use	Total Indoor Use	Total Outdoor Use	Residential Indoor Return Flow	Commercial Indoor Return Flow	Institutional Indoor Return Flow	Industrial/Stockwater Indoor Return Flow	Total Indoor Return Flow To Treatment Facility	Pond Evaporation	Facility Outflow (Indoor Return Flow)	Outdoor Return Flow	Total Return Flow	Total Deliveries	Total Depletions
Beaver County																				
Beaver City Water System	220.2	10.0	109.7	43.9	11.0	394.8	959.8	327.7	1,026.9	215.8	86.0	8.6	0.0	310.4	116.2	188.0	342.3	530.2	1,354.6	824.4
Manderfield Culinary Water System	4.9	15.0	0.0	0.0	6.3	26.2	0.0	11.2	15.0	4.8	0.0	0.0	0.0	4.8	0.0	4.7	5.0	9.7	26.2	16.5
Milford City Water System	122.0	186.6	36.3	137.9	1.0	483.8	251.9	179.6	556.1	119.6	28.5	27.0	0.0	175.0	38.8	132.8	185.4	318.2	735.7	417.5
Minersville Water System	71.2	112.0	1.5	5.9	113.8	304.4	168.6	187.4	285.6	69.8	1.2	1.2	0.0	72.1	15.2	55.5	95.2	150.7	473.0	322.3
TOTAL COMMUNITY SYSTEMS	418.3	323.6	147.5	187.7	132.1	1,209.2	1,380.3	705.9	1,883.6	409.9	115.6	36.8	0.0	562.4	170.2	381.0	627.9	1,008.8	2,589.5	1,580.7
Non-community Systems	1.3	2.7	24.0	12.4	0.0	40.4	0.0	23.0	17.4	1.3	18.8	2.4	0.0	22.5	0.0	21.4	5.8	27.2	40.4	13.2
Self-Supplied Industries	0.0	0.0	0.0	0.0	2,060.7	2,060.7	3,629.0	5,689.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5,689.7	5,689.7
Private Domestic Systems	55.5	111.1	0.0	0.0	0.0	166.6	0.0	55.5	111.1	54.4	0.0	0.0	0.0	54.4	0.0	51.7	37.0	88.7	166.6	77.9
COUNTY TOTALS	475.1	437.4	171.5	200.1	2,192.8	3,476.9	5,009.3	6,474.1	2,012.1	465.6	134.5	39.2	0.0	639.3	170.2	454.0	670.7	1,124.7	8,486.2	7,361.5

Iron County																				
Angus Water Co., Inc.	12.0	54.0	0.0	12.0	0.6	78.6	0.0	15.0	63.6	11.8	0.0	2.4	0.0	14.1	0.0	13.4	21.2	34.6	78.6	44.0
Brian Head Water Supply	21.5	0.0	10.8	1.5	138.1	171.9	0.0	168.5	3.4	21.1	8.5	0.3	0.0	29.8	68.2	0.0	1.1	1.1	171.9	170.8
Buena Vista Community	32.7	91.0	0.0	0.8	0.7	125.2	0.0	33.6	91.6	32.0	0.0	0.2	0.0	32.2	0.0	30.6	30.5	61.1	125.2	64.1
Cedar City Municipal Water	1,971.9	2,158.5	1,330.1	636.4	149.5	6,246.4	765.3	3,312.8	3,698.9	1,932.5	1,042.8	124.7	0.0	3,100.0	1,020.5	2,017.5	1,233.0	3,250.4	7,011.7	3,761.3
Cedar Highlands Homeowners Assoc.	24.5	0.0	0.0	0.0	0.0	24.5	0.0	24.5	0.0	24.0	0.0	0.0	0.0	24.0	0.0	22.8	0.0	22.8	24.5	1.7
Cross Hollow Hills Water Users Assoc.	16.7	25.8	0.0	0.5	2.1	45.1	0.0	18.9	26.2	16.4	0.0	0.1	0.0	16.5	0.0	15.6	8.7	24.4	45.1	20.7
Eagle Valley Ranch	8.0	10.0	0.0	0.0	0.6	18.6	0.0	8.6	10.0	7.8	0.0	0.0	0.0	7.8	0.0	7.4	3.3	10.8	18.6	7.8
Enoch Municipal Water System	389.7	480.1	6.4	80.0	100.1	1,056.3	0.0	510.9	545.4	381.9	5.0	15.7	0.0	402.6	114.7	279.9	181.8	461.7	1,056.3	594.6
Escalante Valley Water System	8.8	2.0	0.0	0.0	0.0	10.8	0.0	8.8	2.0	8.6	0.0	0.0	0.0	8.6	0.0	8.2	0.7	8.9	10.8	1.9
Fifetown Water System	20.0	22.8	0.0	0.0	0.8	43.6	0.0	20.8	22.8	19.6	0.0	0.0	0.0	19.6	0.0	18.6	7.6	26.2	43.6	17.4
Flying L Subdivision	4.8	7.2	0.0	0.0	0.2	12.2	0.0	5.0	7.2	4.7	0.0	0.0	0.0	4.7	11.5	0.0	2.4	2.4	12.2	9.8
Irontown	5.6	0.0	0.0	0.0	0.0	5.6	0.0	5.6	0.0	5.5	0.0	0.0	0.0	5.5	0.0	5.2	0.0	5.2	5.6	0.4
Meadows Ranches Homeowners Assoc., Inc.	31.0	46.4	0.0	0.1	0.5	78.0	0.0	31.5	46.5	30.4	0.0	0.0	0.0	30.4	0.0	28.9	15.5	44.4	78.0	33.6
Mid Valley Estates Water Co.	61.2	44.3	0.0	0.7	0.6	106.8	0.0	61.9	44.9	60.0	0.0	0.1	0.0	60.1	0.0	57.1	15.0	72.1	106.8	34.7
Monte Vista Community & Water Co.	15.9	27.4	0.0	2.0	0.4	45.7	0.0	16.7	29.0	15.6	0.0	0.4	0.0	16.0	0.0	15.2	9.7	24.8	45.7	20.9
Mt. View SSD	15.2	25.2	0.0	0.0	0.2	40.6	0.0	15.4	25.2	14.9	0.0	0.0	0.0	14.9	0.0	14.2	8.4	22.6	40.6	18.0
Newcastle Water Co.	36.6	58.3	1.7	21.1	8.8	126.5	30.4	51.0	105.9	35.9	1.3	4.1	0.0	41.3	0.0	39.3	35.3	74.6	156.9	82.3
Old Meadow Ranches Community & Water Co.	2.4	16.0	0.0	0.0	0.5	18.9	0.0	2.9	16.0	2.4	0.0	0.0	0.0	2.4	0.0	2.2	5.3	7.6	18.9	11.3
Paragonah Municipal Water System	33.9	0.0	0.0	0.2	0.0	34.1	186.4	33.9	186.6	33.2	0.0	0.0	0.0	33.3	0.0	31.6	62.2	93.8	220.5	126.7
Park West Water Company	9.6	18.1	0.0	0.6	0.7	29.0	0.0	10.4	18.6	9.4	0.0	0.1	0.0	9.5	0.0	9.0	6.2	15.2	29.0	13.8
Parowan Municipal System	226.7	50.2	76.0	20.0	3.0	375.9	511.0	294.5	592.4	222.2	59.6	3.9	0.0	285.7	68.2	211.7	197.5	409.2	886.9	477.7
Rainbow Ranches Water Co.	20.7	5.6	0.0	2.7	0.8	29.8	0.0	22.0	7.8	20.3	0.0	0.5	0.0	20.8	0.0	19.8	2.6	22.4	29.8	7.4
Spring Creek Water Users	18.3	18.1	0.0	0.0	1.0	37.4	0.0	19.3	18.1	17.9	0.0	0.0	0.0	17.9	0.0	17.0	6.0	23.1	37.4	14.3
Summit SSD	19.1	39.7	0.0	10.0	15.0	83.8	17.0	36.1	64.7	18.7	0.0	2.0	0.0	20.7	0.0	19.6	21.6	41.2	100.8	59.6
TOTAL COMMUNITY SYSTEMS	3,006.8	3,200.7	1,425.0	788.6	424.2	8,845.3	1,510.1	4,728.7	5,626.7	2,946.7	1,117.2	154.6	0.0	4,218.4	1,283.2	2,884.9	1,875.6	4,760.5	10,355.4	5,594.9
Non-community systems	0.2	0.4	3.7	74.1	0.0	78.4	0.0	18.0	60.4	0.2	2.9	14.5	0.0	17.6	0.0	16.7	20.1	36.9	78.4	41.5
Self-Supplied Industries	0.0	0.0	0.0	0.0	596.0	596.0	1,794.0	2,390.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,390.0	2,390.0
Private Domestic Systems	175.9	351.8	0.0	0.0	0.0	527.7	0.0	175.9	351.8	172.4	0.0	0.0	0.0	172.4	0.0	163.8	117.3	281.0	527.7	246.7
COUNTY TOTALS	3,182.9	3,552.9	1,428.7	862.7	1,020.2	10,047.4	3,304.1	7,312.6	6,038.9	3,119.2	1,120.1	169.1	0.0	4,408.4	1,283.2	3,065.4	2,013.0	5,078.4	13,351.5	8,273.1

Millard County																				
(none)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL COMMUNITY SYSTEMS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-community Systems	1.0	2.0	5.7	44.5	0.0	53.2	6.4	14.5	45.1	1.0	4.5	8.7	0.0	14.2	0.0	13.5	15.0	28.5	59.6	31.1
Self-Supplied Industries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Private Domestic Systems	0.6	1.1	0.0	0.0	0.0	1.7	0.0	0.6	1.1	0.6	0.0	0.0	0.0	0.6	0.0	0.6	0.4	0.9	1.7	0.8
COUNTY TOTALS	1.6	3.1	5.7	44.5	0.0	54.9	6.4	15.1	46.2	1.6	4.5	8.7	0.0	14.8	0.0	14.0	15.4	29.4	61.3	31.9

Washington County																				
Enterprise	123.4	348.5	31.3	146.5	0.5	650.2	0.0	178.2	472.0	120.9	24.5	28.7	0.0	174.2	58.9	111.8	157.3	269.1	650.2	381.1
TOTAL COMMUNITY SYSTEMS	123.4	348.5	31.3	146.5	0.5	650.2	0.0	178.2	472.0	120.9	24.5	28.7	0.0	174.2	58.9	111.8	157.3	269.1	650.2	381.1
Non-community Systems	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Self-Supplied Industries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Private Domestic Systems	1.1	2.0	0.0	0.0	0.0	3.1	0.0	1.1	2.0	1.1	0.0	0.0	0.0	1.1	0.0	1.0	0.7	1.7	3.1	1.4
COUNTY TOTALS	124.5	350.5	31.3	146.6	0.5	653.4	0.0	179.4	474.0	122.0	24.5	28.7	0.0	175.3	58.9	112.9	158.0	270.9	653.4	382.5

BASIN COMMUNITY SYSTEMS	3,548.5	3,872.8	1,603.8	1,122.8	556.8	10,704.7	2,890.4	5,612.9	7,982.2	3,477.5	1,257.4	220.1	0.0	4,955.0	1,512.2	3,377.7	2,660.7	<
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