WASHINGTON COUNTY WATER CONSERVANCY DISTRICT

Virgin River
Photo: Corey Cram

Manager's Message

By Ron Thompson, General Manager

Population projections dictate methodical and relentless approach to water development

Washington County is facing substantial deficits with regard to its future water supply. It is essential that Washington County realistically assess what we know and what we do not know about our future water supplies. The welfare of our community, our economy and our ecosystem relies on a thorough analysis. Serious questions need to be considered:

> *Water demand will increase from 46,740 acre feet annually in 2005 to 265,780 acre feet annually in 2060.*

- How much more water has to be developed in Washington County in order to meet the residential and commercial needs of future residents?
- Where will this water come from?
- How do we go about developing this water?
- How do we address projected population numbers and make long-term plans to meet projected demand?
- When will this water be needed?

If the District is to accomplish its mission of providing and stabilizing water supplies for its service area, it has no choice but to answer these questions.

We also have to take a long look at historical growth figures in our county, pair that with current projected growth numbers and work diligently to get the water here by the time it is needed.

As part of the preliminary environmental and engineering work for the Lake Powell Pipeline Project, the engineering firm of MWH Americas, Inc. has completed a Water Needs Assessment (Assessment). This Assessment is intended to address the issues outlined above. In addition, the Assessment provides:

- realistic information that gives us a comprehensive picture of the water resources now available as well as the water supply that will be needed in the near future;
- a basis for a course of action; and
- the timing for the need for water from future water resources that may be available.

> *Current water resources and planned projects, including water conservation but excluding the Lake Powell Pipeline, will provide sufficient water to support a population of approximately 280,000. Projections have us at that number by 2020.*
>
> —Ron Thompson

This analysis is complex and must take into account various factors including, but not limited to, residential and commercial growth patterns, water availability, inconsistent weather cycles and water conservation.

It is the District's intent to share with you in special editions of the *Water Line* some of the conclusions reached in this Assessment. In this particular edition, we will take a look at:

- the methods used to project population growth;
- water use in Washington County;
- the current permanent and non-permanent population of Washington County;

- actual population projections; and
- the water demand forecast through the year 2060.

The information contained here will only touch the surface of the Assessment. For a more in-depth look at the Assessment, you may access it on the Utah Division of Water Resources' Web page at http://www.water.utah.gov/LakePowellPipeline/ProjectUpdates.

Water development critical

Population numbers from the Governor's Office of Planning and Budget

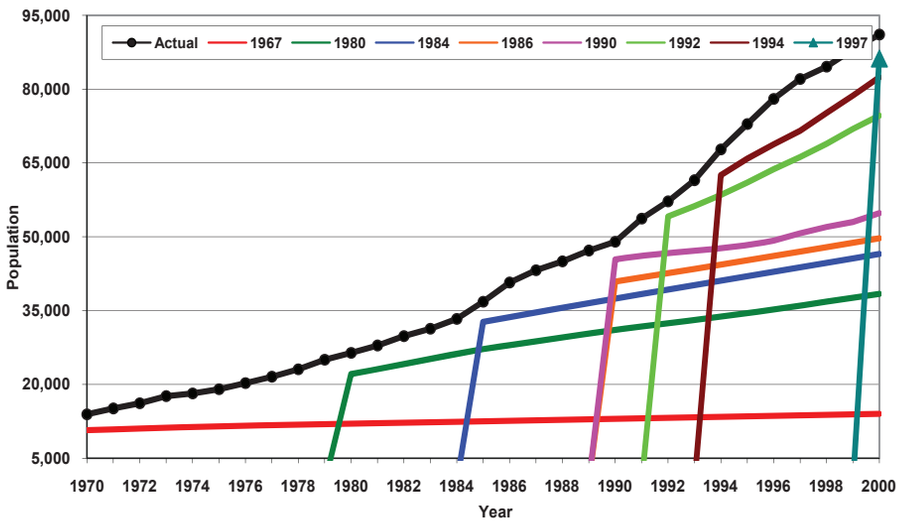
In order to establish an estimate of future water needs in Washington County, the Water Needs Assessment (Assessment) utilized information from the 2008 Governor's Office of Planning and Budget (GOPB).

The GOPB estimates future population projections, based on past populations, to provide insight into the growth trends of an area. The projections enable the cities/county to plan for future water, power, housing and infrastructure needs.

Eight historical population projections have been made by the GOPB for Washington County. Original projections indicated there would be only a 30% increase in Washington County's population between 1970 and 2000. The actual data supplied by the Census Bureau shows a population increase of 560% for this same period.

The colored lines in this graph show that each successive population projection made by the GOPB came closer to meeting the mark each year. GOPB's projection of a population of 860,378 by the year 2060 is realistic.

Therefore, the GOPB's projections were used in this Assessment to calculate future population numbers. Future water demand is calculated by actual water use (with an increasing amount of conservation each year) and the population projections.



Population projections for Washington County[1]

The following chart contains data from the GOPB. It depicts projected population growth and the annual growth rate for six cities within the county and the District's service area as a whole.

District / City	Parameter[2]	Year							2005 to 2060 AGR
		2005	2010	2020	2030	2040	2050	2060	
WCWCD	Pop.	127,090	168,078	279,864	415,510	559,670	709,674	860,378	--
	AGR	--	5.59%	5.10%	3.95%	2.98%	2.37%	1.93%	3.48%
Ivins	Pop.	6,860	10,477	17,436	25,886	34,867	44,213	53,602	--
	AGR	--	8.47%	5.09%	3.95%	2.98%	2.37%	1.93%	3.74%
La Verkin	Pop.	4,370	5,162	8,592	12,756	17,182	21,787	26,413	--
	AGR	--	3.33%	5.09%	3.95%	2.98%	2.37%	1.93%	3.27%
Hurricane	Pop.	11,180	16,381	27,287	40,512	54,568	69,193	83,887	--
	AGR	--	7.64%	5.10%	3.95%	2.98%	2.37%	1.93%	3.66%
St. George	Pop.	67,000	84,245	140,268	208,254	280,507	355,703	431,239	--
	AGR	--	4.58%	5.10%	3.95%	2.98%	2.37%	1.93%	3.39%
Santa Clara	Pop.	6,000	9,325	15,532	23,061	31,062	39,387	47,751	--
	AGR	--	8.82%	5.10%	3.95%	2.98%	2.37%	1.93%	3.77%
Washington	Pop.	15,400	22,858	38,285	57,050	77,011	97,793	118,818	--
	AGR	--	7.90%	5.16%	3.99%	3.00%	2.39%	1.95%	3.71%

[1] Source of population projections is GOPB (2008), except for the 2005 population, which is estimated population data accessed from (DWRe 2008a).
[2] Pop = GOPB population projection; AGR = annual growth rate.

Even though the population increase portrayed in this chart is rapid, the annual growth percentages are fairly conservative compared to historical annual growth rate percentages. One might assume that these population projections are based on the rapid growth we have recently experienced. That is not the case. The projections are based on long-term averages of actual growth experienced in Washington County. There is little to suggest that these projections are higher than what will be realized.

to meeting future demand

Water use in Washington County

Per capita water use numbers are generated by dividing the amount of water used by the permanent population. These water consumption rates are frequently compared for different cities or parts of the country. It is important to understand how these numbers are calculated and what is included. Several factors can affect the outcome of per capita water use numbers, such as:

Second homes – Washington County is unique in that it has a relatively high percentage of non-permanent households. The County's tax assessment figures provided the information needed to come up with the percentage of non-permanent households who use water but who are not counted in the permanent population. An estimated 27% of the households in Washington County are second homes. The water used by these non-permanent households is counted and applied to the water used by permanent residents.

City of St. George

Boat launching at Sand Hollow State Park

Student population, tourism and prolonged growing season –

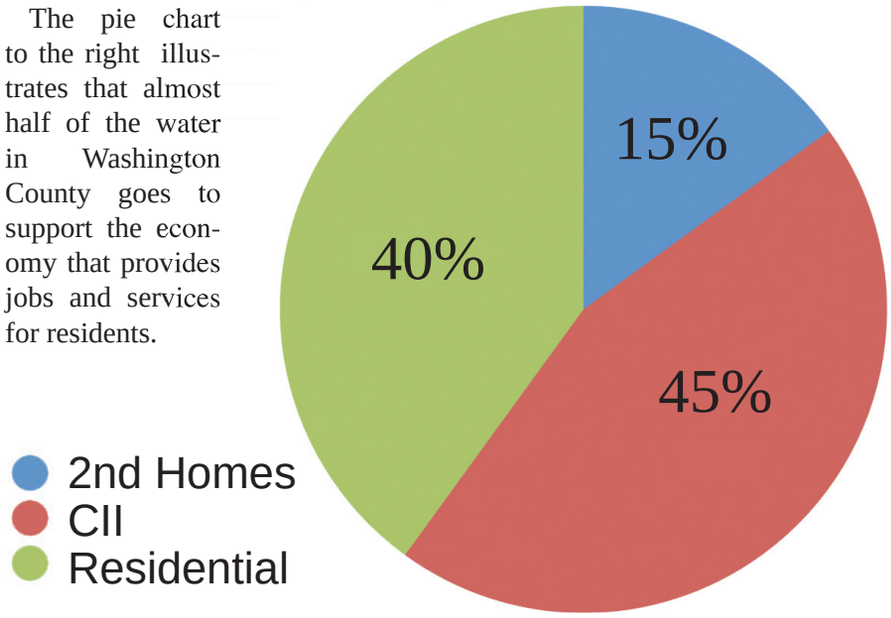
- 42% of water used by commercial, institutional and industrial (CII) facilities, including a student population of over 10,000 and 16 million tourists who visit Washington County annually, is assigned to the water use of our permanent residents.
- A prolonged growing season coupled with the lack of precipitation during that growing season increases water demand in comparison to some of the "model" communities like Tucson, Arizona and Portland, Oregon.

The Utah Division of Water Resources provided the 2005 municipal and industrial water use numbers for the permanent population of Washington County. (see chart below)

2005 Per Capita Water Use			
	Culinary	Secondary	Total
Washington County Water Conservancy District	276.0	52.3	328.3

Water use percentages

The pie chart to the right illustrates that almost half of the water in Washington County goes to support the economy that provides jobs and services for residents.



LAKE POWELL PIPELINE
Delivering the future.

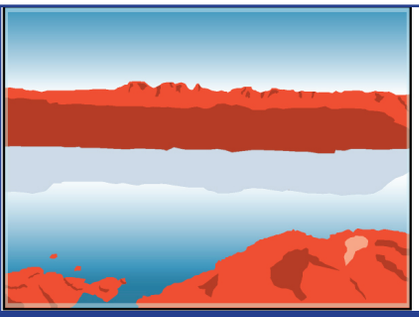
Projected total water demand, both culinary and secondary, for the Washington County Water Conservancy District's (WCWCD) service area was calculated by taking into account the population projections from the GOPB and the per capita water use with conservation. The results are the water demand figures for the period from 2005 to 2060 as listed in the chart below.

WCWCD Municipal and Industrial Water Demand Forecast						
Year	Population	2005 Per Capita Use	Assumed Conservation from 2005	Per Capita Use with Conservation (gallons/day)	Base Water Use Forecast Demand (acre feet)	Total Projected Water Demand (acre feet)
2005	127,090	328.3	0%	328.3	46,740	46,740
2010	166,080	328.3	1%	323.6	60,920	60,920
2020	279,860	328.3	4%	314.1	98,460	98,460
2030	415,510	328.3	7%	304.6	141,770	141,770
2040	559,670	328.3	10%	295.1	185,010	185,010
2050	709,670	328.3	13%	285.6	227,050	227,050
2060	860,380	328.3	16%	275.8	265,780	265,780

The conservation percentages in the above chart are based on the Utah Division of Water Resources' goal of achieving 25% reduction in per capita use by 2050. This translates into an additional 13% reduction in per capita municipal use from 2005-2050 within the service area of the WCWCD beyond the conservation achieved to date.

If the Lake Powell Pipeline is not built, water demand could be met only up to the year 2020. Some of the consequences of not addressing our future needs could include:

- **severe limits on business and residential development;**
- **water shortages;**
- **unavailability of water for lawns during the season of peak demand;**
- **diminished pressure in water lines;**
- **increased water rates due to high demand and short supply; and**
- **reduction in the amount of stored water resulting in severe water restrictions during drought years.**



WASHINGTON COUNTY WATER CONSERVANCY DISTRICT

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