Concepts for Reliable, Affordable Water to Support Washington County's Growth

Conserve Southwest Utah (CSU) is concerned that relying on water from the Lake Powell Pipeline (LPP) project is unsustainable and the risks have not been disclosed to the public or the decision makers. This paper describes the alternative to the LPP (Improved Local Water Management) and the LPP risks (water right and finances). Addressing these points will require additional data, analysis and open discussion among all of the stakeholders of the Lake Powell Pipeline.

We Have Enough Local Water to Grow Without the Lake Powell Pipeline

Improved Local Water Management (ILWM)

ILWM is a concept that includes continuously improving conservation and comprehensive accounting and management of all water supplies in the county, including extensive secondary water distribution and use and water recycling. This requires concrete executable planning, implementation and monitoring. The concept was born from our research indicating the Lake Powell Pipeline carries an unacceptable risk and is unnecessary if we improve the management of our local water. Many of the initial ideas for ILWM were included in the Local Waters Alternative paper formally submitted to FERC as an LPP alternative.

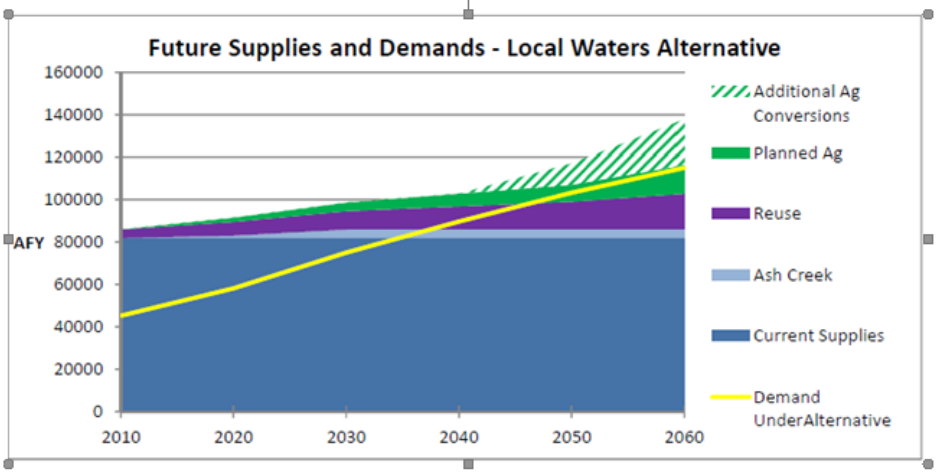
Local Waters Alternative

In 2012, Conserve Southwest Utah (then Citizens for Dixie's Future) engaged Western Resource Advocates to study the Lake Powell Pipeline Project the "*Local Waters Alternative to the Lake Powell Pipeline*" (LWA).[1] It concluded that our local water supply, if managed more completely, would support our projected growth into the distant future and that we are in no danger of running out of water, even if you don't consider more supplies listed below.

Our Local Water Supply Can Meet the Demand

The following chart from the 2012 *Local Waters Alternative*, though outdated, illustrates the feasibility of this alternative. It shows the demand (yellow line) easily within the supply. It is based on a demand of 176 gallons per capita day (GPCD) for a population of 581,700 in 2060 and with a water supply of between 116,000 acre-feet a year (AFY) to 138,000 AFY.

Future Supplies and Demands – *Local Waters Alternative to the Lake Powell Pipeline*



Demand based on old 581,700 projection for 2060 – current "baseline" pop projection 468,830 (Kem C. Gardner)

Our Demand for Water Can Be Significantly Reduced

The demand for water is determined by population and the average use of water in gallons per capita daily (GPCD). It is primarily driven by growth and mitigated by conservation. The following chart shows the demand for Municipal & Industrial water based on different per capita use (demand) rates. This concept identifies that 85,000 AFY could support a population of 508,952 using 150 GPCD in 2065. 150 GPCD is the approximate current target for conservation-minded Southwest communities, and that number does not represent extraordinary conservation. Water budgeting programs [2] alone have been shown to save 40% to 50% in water use with a short-term return on investment. See CSU web page/water conservation[2] for more information on creating water budgets.

Year	Population	Demand @ 300 GPCD AFY	Demand @ 200 GPCD AFY	Demand @ 150 GPCD AFY
2050	391,468	131,550	87,700	65,775
2065	508,952	171,030	114,020	85,515

Notes: 1) Population is per recent Kem C. Gardner Policy Institute population projections
2) 300 GPCD is the current demand in Washington County.
3) Albuquerque, NM supports 600,000 people on less than 100,000 AF, which is approximately 150 GPCD.
4) Reports show Washington County could have more water supply than 85,515 AFY by 2065.

We Have Plenty of Local Water Supplies

Estimates for available local water have been widely variable. Early LPP studies estimated a supply of 134,000 acre-feet a year (AFY) (culinary and secondary water) could be available in Washington County by 2060. Their current estimate of water supply is that only 60,000 AF of culinary water is available, with very little added by 2060; secondary water is not mentioned. The Water District underestimates many existing local water sources and those that could be developed in the future. Our analyses show that local supplies could provide enough water for growth. Undeclared or underutilized water sources include:

- Increased yield from currently identified future sources (e.g., wells)
- Appropriate accounting of agricultural water conversions to culinary and/or secondary
- Inclusion of water rights from private landowners that convert with development
- Increased reuse and treatment of abundant brackish water
- Increased conservation
- Increased use of secondary water for M&I irrigation
- Inclusion of undeveloped city water rights that can still be developed in the future
- Rainwater capture
- Increased yield from the Virgin River and local reservoirs and underlying aquifers

Criticisms Are Unfounded

The following are claims that relying on local water supplies is not feasible or wise:

- *Sand Hollow and Quail Lake reservoirs and Sand Hollow aquifer, fed from the Virgin River, can only provide about 30,000 AFY as annual supply to 2060.*

  We believe this is underestimated. The Division of Water Resources projects an 113,000 AFY Virgin River depletion to 2050, more than triple the claim of 30,000 AFY.[3] This is not identified in future supplies and in spring high water flows that can be stored in reservoirs.

- *"Washington County must have a second source of water to ensure a reliable supply."*

  The sections below address the risks involved with using Lake Powell as a second source. It appears that local water sources carry much less risk and cost than the Lake Powell Pipeline. Since pioneer settlement, wells and springs have provided water to communities because the water quality of the Virgin River was poor. In 1980 the Quail Creek Reservoir was built and water could be treated for culinary use. Thus, the Virgin River is not the only source of water for the county. Wells and springs provide the majority of water to communities.

- *"The state of Utah must get its share of the Colorado River before some other state gets it. Washington County can be more aggressive with conservation later, when required."*

  Due to reduced flows and over-allocation, Utah may not have a remaining share left to develop (see the section below). It is unclear how Utah could lose its legal share of the Colorado to another state. It is, however, very clear that conservation will be required at some point, and it makes sense to address the low cost and low risk elements of Improved Local Water Management before the high cost, high risk Lake Powell Pipeline.

- *"The county will run out of water by 2024, the only alternative is to treat the remaining available water using expensive reverse osmosis; yards would have to be converted to hardscapes of rocks and concrete. It would cost more than Lake Powell Pipeline."*

  There is no evidence provided for this claim. Our analysis reveals we are not running out of water in 2024, even without improving our local water management.

- *"All agricultural water in the county would have to be converted to culinary"*

  We do not advocate the development of agricultural land; it merely recognizes that wherever development occurs, agricultural water could convert to culinary or secondary. It is recognized that some agricultural water is more expensive than others to convert to culinary use. More analysis is required to account for agricultural water, estimate its conversion rate, and determine its treatment costs.

Relying on our Local Water is Less Costly and Less Risky than the Lake Powell Pipeline

Improved Local Water Management projects to increase supply and decrease demand can be addressed incrementally as growth and demand requires. Their costs and benefits are fairly well known. These projects would be small (in comparison to the Lake Powell Pipeline), requiring much less capital and much shorter financing periods with less state support. This is a much more fiscally conservative approach, involving much less risk, while protecting the state's bond rating.

The Lake Powell Pipeline Is Very Risky

Climate Variability Increases the Risk of an Already Over-Allocated Colorado River

Snowpack, the main source of water for community water systems, is estimated to be reduced greatly by increasing temperatures. Dr. Robert Gilles from the Utah Climate Center found the temperatures of all Utah's cities are going up. Utah has had 9% less snow since 1950 and less winter storms generally. Other studies predict that the Colorado River flows could be reduced by 10-30% over the next 50 years.

The Utah Climate Center is far from the only organization warning of higher temperatures and increasing drought throughout the region. The Western States Water Council counts the Utah Department of Environmental Quality as a member organization and the Utah Division of Water Resources as an executive council member. In March, 2018 the council resolved that it "*supports state and federal applied research and hydroclimate data collection programs that would assist water agencies at all levels of government in adapting to climate variability and making sound scientific decisions.*"[4]

In contrast, state and federal studies, which have been cited thus far in support of the LPP, have not included study results that have already been undertaken on the variability of future river flows. The projected impacts of climate change on the diminishing Colorado River flows are widely accepted within the scientific community. They should be included directly in planning for future water supplies.

The Lake Powell Pipeline's Water Right is Risky

Utah is not entitled to a specific amount of water. Utah's water rights are not fixed; as water supplies go down its water right goes down proportionally. Utah has 23% of the Upper Basin Colorado River flow. The 1956 Lake Powell Pipeline water right, which was allocated from the Ultimate Phase of the Central Utah Project (CUP), is a "junior" water right. It is junior to many senior water right holders and is at high risk of being shut off as the water supply is reduced. The State of Utah is ignoring this risk. As Colorado River flows diminish over time the LPP water right will be outranked by senior water right holders. Furthermore, the Utah Division of Water Rights indicated that the state has over-allocated its Colorado River water rights. In litigation, "junior water rights" holders will go wanting. Precedent in water law shows that "paper" rights and "wet water" can be very different. The LPP water right is junior to the following water right holders:

- Central Utah Project
- Lower Basin states
- Ute Indian Tribe
- Navajo and other tribal rights
- Other Federal Reserved water rights; not yet determined
- Mexico, and other water rights established at earlier dates

Utah has Over-allocated Its Colorado River Water Rights

It is well documented that there is more water allocated from the Colorado River than the river produces annually even without considering a warming climate. Utah has also over-promised its Upper Basin allocation water to communities across the state. Utah's Compact allocation is a "depletion" (permanently removed from the watershed) of about 1.369 million-acre feet yearly. However, according to the Upper Basin Colorado River Water Rights website, Utah has allocated 2.5 million-acre feet of depletion and 6

million-acre feet of diversions (some of which would return to the watershed). Utah should not allocate any water to the Lake Powell Pipeline until this over-allocation is resolved.

At some point Utah will have to realize that any new diversion will be taking water away from another Utah water user. With snow declining in the future, Utah's mountains will not produce as much water. Utah will have to decide who will take priority: will it be water for the Wasatch Front, or the CUP projects, landscaping, commercial development, oil and gas development, or oil shale development? Will there be enough water for other water districts that have approved applications and think they have 50 years to develop it? The problem is the state has made promises to water providers for future water supplies that cannot be met because the future water supplies are shrinking. The state should disclose this over-allocation to the public and water providers so communities can take steps now to use their existing supplies more efficiently.

Water resources in every urban area in the southwestern United States will come under increasing pressure as population and economic growth continue through the coming decades. To prevent potential future exposure to legal challenges based on the relative seniority of water right holders in Utah, the over-allocation of Utah's water rights should be addressed. Utah also needs to start planning now for a range of adaptive strategies for a changing climate.

The Lake Powell Pipeline's Costs Are Undetermined

As stated by the project proponents, the capital cost cannot be determined until the route is finalized. Estimates in early 2018 range from $1.1 to $1.8 billion dollars with $1.4 billion dollars currently being used as an estimated cost. Comparisons to other similar projects indicate the LPP construction costs could be much higher. To give but one example of the range of variables involved consider the "pumped storage project" which is a key component of the project in the FERC cost benefit analysis. The assumption that power will be produced and sold would be a financial benefit to the pipeline. However, regional power costs are cheaper than the power produced by the pumped storage project yet the studies still claim they will make billions of dollars from it.

The $1.4 billion cost of the pipeline does not include the $660 million-dollar capital cost of the pumped storage component, nor is there accounting for annual costs of $57 million. Costs of the pumped storage component are expected to be borne by Washington County and these costs have not been included in discussions about the financial impacts on the county.

In addition, the maintenance costs of quagga mussels coming from Lake Powell in the Lake Powell Pipeline and Washington County reservoirs and pipelines has not been considered.

Washington County's Ability to Repay is a Risk Borne by All Utah Taxpayers

As we understand it, the state will bond the project and pay interest on it for the bond period. However, Washington County will not be able to fully repay the state during that bond period - it will be a much longer repayment period. This effectively results in an interest-free loan from the state to the county for the difference in the payment periods. Until the costs are known and available funding sources committed for the LPP, the entire state is being asked to commit a significant but unknown amount of their tax dollars for a project whose many risks have not yet been fully addressed.

Conclusion

The idea for the Lake Powell Pipeline was hatched in the late 1990s, when the county's 2060 population was projected to be 860,000, when the Lake Powell Pipeline's costs were estimated to be $187 M, when the benefits and costs of conservation were relatively unknown, and when the risk of diminishing flows in the Colorado River was relatively unknown. In 2006, when the Lake Powell Pipeline Act was passed by the Utah legislature the cost was estimated at $500 million.

Now things have changed: over allocation of the state's water is becoming known, the 2060 population is projected to be about 1/3 less, the Lake Powell Pipeline costs are projected to be at least 10 times more (counting pumped storage, operations, maintenance and debt service), the benefit and cost of conservation is much better known, and the risk of less water from the Colorado River is much clearer. It seems obvious that the less costly, less risky, incremental implementation of Improved Local Water Management should be addressed first. It will position our county and the state much better economically.

Utah's and Washington County's growth and economic potential can be supported with Improved Local Water Management, more so than the Lake Powell Pipeline, considering the interest payment savings. The Lake Powell Pipeline's debt, not to mention its risk, may be a limiting factor to Utah's economic growth. Our local water will allow us to achieve our potential without encumbering our state and county with unnecessary debt and a water supply vulnerable to drought, litigation, political conflict, controversy and uncertainty.

References

[1] Local Waters Alternative: https://westernresourceadvocates.org/publications/the-local-waters-alternative/

[2] Water Budgeting: http://conserveswu.org/programs/water-conservation/.

[3] Utah Perspectives Colorado River, page 8: https://water.utah.gov/InterstateStreams/PDF/TheColoradoRiverart.pdf

[4] Supporting Federal Research on Climate Adaptation (March 14, 2018) http://www.westernstateswater.org/wp-content/uploads/2018/08/421-WSWC-Resolution-supporting-Federal-Climate-Adaptation-Research.pdf

[5] CSU presentation on water supplies Sept 17, 2018 Finance Board http://conserveswu.org/wp-content/uploads/Finance-Board-2018-Sept-17-FINAL-pp.pdf; and audio (start at 43:38 into the audio) https://www.utah.gov/pmn/files/429905.MP3