

Town of Weaverville - Alternative Water Sources Initiative (AWSI)

The Town of Weaverville is nearing its supply usage limits requiring action to increase availability of potable water for its residents. It appears that the Town has not considered other water supply alternatives, such as those that have proven to be more affordable than many infrastructure expansion projects such as efficiencies to drive conservation of the current supply. The purpose of the Alternative Water Sources Initiative (AWSI) is to provide the Town with alternatives to the Water Treatment Plant (WTP) Expansion Plan.

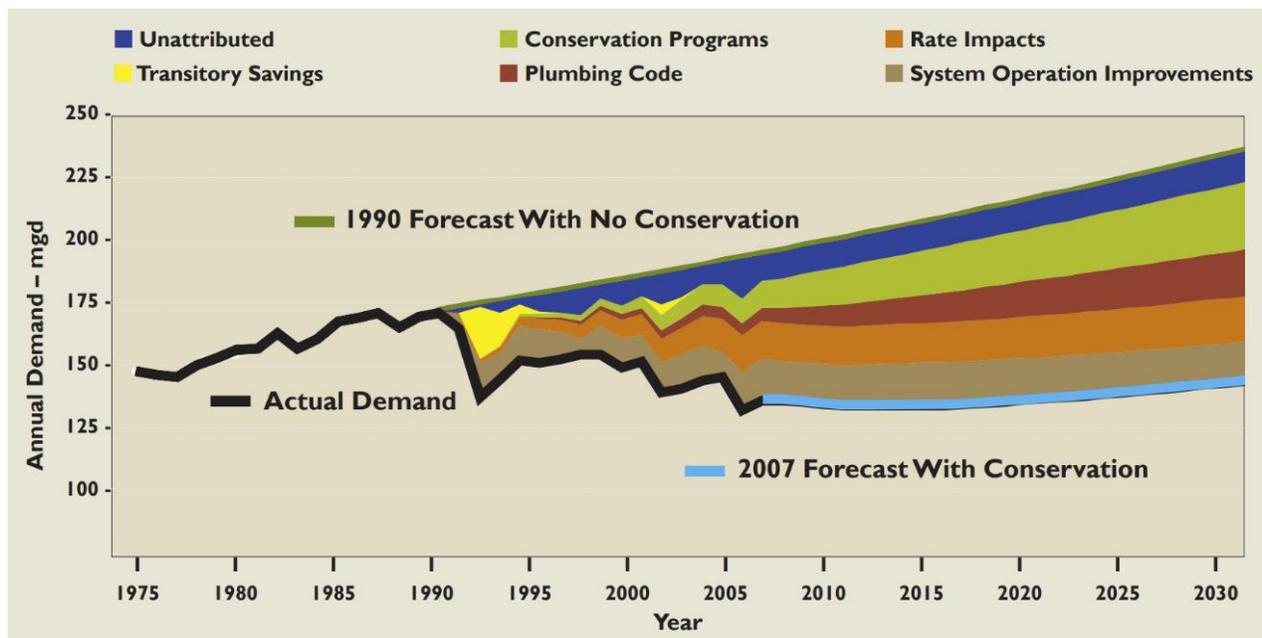
Water Utility Best Practices Takeaways:

- **Water efficiency works** and has been implemented all over the country saving millions of dollars in infrastructure costs for municipalities and preserving the finite supply of water from which it is taken.

Type of Supply	Cost Range per 1 million Gallons per day (MGD)
Weaverville WTP Expansion	\$9 million per MGD
Typical Reservoir	\$4 - \$10 million per MGD
Water Reuse	\$1.4 - \$11.2 million per MGD
Efficiency & Conservation	Up to \$2.5 million per MGD ¹

- **Expansion is often unnecessary or premature** due to projections being increasingly higher than actual demand – **see Seattle case study*

Figure 1: Seattle Public Utilities' Demand Forecasts With and Without Conservation



Americans are using less water—per capita water use has decreased over 27% since the 1980s leading to over-estimations of demand which instigate costly and unnecessary infrastructure expansion and municipal debt, as seen in the example from Seattle.

¹American Rivers, 2013, *Drinking Water Infrastructure: How Pays and How (And For What?)*, <https://www.americanrivers.org/conservation-resource/drinking-water-infrastructure-pays/>

Assumptions:

- The Town of Weaverville is only nearing withdrawal limits during peak demand scenarios which is at least 15% higher than normal demand.
- Water efficiency has not been considered as an alternative water supply and no current alternative plans are being made to diversify the water sourcing for the Town of Weaverville.

Potential Solutions:

1. **Execute fixture retrofit programs:** Provide existing residents with retrofits of fixtures and appliances—can reduce household water use by ~35%
2. **Update the Conservation Rate Structure:** *Rate revision proposal to be provided at a later date*—can reduce per capita water use by ~15-22%
3. **Adopt robust building standards:** Require high-efficiency fixtures and sub-metering in apartments—can reduce per capita water use by ~15%
4. **Improve Leak detection and reparation program:** It appears that Weaverville has a leak detection program but it is unclear whether the town is following the AWWA Water Loss Control industry standard—can reduce overall system use by ~5-10%
5. **Outdoor Water efficiency programs:** efficient landscape watering can save up to ~25% of outdoor water use, which represents the majority of increased summer demand²
6. **Peak Demand Augmentation:** Could the Town augment peak summer demand with groundwater?
7. **Incentivize and Require Wells:** How much of the anticipated future construction could rely on groundwater wells?
8. **Other:** New ideas may arise as the AWSI evolves and Save Ivy River works to bring more potential solutions to the table.

Takeaways:

1. Water efficiency is cost effective and can bend projected demand curves significantly, success stories from across the country prove this
2. An AWSI can help avoid massive debt estimated at \$13.5M plus interest for WTP expansion
3. Options exist to extend the timeline by years before it is necessary to decide on a possible WTP expansion as required by the NC Department of Environmental Quality
4. Save Ivy River needs your help and cooperation to provide you with the best possible and most accurate outputs

Requested Next Steps:

1. Commitment: Establish AWSI monthly cadence
2. Expertise: Hire Integrated Water Planning or Water Efficiency Consultants
3. Execution: Weaverville should adopt a Water Efficiency Program with help from the Alliance for Water Efficiency or a similar organization

²American Rivers, 2008, *Hidden Reservoir: Why Water Efficiency is the Best Solution for the Southeast*, <https://www.americanrivers.org/conservation-resource/hidden-reservoir/>

Water Treatment Facility – Expansion Plan

Questions for Town regarding the expansion and access to Preliminary Engineering Report

SEPA (State Environmental Policy Act) Process

- 1) The project will most likely require a SEPA (State Environmental Policy Act) review, which requires State agencies to review, report, and disclose environmental impacts of the project. At what stage is the project in the SEPA review process?
- 2) As a part of the SEPA review process there will be a public review and comment period. How will residents be informed of the public comment window? Will there be a public hearing regarding the project as a part of the SEPA process?

Imperiled Species

- 3) There may be state and federally listed threatened and endangered species directly impacted by this project. How is the potential for significant impacts to threatened and endangered species in the project vicinity being evaluated?
- 4) There may be state and federally listed threatened and endangered species indirectly impacted by this project. How is the potential for significant impacts to threatened and endangered species being evaluated in the expanded service area?

Water Quality Protection

- 5) The Water treatment plant currently discharges about 100,000 gallons of wastewater daily, with the main pollutants consisting of manganese, suspended solids (TSS), as well as trace amounts of copper and chlorine. The plant has an NPDES (National Pollutant Discharge Elimination System) permit to discharge wastewater as a point source into Ivy Creek. Since 2017, the water treatment plant (WTP) has documented discharging approximately 834 lbs of suspended solids into the river, and nearly 50 lbs of manganese. In 2017, a drought year, the plant came close to the maximum allowable load for one of these pollutants (TSS). How much more wastewater discharge will the expansion of the plant produce?
- 6) The half mile section of Ivy Creek adjacent to the water treatment intake, from Adkins Branch to 0.5 miles downstream, is on the 303d list for impairment due to fecal coliform in 2020. How will increased water withdrawals and increased discharges of wastewater from the Water Treatment Plant affect water quality in this impaired reach of Ivy Creek?
- 7) Cumulative impacts to water quality will likely occur as a result of this upgrade, due to the expansion of the water service area. Where are the proposed service area expansions, and how will water be protected from stormwater runoff, fill, impervious surfaces in those areas?
- 8) There will be additional wastewater produced within the expanded service area from future water customers. How much is the additional wastewater from water customers expected increase? Does the receiving Wastewater Treatment Plant have the capacity to treat the anticipated increase in wastewater from customers in the expanded water service area?

Alternatives Analysis

- 9) Does the alternatives analysis consider improving water efficiency or alternative sources?

Drought

- 10) The Town of Weaverville should have an emergency drought plan to reduce demand for water during periods of low flow. What environmental triggers enact the plan? How effective is the voluntary plan for water customers to reduce water use within the service area, and how is it enforced?
- 11) The 7Q10 is defined as the minimum average flow for a period of seven consecutive days that has an average recurrence of once in ten years. If operating at 3 million gallons per day (MGD) capacity, the plant could potentially withdrawal one third of the water in Ivy Creek during the estimated 7Q10 flow. There must be a minimum downstream flow defined at the WTP intake location to ensure adequate water resources for downstream wildlife and human activities. Is there a plan to intentionally limit water withdrawals during periods of drought?
- 12) The 2017 PER includes correspondence with Mr. Curtis Weaver of the United States Geological Survey (USGS) estimating the 7Q10 flow value based on historical data. As no records have been collected at the point of interest, the estimate was calculated based on 3 nearby streams. Mr. Weaver states that this value is provisional, and in fact provides a range of values (10.1 to 14.6 cfs or 6.5 MGD – 9.4 MGD), averaging 12.3 cfs or 7.9 MGD, not 8.7 MGD as calculated by 2017 McGill PER. Does the city collect water flow data in Ivy Creek at the intake site, which could provide a site-specific record of historical flow?
- 13) In the context of shifting climate patterns, both drought and flood frequency and severity will likely continue to become amplified globally. How does the plan account for increasing duration and severity of droughts in Ivy Creek due to shifting climate patterns?

Emergency Sources of Water

- 14) The Town of Weaverville maintains connections with Asheville-Buncombe Regional Water Authority and the Town of Mars Hill Water System for emergency supply. Under an expanded service area scenario, will those suppliers have sufficient capacity to meet increased customer demands in an emergency where the Lawrence T. Sprinkle Jr. might be inoperable or operating at reduced capacity?