

North Shore Water Resilience Task Force Joint Narrative

January 30, 2024

Full Narrative

The North Shore Water Resilience Task Force members have come together in a good-faith effort to seek consensus on regional solutions to ensure water supply resilience and improve ecosystem health in the Ipswich River Watershed.

A total of 18 communities rely wholly or in part on water from the Ipswich River Watershed for their public water supply systems or for private wells serving their homes, farms, and businesses.

The water quality in the watershed is generally good, while water quantity is much more challenging. There is sufficient ground and surface water on an annual average basis to meet current human demands and support ecosystem health, but water suppliers and the ecosystem both have seasonal challenges.

The available groundwater and surface water is naturally lower during the summer, driven primarily by evaporation and plant use (evapotranspiration). Meanwhile, human demand is generally highest during the summer months, creating a supply-demand mismatch.

On top of this, natural periods of low streamflow and groundwater are reduced to extreme lows, beyond what fish and other aquatic species are adapted to, by factors in the built environment. For one, a high percentage of the water withdrawn from the basin for human use is transported out of the watershed as drinking water or wastewater, creating a long-term net export of water. Another significant percentage of water withdrawn is lost to the atmosphere through lawn and landscape irrigation. Additionally, impervious surfaces (pavement and buildings) reduce recharge of groundwater (soaking of rain and snow into the soil).

The resulting extreme low flows reduce areas for fish to reproduce and find shelter, increase water temperatures, which can stress or kill organisms, impair water quality, and adversely impact fishing, recreation, aesthetics, property values, and business activities dependent on the river.

Climate change, including increasing drought frequency, is adding to the region's water challenges.

Up to this point, communities relying on the Ipswich River Watershed ground and surface waters for their supply have been working largely independently to improve their water supply resilience.

The Task Force represents the first truly regional structure for collaborative and proactive engagement to protect the river and ensure all the communities relying on the watershed have water for the future. Having created a charter to define, govern, and set a path for itself, the Task Force is structured to help members:

- explore a range of water supply alternatives to improve supply resilience, including intermunicipal water sharing, out-of-basin sources, increased storage, and water conservation efforts;

- use credible experts to better understand the potential effects of these alternatives on watershed hydrology and ecosystem health;
- select one or more solutions that represent mutual gains for water supply and ecosystem resilience;
- work collectively toward realizing these solutions, addressing planning and logistical needs, regulatory requirements, needed governance or legal structures, and significant costs.

In addition to the Task Force members, any non-member parties critical to the success of a potential solution will be invited to participate in all stages of exploration of those solutions.

The ultimate approach for the region will likely be multi-faceted, prioritizing solutions to the low water supply availability and low stream flows in the summer:

- One avenue the Task Force is exploring is using inter-municipal connections in new ways to increase flexibility and resilience through regional water sharing. The region currently doesn't have sufficient infrastructure to widely share water among the communities. Wider sharing will require addressing questions of water chemistry and mixing compatibility between systems, challenges generally thought to be solvable, but which require careful planning. The Task Force will also need to take up questions such as what governance or administrative structures might be needed to support water sharing, what regulatory or legislative approvals and intermunicipal agreements may be needed, and how to protect certain details about infrastructure for security purposes.
- The group is also exploring the feasibility of creating additional storage capacity within the watershed to capture more water. With climate change, precipitation is coming as more intense, larger storms, and there is little natural or human-made storage in the watershed to capture that, relative to other areas of the state, so much of it runs directly out to sea.
- Another avenue of exploration is reducing local withdrawals and exports by bringing in out-of-basin water, such as from the Massachusetts Water Resources Authority (MWRA) or the adjacent Merrimack River watershed, or via desalination from the Massachusetts Coastal Basin.
- Other possible gains may be sought by changing the timing of withdrawals at different locations to optimize ecosystem and water supply resilience, as well as continuing and enhancing water conservation, demand management, and water efficiency efforts across water users and providers. The latter has a public awareness and education component the Task Force members understand needs to be addressed. Water users often don't understand the connection between their water use and ecosystem health, such as the hydrologic connection between water withdrawals and streamflow. Private well users often don't know that they generally draw from the same groundwater system as public wells and can also affect the ecosystem. The price of water alone may not be a sufficient motivating factor for certain water users to reduce demand. We may need to think in new ways about the water utility service model, cultural norms, and water use behavior to support resilience.

Task Force members are aware of the complexities and challenges of the task at hand. A key aspect of their work will be addressing the substantial funding needs, first for the studies to analyze the range of possible solutions, and then for the implementation of the preferred solutions. For most of the alternatives under consideration, costs would be unprecedented and exceed what ratepayers alone could shoulder. Water suppliers already face numerous regulatory mandates and financial burdens, including treatment of PFAS and other contaminants, and much of the water supply infrastructure throughout the watershed is older and in need of upgrade or replacement. These challenges create financial pressure on ratepayers, even before addressing the long-term water resiliency challenges. Any additional impact of the region's water resilience solutions on the affordability of water needs to be carefully considered, and it will be critical for the Task Force, including its legislative convenors and federal delegation, to identify, prioritize, and secure funding from all available sources.

Regulatory constraints associated with many of the regional options present another significant challenge. The Task Force recognizes that regulatory and legislative changes will need to be explored to identify a feasible path for some of the potential solutions.

There are other challenges and complexities, too. When water shortages are caused by regional drought, regional water sharing among affected systems may not be able to provide much relief. And while redesign of impervious surfaces and wastewater export may be possible over the long term, many of these legacy land use and public infrastructure decisions would be very costly to rethink in the short term.

With any of the potential solutions, it will be important to consider all impacts to avoid unintended consequences, such as creating or intensifying water deficits in some locations when working to improve deficits in others, or causing a large increase in private well installations, which generally draw from the same hydrologic system as the public supplies.

The creation of the Task Force is a collaborative way to begin addressing these challenges and opportunities, and there are reasons to be hopeful, including:

- For potential solutions that face regulatory or legislative barriers, relevant parties have committed to exploring new and creative approaches to the regulatory and legislative landscape.
- If the Task Force identifies projects backed by wide consensus, that could demonstrate readiness in a way that strengthens advocacy for funding opportunities.
- The Task Force's legislative delegation, led by Senator Bruce Tarr, has already secured \$400,000 in state budget earmarks to support the Task Force's exploration of solutions.
- Even a small improvement in extreme low flows can allow fish and other species to access refuge areas and cooler temperatures, improving survival.
- Given the regional importance of the Ipswich River Watershed's challenges, our federal delegation has indicated their support for helping to identify and aid long term solutions.

Most significantly, while the path forward is not straight, simple, or inexpensive, the options being explored will become more feasible when approached collaboratively and regionally.

Elevator Pitch

- The goal of the North Shore Water Resilience Task Force is to ensure water supply resilience within the Ipswich River Watershed, while improving ecosystem health.
- Summer flows and groundwater levels in the watershed are naturally low, driven primarily by evapotranspiration during the growing season.
- Human demand is generally highest during the summer months, creating a supply-demand mismatch.
- On the ecological side, the key problem is that naturally low flows are further reduced to extremely low flows, beyond what the fish communities and other flora and fauna are adapted to, due to a myriad of human factors such as wastewater exports, water withdrawals, stormwater management, and potentially others.
- Climate change, including increasing drought frequency, is adding to the region's water supply and ecological challenges.
- The Task Force provides a regional structure for collaborative and proactive engagement to protect the river and ensure all the communities relying on the watershed have water for the future. It is structured to help members:
 - explore a range of water supply alternatives to improve water supply resilience, including connecting to out of basin sources, increasing in-basin storage capacity, intermunicipal water sharing, and reducing demand through water conservation efforts;
 - use credible experts to better understand the effects of these alternatives on watershed hydrology and ecosystem health;
 - select one or more solutions for implementation;
 - work collectively toward realizing these solutions, addressing planning and logistics, regulatory requirements, governance and legal structures, and funding.
- The ultimate solution for the region will likely involve a multi-faceted approach.
- Two key aspects of the Task Force's work will be addressing the substantial funding needed to pursue solutions and working with all relevant parties to find creative pathways through the legislative and regulatory landscape.