

MERRIMACK RIVER WATER PLANNING PROJECT



Need

- Approximately one-third of the state's population (450,000 people) currently and will continue to rely on the Merrimack River or its primary tributaries to meet water supply and/or wastewater disposal needs.
- Many communities in the Merrimack River Valley continue to experience rapid growth.
- Communities in the Merrimack River valley from Penacook/Boscawen to Nashua need significant upgrades to their water supply and wastewater systems to accommodate growth and to comply with more stringent environmental regulations.
- No effort has been made to integrate wastewater and water supply planning efforts into one cohesive study to determine whether future water supply and wastewater projects, when implemented, will or can meet federal and state water quality and stream flow requirements.

Opportunity

- The Merrimack River Basin in New Hampshire contains 10 significant storage structures for power production and flood control. Combined, they can store up to 225 billion gallons.
- Some of that storage volume may be usable to augment stream flow to help ensure that future water supply and wastewater needs are met without violating water quality and stream flow requirements.
- Approximately 83% of the cost of developing a model and assessment to determine the capacity of the Merrimack River to meet future needs is already covered as a result of:
 - Ongoing projects to determine sources of water quality contamination within the Merrimack River and
 - The availability of matching federal funds that could be used to expand the scope of the work already underway.
- A relatively modest non-federal match is needed to expand the current water quality study in order to assess the feasibility of using existing storage to meet water quality and streamflow requirement

The Proposal

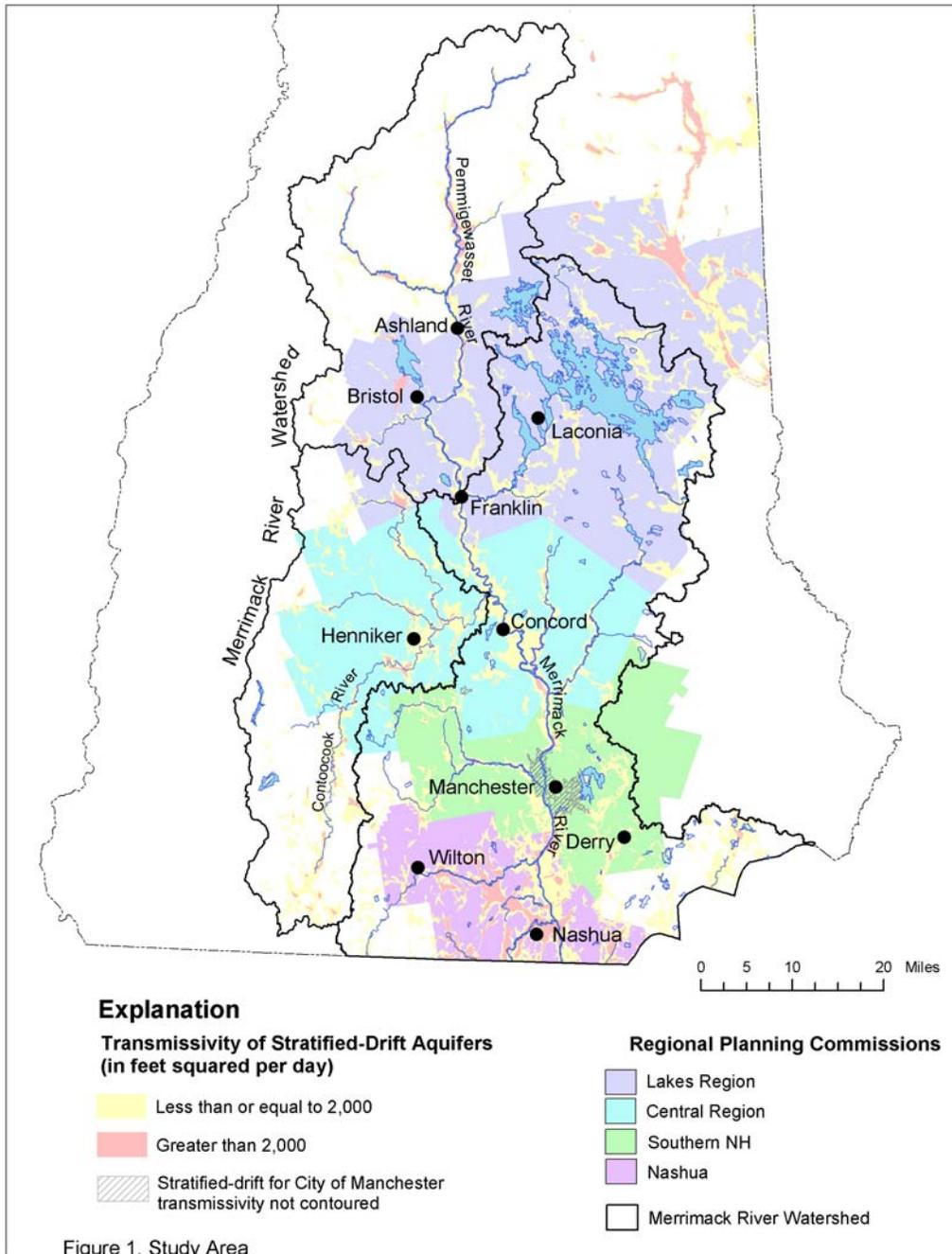
- Start by utilizing the data and models already developed as part of a \$2,000,000 project that was completed to assess sources of pollution in the Merrimack River.
- Obtain commitments of state or local funds to match the federal funds available to expand the scope of the ongoing water quality study.
- Coordinate the involvement of municipalities, water suppliers, wastewater systems, federal and state officials, and other stakeholders to integrate local water supply and wastewater plans in the Merrimack River Basin into one cohesive model and assessment for the basin.
- Coordinate with state and federal officials to integrate water quality and streamflow goals for the Merrimack River into the planning process.
- Evaluate how different approaches to managing water storage impoundments within the watershed may help resolve water quality or stream flow issues that arise as water projects and land within the basin are developed.
- Develop a water quality and hydraulic model using industry standard software that any stakeholder can use with the assistance of a qualified engineer or hydrologist to assess how major water use projects or major land use changes may impact the Merrimack River.

Opportunities for Comprehensive Water Supply Planning

The Merrimack River Water Planning Project, as outlined above, could be integrated with a broader effort to produce data sets that would be valuable for local and regional water supply planning in areas that depend on groundwater. At least half the population in the Nashua and Southern NH Planning Commission areas is estimated to rely on groundwater resources.

The groundwater planning project would involve compiling existing geologic and hydrologic information, assessing existing groundwater uses, assessing groundwater quality and its relationship with geology, and developing groundwater flow models linked to the surface water model referenced above. Funding (\$1.2M) is currently being sought for the groundwater planning effort. Major products from the groundwater project, and responsible agencies include:

- **Geohydrologic Database (NHGS)** - GIS databases of geohydrologic data that has been generated by various Federal, state, and local agencies and the private sector will be provided.
- **Streamflow and Ground-Water Monitoring Networks (USGS and NHGS)** - A streamflow and ground-water level monitoring program will be provided to enhance existing networks of streamgages and ground-water wells for monitoring water supply and quality conditions.
- **Surficial Geologic Mapping (NHGS)** - A seamless GIS coverage of the surficial geology will be created for SNRPC and NRPC by converting existing 1:24,000-scale maps to digital form and remapping selected geologic contacts as necessary. Surficial thickness maps will also be developed and existing stratified-drift aquifer maps updated.
- **Water-Use Assessments (USGS)** - A water-use analysis, using uniform methods and tabulated by town for all the towns in the Nashua and SNH RPCs, will be provided to quantify current water uses and estimate future uses in 2030.
- **Water-Quality Assessments (NHGS and USGS)** – A sub-regional occurrence of arsenic, uranium, fluoride, nitrate, VOCs, and other contaminants in bedrock aquifers will be provided to assess potential health hazards and provide guidance for future monitoring. Simultaneously, individual well studies will characterize local controls on ground-water contaminants. Together the regional and local products will provide valuable information for resource management and citizen action.
- **Ground-Water Resource Modeling (USGS)** - Sub-regional ground-water flow models, linked to the USACE surface-water model, will be developed for critical growth areas to estimate the effects of current and future water uses and allow for optimization of ground- and surface-water withdrawals.



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