DRAFT FOR REVIEW

North Shore Water Resilience Task Force Meeting
November 25, 2024 – Virtual Meeting
DRAFT MEETING SUMMARY

Purpose

- Hear a presentation by Horsely Witten and Weston Sampson on the Task Force commissioned report: *Assessment of Water Supply Alternatives Using the New Ipswich River Streamflow and Watershed Analysis Model (IRSWAM)*
- Provide opportunity for meeting participants to ask questions and discuss the report findings

Attendees

State and Congressional Legislators and staff: Senator Bruce Tarr (Chair), Senator Joan Lovely, Representative Sally Kerans, Victoria Mori Daigle (Office of Sen. Tarr), Ian Hatfield (Office of Rep. Robertson); Bob McCarthy (Office of Sen. Lovely); Chloe Mitchell (Office of Rep. Kerans); Michael Searles (Office of Rep. Walsh)

Task Force Members, Stakeholders, and Other Attendees (Task Force member official designees for the meeting are noted by showing the community or organization they represented) : Rachel Belisle-Toler; Erin Bonney Casey (IRWA); Zach Calderón; Shi Chen; Eileen Coleman (Burlington); Mike Collins (Beverly); Chuck Dam; Joseph Domelowicz (Hamilton); Deb Duhamel (Salem); Jim Engel; Vicki Halmen (Ipswich); Kevin Harutunian (Topsfield); Daniel Heiter; Michael Kessman (Reading); Karen Lachmayr; Duane LeVangie; Joe Lobao (Wilmington); Erik Mansfield (Wenham); Hanna Mogensen; Hillary Monahan; Nathan Mousseau; Joseph Parisi (North Reading); William Paulitz (Peabody); Jen Pederson; Brad Perron; Ross Povenmire (Boxford); Neal Price; Matthew Prince; Giovanna Recinos; Colleen Rizzi; Alan Taubert (SBWSB); Andrew Walker

Facilitators: Sara Cohen, Leah Robins, Martin Pillsbury; Jason Duff

Introduction

Senator Tarr welcomed participants and reminded everyone that while the Task Force was beginning to meet more frequently, we are also working to keep the meetings short, when possible. He expressed eagerness to continue to learn about the results of the studies that have been underway during the past year. Senator Lovely expressed welcome and appreciation for the ongoing process.

Update from the Facilitation Team

The facilitation team let participants know that they are working to improve the vote-taking process by clarifying member designees present at each meeting and eligible to vote. They acknowledged that the process used at the previous meeting to vote on the addition of Lydia Olson of Mass Rivers Alliance to the Conservation and Demand Management Subcommittee was not very clear and that this vote would be re-taken soon, when the designees for member communities have been updated.

The facilitators also explained that recordings of the presentation at today's meeting and Dewberry's presentation from the previous meeting would be available through the project website: https://www.mapc.org/resource-library/north-shore-h20/.

Presentation by Neal Price of Horsley Witten and Andrew Walker of Weston & Sampson – *Water Budget Assessment of Water Supply Alternatives in the Ipswich River Watershed*

Neal Price gave an overview of the process, including thanking the Earmark Subcommittee for its review of several drafts of the report, bringing it to the version being reported on today. He provided background on the key water resource challenges of the Ipswich Watershed and the process that led to the commissioning of this study whose aim is to evaluate the relative benefit to streamflow of a range of water supply alternatives affecting groundwater withdrawals in the basin.

The evaluation tool built for this study – the Ipswich River Streamflow and Watershed Analysis Model (IRSWAM) – was based on an expansion of the Water Management Act Tool, which was developed during the Sustainable Water Management Initiative. IRSWAM draws on some of the same regulatory definitions used in the Water Management Act but allows for an assessment of cumulative downstream impacts of management changes, rather than just effects within a given subbasin. It also builds in some limited evaluation techniques for withdrawals from 3 "in-line" reservoirs, which the original tool did not address. Finally, it enables an assessment of time lags between management changes and impacts, although these proved to be minimal.

The Powerpoint slides and a video recording of Peter's presentation are available on the Task Force Website at: https://www.mapc.org/resource-library/north-shore-h20/.

Highlights and Key Conclusions shared in the presentation:

- There has been a significant reduction in Public Water Supply (PWS) groundwater withdrawals since the Sustainable Water Management Act (SWMI). These changes were updated in IRSWAM to create a new baseline condition. There has also been a documented increase in private well withdrawals over the same period, but since these are not calculated at a subbasin scale, they could not be included in the updated baseline. As a result, IRSWAM shows modeled improvements in August median flow and all the Water Management Act metrics in the updated baseline relative to the early 2000's. However, actual on-the-ground conditions tell a more complicated story, possibly reflecting the increase in private well withdrawals that were not accounted for, or other complicating factors. Therefore, IRSWAM's value lies more in its conclusions about *relative* improvements between scenarios than in its predictions of *absolute* improvements.

- They evaluated six water supply scenarios, five involving the cessation of pumping by PWS's as shown in Table xx, and the sixth involving a combination of the other five scenarios. All six scenarios were then evaluated for potential improvements in various streamflow metrics relative to the updated baseline. A few important numerical findings are summarized in Table 1.

Table 1

	Reduction in pumping volume (MGD) relative to the updated baseline	modeled flow alteration, weighted average across all subbasins	August median flow (cubic feet per square mile), weighted average across all subbasins	Net GW Depletion, weighted average across all subbasins	Change from baseline in August median flow, as a precentage of the reduction in pumping	Change from baseline in Net GW depletion, as a percentage of the reduction in pumping
Updated Baseline	-	27.5%	0.184	3.1%	-	-
Each of the Following Scenarios Entails the Named Community Ceasing PWS withdrawals May-Sept:						
#1. Wilmington	1.837	14.5%	0.212	-10.0%	8.3%	-7.1%
#2. Lynnfield	0.461	26.7%	0.186	2.2%	2.5%	-1.9%
#3. Danvers-Middleton	0.597	27.5%	0.191	3.0%	5.9%	-0.1%
#4. Topsfield and Ipswich	0.724	25.9%	0.188	1.4%	2.5%	-2.3%
#5. Wenham, Hamilton, and Ipswich	1.265	21.6%	0.196	-2.9%	4.9%	-4.7%
#6. All the above combined	4.637	6.0%	0.235	-18.4%	6.0%	-4.6%

- Some key takeaways include:
    - Most groundwater withdrawals lead to instream flow reductions within 3 months.
    - Upstream reductions in pumping lead to flow improvements all downstream, making those further upstream more "efficient" in terms of overall ecosystem improvement.

Discussion/Reflections by Meeting Participants:

Based on a request for clarification on how the three in-line reservoir impacts were incorporated, the presentation team explained that for the updated baseline an estimate of natural (unimpacted) August median flows at the location of the dam spillways was subtracted out of the total August median flow from the subbasins in which the dams were located, to reflect that in August, generally no water flows over those spillways. For the scenarios that involved Danvers-Middleton ceasing water supply withdrawals from their reservoirs during the summer, those estimated unimpacted flows were added back into the respective subbasins, reflecting an assumption that they would become run-of-river dams.

A clarification was requested for the impacts shown on one of the displayed Water Management Act metric maps for the town of Boxford, which has private wells and septic discharges, creating a generally cyclical use of water resources. Duane LeVangie from MassDEP explained that the metric shown on the map, Groundwater Category, accounts for groundwater withdrawals as a percentage of natural flows without consideration for septic returns, resulting in a net impact for Boxford. However, another WMA metric, Net Groundwater Depletion, accounts for return flows and

would likely show Boxford as being relatively unimpacted. Walker added that their study focused more on the Net Groundwater Depletion metric.

Further clarification was requested on the scale of subbasin used for the analysis. Most Task Force communities have at least part of multiple subbasins in their communities. A subbasin is defined by all the land area that drains to a single point and therefor forms a hydrologic unit. Groundwater withdrawals and in-line reservoirs impact the subbasins in which they are located, and all subbasins downstream of those subbasins. Since subbasins don't align with town boundaries, a single town may include subbasins that are highly impacted and others that are less so.

Clarification was requested about how the study estimated changes to Biological Category (BC) classifications, since this category involves 3 inputs that are additional to groundwater withdrawals. The study team explained that the other 3 factors contributing to BC were held constant, while the groundwater withdrawal value was altered to reflect the simulated scenarios.

A question was posed that if the simulated streamflow improvements predicted by the model resulting from the watershed-wide reductions in pumping since the early 2000's are not being confirmed by monitoring data, does this call into question the validity of this study? The study team acknowledged that many factors affect streamflow other than PWS withdrawals, which can account for discrepancies between modeled flows and actual flows. However, the relative benefits to streamflow of the different scenarios are thought to be valid, allowing Task Force members to compare withdrawal alternatives to one another in relative terms. Much more extensive modeling would be required to predict accurate absolute streamflow rates based on the different withdrawal scenarios.

<u>Next Steps</u>

- ➔ The final reports for the Water Budget Assessment presented at this meeting and the Water Supply Alternatives Feasibility Analysis presented on October 29th are anticipated to be distributed by the end of the calendar year.
- ➔ The facilitation team will work with MAPC to issue the two solicitations finalized by the Earmark Subcommittee:
    - A contract facilitator to lead the Lower Basin Subcommittee negotiations
    - Development of a web-based decision support tool to help Task Force members, stakeholders, and the public understand the most promising water supply alternatives emerging from the investigations
- ➔ The PFAS Subcommittee and the Conservation and Demand Management Subcommittee will continue meeting.
- ➔ The facilitation team will continue work to identify individual representatives for the Lower Basin Subcommittee.
- ➔ The facilitation team will send around a draft meeting summary from this meeting.