Sea-Level Rise Impacts on Drinking Water:

A Groundwater Modeling Study in Newmarket, NH

CAW Workshop

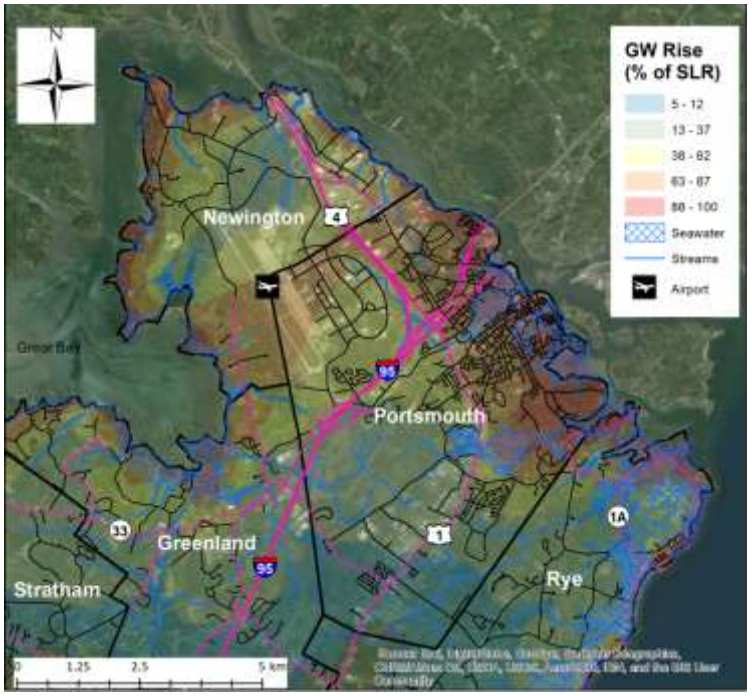
April 26, 2018
5:00pm
Hugh Gregg Coastal Conservation Center

Research – *"investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws"*

Planning – *"the act or process of making or carrying out plans"*

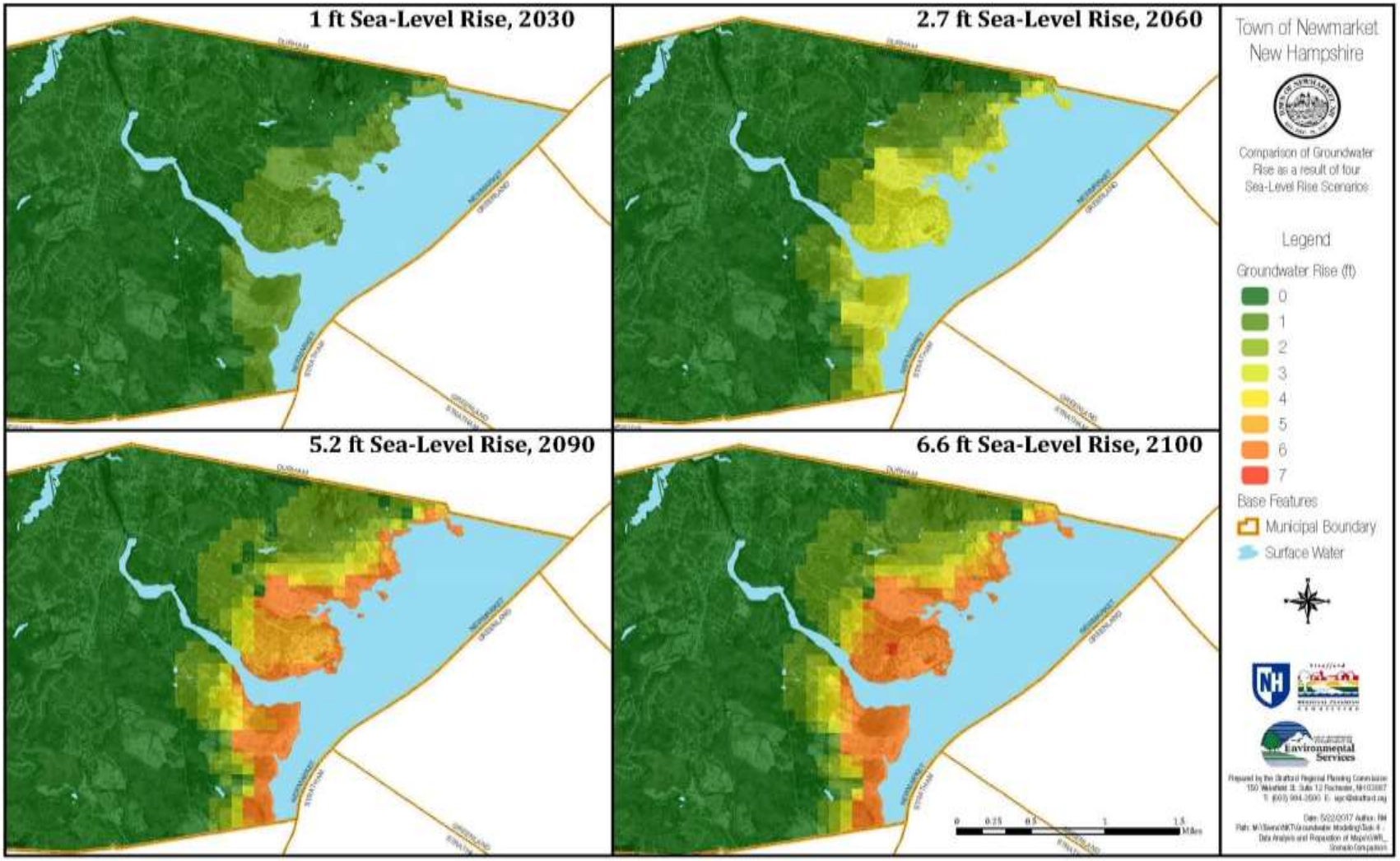
Introduction

Existing model…



…different application

Groundwater Rise with Sea-Level Rise Scenarios



Project Goals

- Increase the understanding of how sea-level rise may impact groundwater sources of drinking water
- Identify areas of Town that may be vulnerable to groundwater rise due to sea-level rise
- Provide the Town with suggested adaptation strategies to assist in becoming more resilient

Process

Technical Planning Committee Meeting #1 – 6/23/16

Technical Planning Committee Meeting #2 – 3/9/17

Technical Planning Committee Meeting #3 – 5/5/17

Data Collection — May-June

Model Construction — June-Oct

Model Scenarios — Nov-Jan

Analysis & Mapping — Jan-Mar

Final Report & Recommendations — Mar-May

Final Presentation — June

2016

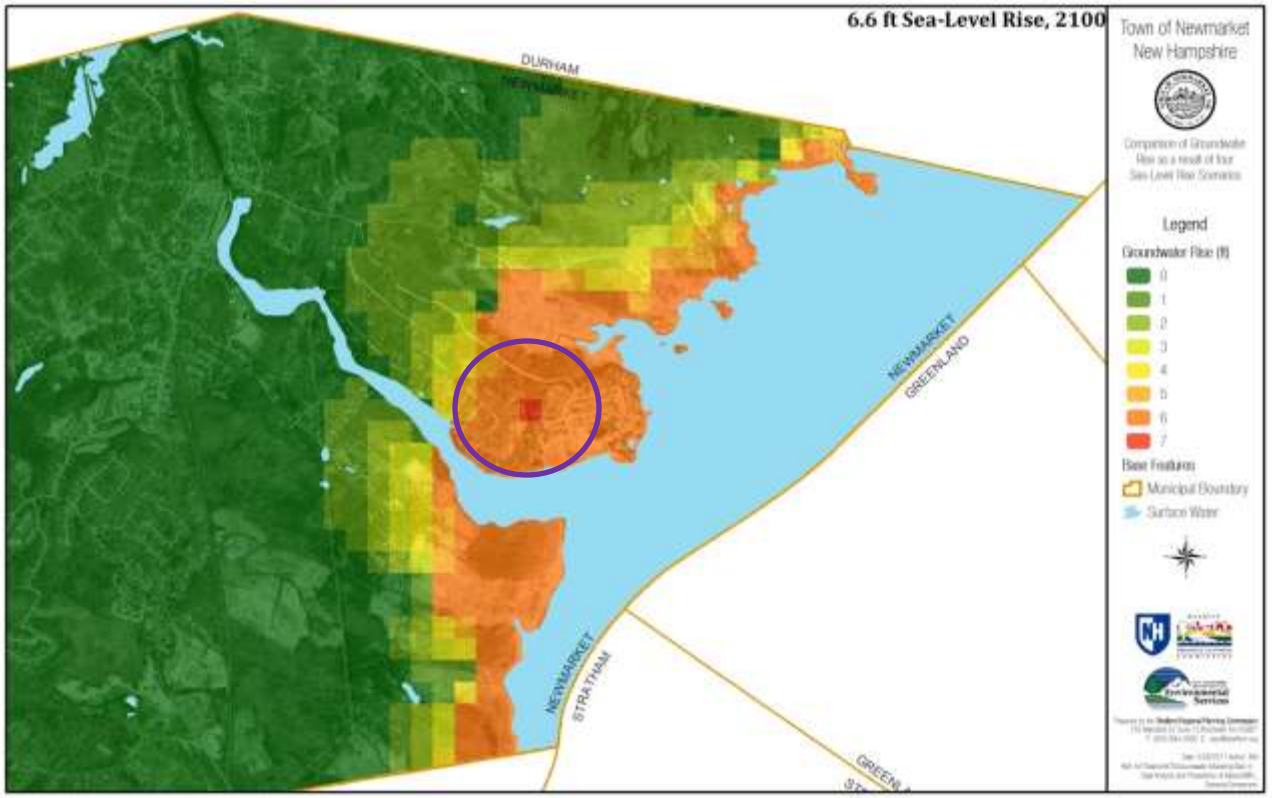
2017

Outcomes

- Groundwater Rise
- Vulnerable Infrastructure and Potential Contamination Sites
- Saltwater Intrusion
- Septic System Environmental Impacts

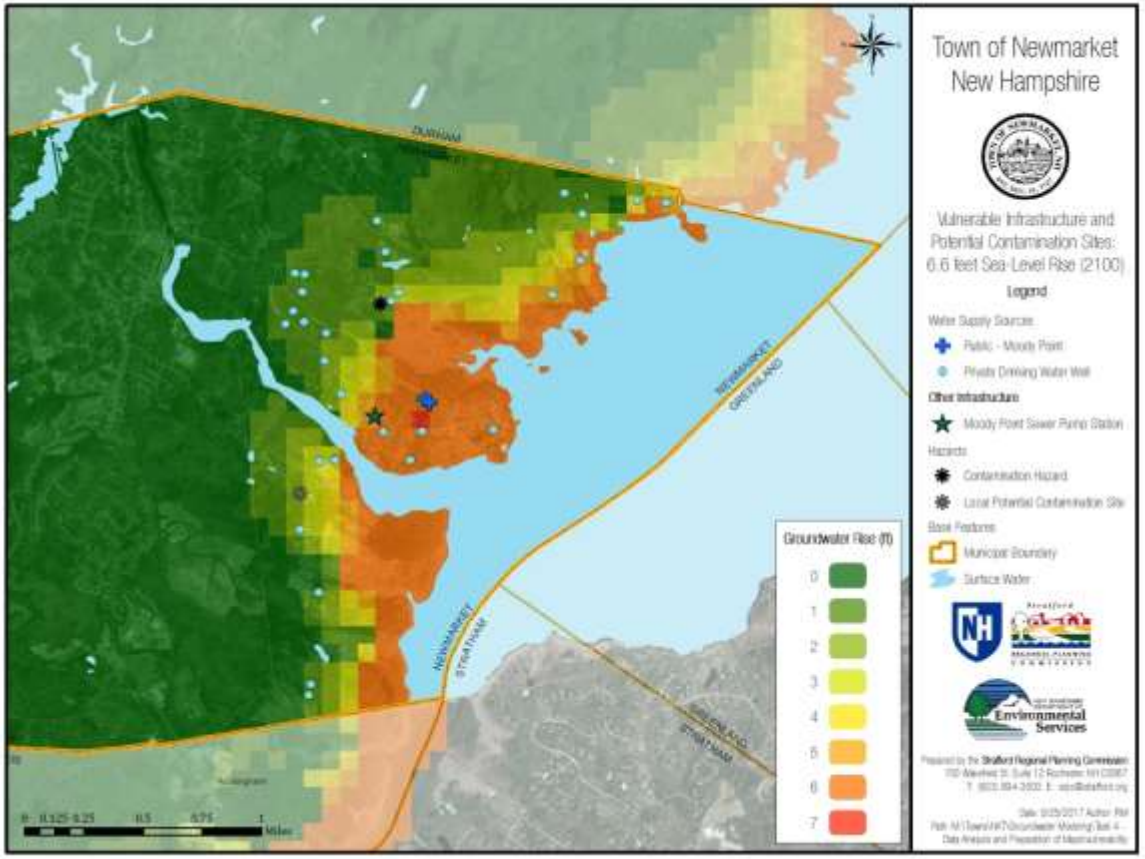
Groundwater Rise Highlights

- Ranges from 1 to 7ft to occur within 0.8 miles of the coast
- Moody Point is projected to experience the most rise



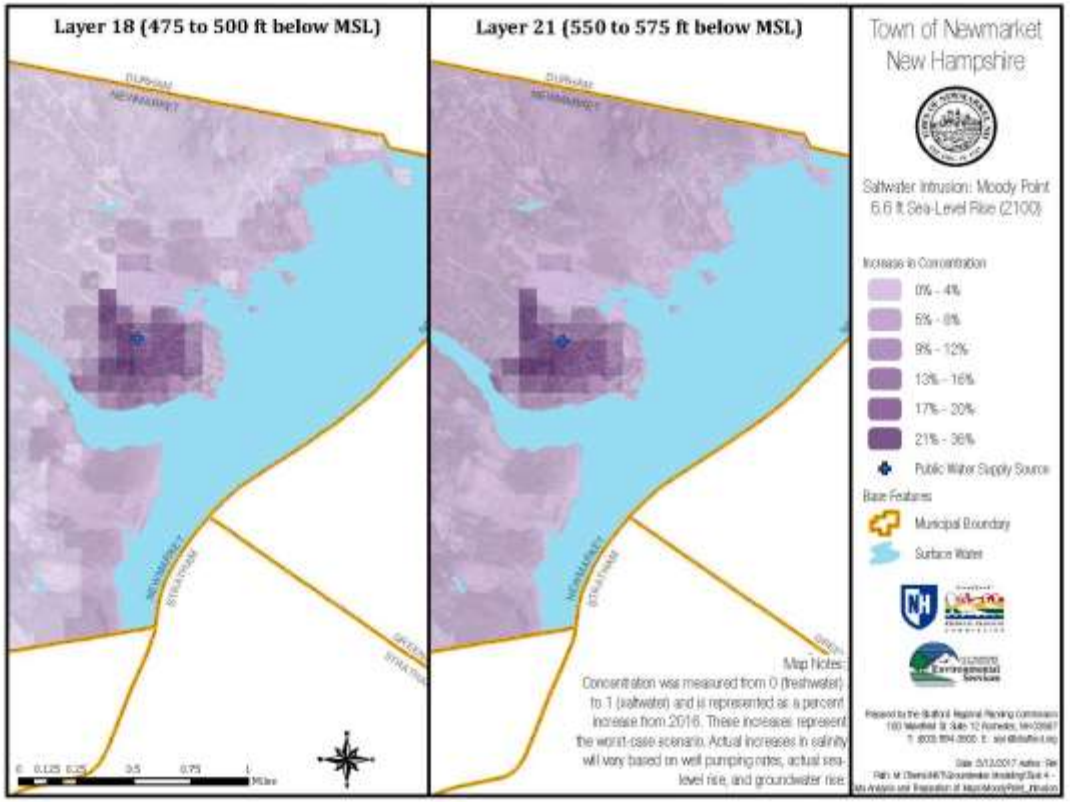
Vulnerable Infrastructure and Potential Contamination Sites

- Moody Point (3 wells)
- Two potential contamination sites
- One sewer pump station (M. Point)
- 30 private drinking water wells



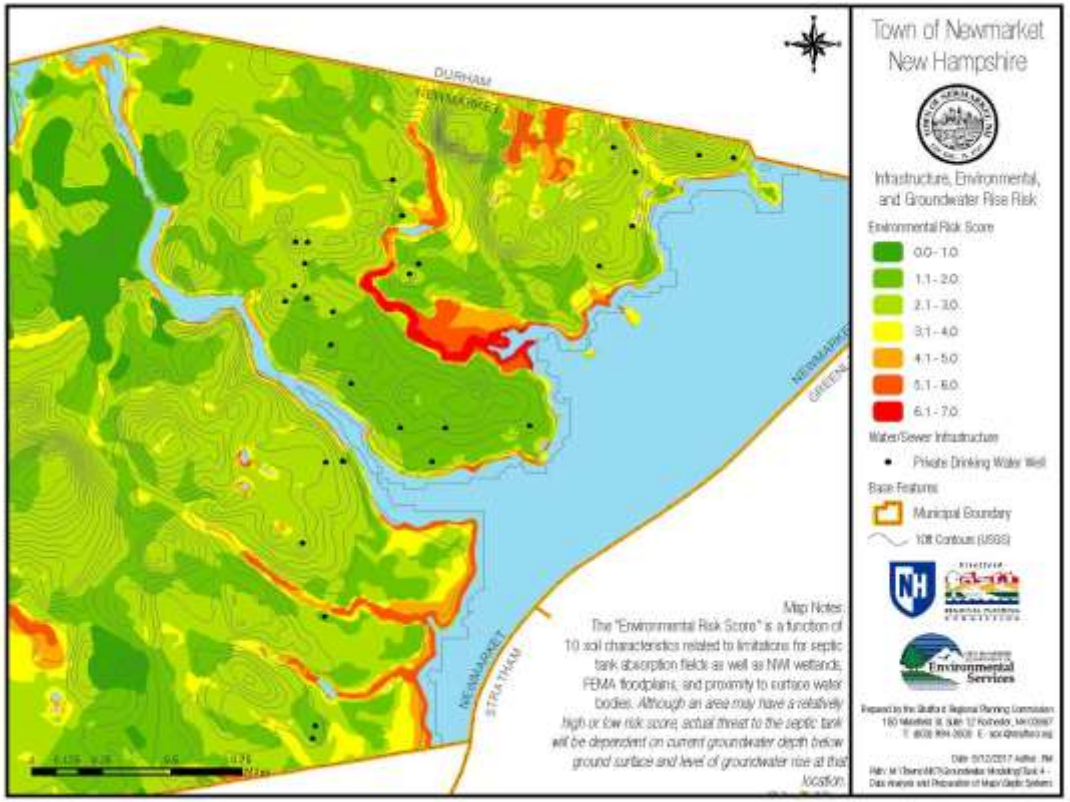
Saltwater Intrusion

- Moody Point already experiences high total dissolved salt (TDS) levels
- The two deeper wells are experiencing higher salt concentrations
- Closer to groundwater table are more susceptible to intrusion
- Model predicts an 8-12% increase in salinity concentrations



Septic System Environmental Impacts

- Limitations for septic tank leach fields
- Wetlands, floodplains, and 100ft buffer around surface waters
- Determine where septic tanks and leach fields are more vulnerable to groundwater rise
- Can be used as a preliminary guide (additional information is needed)



Recommendations

- Six planning topics:

1. Outreach and Engagement
2. Planning/Regulatory
3. Long-term drinking water
4. Infrastructure & equipment
5. Additional research
6. Emergency management

- Adaptation strategies, timeframe, and potential partners/programs and additional needs

Accomplishments & Next Steps

- Data was included in the 2018 multi-hazard mitigation plan update
- Newmarket is considering expanding municipal water infrastructure to Moody Point development
- Durham, in partnership with SRPC will be seeking funding to do a similar analysis

Thank You!

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