2019-2020 NEW HAMPSHIRE COASTAL FLOOD RISK SUMMARY WEBINARS

March 30 and March 31, 2020, 5:00-6:00 PM

WRITTEN RESPONSES TO QUESTIONS

1. If I live more than 5 miles inland from the coast, can I just ignore the groundwater rise step?

The Guidance recommends two different approaches for determining projected Relative Sea-Level Rise (RSLR) induced groundwater rise, depending on whether the project is located in a community where projected groundwater rise has been mapped. Regardless of your proximity to the coast, if your project is located in a mapped community (i.e., Exeter, Greenland, Hampton, Hampton Falls, Newington, North Hampton, Portsmouth, Rye, Seabrook, and Stratham), follow the "Preferred Approach" recommended in the Guidance and use the Sea-Level Rise Mapper to determine whether your project is located within the Groundwater Rise Zone (GWRZ) associated with the RSLR estimate you selected in Step 3. If your project is located within the mapped GWRZ, proceed to Step 5.2 to estimate future depth to projected groundwater. If your project is located outside of the mapped GWRZ, you do not have to consider groundwater rise and can proceed to Step 6. If your project is located in an unmapped community (i.e., Dover, Durham, Madbury, New Castle, Newfields, Newmarket, Rollinsford), follow the "Alternate Approach" recommended in the Guidance, which states that projects within 3 miles of the tidal shoreline should commit to manage mean groundwater rise of at least 33% of the RSLR estimate you selected in Step 3, and be prepared to manage mean groundwater rise of up to 66% of the RSLR estimate you selected in Step 3. No guidance is provided at this time for projects located more than 3-miles inland in an unmapped community; however, this may change in the future once additional mapping has been completed.

2. How might you use the exercise of determining tolerance for flood risk for broader projects like a planning or regulatory process?

The Step 2 Table provides several planning and regulatory project examples that span across the four tolerance for flood risk categories: High, Medium, Low, and Very Low. The Guidance also explains how each of the steps applies to a planning, regulatory, and site-specific example. In some cases, it may be helpful to assign multiple tolerances for flood risk to different aspects of broader planning and regulatory projects, and even site-specific projects. For example, a planning project to update community master plan that has a large planning area encompassing the entire municipal boundary may want to subdivide that planning area into smaller sub-areas and categorize them based on their different tolerances for flood risk. A community could think about categorizing their critical facilities as having a Low to Very Low Tolerance and their residential areas as falling in the Medium Tolerance for flood risk category. Similarly, for a regulatory project, a regulation could apply to many different regulated structures, in which case the regulation could predetermine tolerance for flood risk for the various regulated structure types (consistent with how present-day flood risk is currently addressed in building code) or, alternatively, could require applicants to justify their own tolerance for flood risk.

3. Will the March 31 webinar include more detail on the other steps not addressed on March 30?

The webinar on Tuesday, March 31, provided more detail on Steps 1-7 and explains how those steps would be applied to the site-specific hospital example. Steps 4-6 are more technical in terms of the calculations recommended to account for RSLR-adjusted coastal storms, RSLR-induced groundwater rise, and projected extreme precipitation. The recording of this webinar is available here: https://youtu.be/tr19-0y7Hhk.

4. How do I know or find out if my community is aware of this document, or using it?

Contact Kirsten Howard (kirsten.howard@des.nh.gov) or Nathalie Morison (nathalie.morison@des.nh.gov).

5. How might you incorporate flood risk into a maintenance plan for projects that are already built?

For simplicity's sake, the site-specific example presented in the Guidance involves new construction, but obviously a lot of assets are already built and that presents some additional challenges when planning for increasing coastal flood risk. If you are interested in ensuring an existing asset or project is resilient to flooding in the future, you would complete the seven steps to help identify the current and future flood risk to that asset and potential adaptation actions that could be taken to address increasing flood risk over time, if needed. In Step 7, you are presented with a framework for how to think about adaptation actions; the five action categories presented are to take no action, avoid, accommodate, resist, and relocate. Some of those action categories will apply better than others to existing assets at risk of coastal flooding. When it comes to some assets that have been designed in flexible, or smart ways, they've been designed intentionally to be altered over time. For example, a seawall on Mechanic Street in Portsmouth was designed in a way that its elevation could be increased in the future. Tidal culvert replacements get reconstructed every so often, so that presents an opportunity to make sure they are sized appropriately to accommodate future risk that you would determine through the Guidance process. Any scheduled maintenance or planned upgrades are good examples of what the Guidance calls "incremental action points" that present opportunities for addressing new flood risk information presented by the Guidance.

6. As a homeowner, what is your recommendation for what my first step might be?

If you are a homeowner in the early stages figuring out what your options are in terms of dealing with coastal flood risk projections, or if you're even earlier on in the process and are trying to figure out if coastal flood risk is something you should be concerned about, I would point your first to the Sea-Level Rise Mapper which is a really user friendly tool where you can input your address and turn on the various sea-level rise, sea-level rise plus storm surge, groundwater rise layers to start and get a feel for whether your property falls within any of those impact areas. Another program that's available to all landowners in the New Hampshire seacoast is the Coastal Land Owner Technical Assistance Program (LTAP) which is a partnership between the NHDES coastal Program, UNH Cooperative Extension, and New Hampshire Sea Grant. LTAP seeks to provide consistent and equitable technical assistance, information, tools, and contacts to help landowners: reduce individual and community flood risk, utilize nature-based approaches to mitigate erosion and flood risk, and restore natural habitats to enhance the resilience of native ecosystems. Interested landowners can sign up for the program by contacting Kirsten Howard (kirsten.howard@des.nh.gov). Participants are required to fill out a pre-visit questionnaire and must commit to participating in two, 1-hour site visits. Finally, start talking to your neighbors about this topic, because most coastal flood risk exists at neighborhood and community scales, and the most effective strategies often have to be coordinated across multiple properties or with your municipality.

7. If utilities are buried, does or can this process rank the sensitivity of various types?

You would need some additional information about the vulnerability of the utilities themselves to flooding. Be sure to consider both fresh and saline groundwater. Once this is determined, you can assess the tolerance for flood risk of the underground utilities and use this process to figure out, based on the design life or the useful life of the utilities, what sea-level rise and groundwater rise you would expect for each

area of installation. Decisions can then be made regarding which utilities to prioritize for replacement or upgrades so that they are resilient throughout their entire useful life. Underground utilities that are at risk from groundwater infiltration (i.e., not waterproof) in areas where groundwater is already less than 10 feet deep and projected to rise are the most vulnerable. The gravel base layers of pavements are also vulnerable and will weaken when groundwater rises into these materials.

8. Going back to the example presented in Step 4, should the hospital be built 18.3 feet above BFE?

The 18.3 feet design flood elevation (DFE) incorporates BFE and is the total flood protection elevation that the Guidance recommends the hospital should be built to. Whether or not the hospital in the site-specific example should be built at the selected site or elsewhere is a subjective decision that would be informed by completing all seven steps in the Guidance, including step 4.2 which directs decision makers to assess RSLR-adjusted coastal storm impacts to the project. Following Steps 1-6, decision makers should entertain the full suite of actions as explained in Step 7 and described in more detail in the Step 7 Table A. Designing and elevating the hospital so that the lowest floor is at 18.3 feet NGVD 29 is an example of how decision-makers might accommodate, or "live with the water," and it is certainly an option; however, decision-makers may also want to consider whether it is feasible to avoid the projected coastal flood risks at this site altogether, by siting the hospital in a less vulnerable location, implementing protective measures to resist, or keep the water out, as well as developing a long-term plan to relocate the hospital in the future when coastal flood risks become too dangerous or costly to accommodate. Ultimately decisions about how to address coastal flood risks for the hospital project should be determined by the relevant stakeholders and experts involved in the hospital project who will have access to the necessary context and nuances associated with the project. The Guidance is only intended to provide a framework to help those decision makers consider coastal flood risks using an intentional and science-informed approach.

9. How should this information be used in relation with FEMA flood maps?

The information is very relevant and can be used in conjunction with FEMA Flood Insurance Rate Maps (FIRMs) in coastal areas. Step 4 requires you to add future flood risk from sea-level rise to the existing 1% annual chance base flood elevation (BFE) that can be found on FIRMs, and provides a rough estimate of the depth and extent of flooding associated with coastal storms in the future. The information provided in the Guidance does not replace existing FIRMs, which are regulatory products provided by the federal government to inform federal flood insurance rates for property owners. The Guidance will not have a direct impact on Flood Insurance Rate Maps, however, actions to address future coastal flood risk on your property (such as elevating your first finished floor above BFE) might help you reduce your flood insurance premiums. The Guidance could be used by a municipality to help determine an appropriate amendment to local floodplain regulations so that new and substantially-improved structures and facilities accommodate future flood risk in their designs. See the Step 4 Case Study about Durham's Advisory Climate Change Risk Areas for more information.

10. Do you see the guidance being used in capital improvement program preparations?

Yes. The Guidance is a great tool for communities to use when they are evaluating projects or designing projects as part of their CIP process. Step 7 Table B presents a number of different project types that may give you a better idea of the specific community decisions and projects that may apply to this Guidance, including various planning and investment decisions.

11. How much collaboration has there been on these guidelines with our neighboring states or federally?

The New Hampshire Coastal Flood Risk Summary was developed by a Science and Technical Advisory Panel comprised of state agencies, the University of New Hampshire, Rockingham and Strafford Regional Planning Commissions, as well as representatives from coastal New Hampshire municipalities and the New Hampshire Coastal Adaptation Workgroup. The work was funded by the National Oceanic and Atmospheric Administration. While representatives from neighboring states and federal agencies were not involved in developing the Guidance, the document was informed by best-practices that have been implemented in many other states and municipalities nationwide, including but not limited to the State of California, the State of Maryland, and New York City. The majority of the NHDES Coastal Program's outreach related to this product will be focused on reaching state agencies and coastal municipalities, but we also anticipate sharing this product more broadly through the Coastal States Organization and our national network of state coastal management committees, as well as other regional workgroups like the Northeast Regional Ocean Council. Maine and Massachusetts have similar initiatives ongoing. Massachusetts has extensive state investment in coastal and inland climate resilience work (Municipal Vulnerability Preparedness Program) and Maine has a Climate Council—staff on that Council are aware of the NH Coastal Flood Risk Guidance and are using it to inform their approach. Please contact Kirsten Howard (kirsten.howard@des.nh.gov) for more information.

12. When explaining how to calculate future depth to projected groundwater, the speaker suggested that measurements for present-day depth to groundwater could be obtained from an on-site test pit. When you state a test pit, is that in a perched water table? There is a difference in the seasonal high-water table and groundwater.

This is correct and an important point to make. In order to determine future depth to projected groundwater, the Guidance recommends applying projected RSLR-induced groundwater rise to the *seasonal high groundwater table (SHWT),* not localized perched water levels. The Guidance recommends determining present-day depth to the SHWT at the project location through on-site observation, survey, and test pits, or if no on-site information is available, by extrapolating from existing nearby surficial aquifer or overburden well data from the NHDES Water Well Inventory or the GEOLOGs database available upon request from the New Hampshire Geological Survey. If a test pit is used, ensure that the test pit is measuring depth to the regional groundwater table, and not localized perched water. Projected RSLR-induced groundwater rise estimates should only be applied to SHWT measurements.

13. Is it fair to tap resources at NHDES (i.e. Nathalie or Kirsten) for help using the guidance in planning and designing private development/construction projects?

The NHDES Coastal Program is available to help interested coastal community stakeholders understand and utilize the Guidance appropriately. Please contact Kirsten Howard (kirsten.howard@des.nh.gov) or Nathalie Morison (nathalie.morison@des.nh.gov) if you would like assistance to better understand how the Guidance can be applied to a general or specific context.