

## MEMORADUM

To: Madbury Board of Selectmen  
From: Madbury Water Resources Board  
Date: April 25, 2017  
Re: The New Hampshire Coastal Risks and Hazards Commission Report of November 2016

### **Purpose of the Commission**

The New Hampshire Coastal Risks and Hazards Commission was established by the New Hampshire Legislature on July 2, 2013 by RSA 483E. The Commission was required to consider key scientific research on current and future coastal risks and hazards and was charged with recommending legislation, rules and other actions.

The report is intended to help municipal and state decision-makers prepare for projected sea-level rise and other coastal hazards and minimize the risks those hazards pose to municipalities and state assets

### **Scientific Advisory Panel**

The Commission created a Science and Technology Advisory Panel to analyze the latest published data on historic Climate Change trends and projections for the years 2050 and 2100 for sea-level rise, coastal storms, and extreme precipitation.

These findings were summarized in a peer-reviewed report, which the Commission used to develop recommendations in 2015 and 2016. The Panel suggests this assessment and report be updated at least every two years as new research and data become available.

### **Impact of Climate Change**

According to the report Climate Change is expected to have significant impacts on critical infrastructure and natural and cultural resources in coastal New Hampshire over the next century and beyond. This report is intended to help municipal and state decision-makers prepare for projected sea-level rise and

other coastal hazards and minimize the risks those hazards pose to municipalities and state assets.

### **Relevance to Madbury**

While Sea-level Rise and Coastal Storm Surges are expected to have minimal impact on Madbury given our limited exposure to Great Bay, the hazards resulting from precipitations (rain storms) and extreme precipitation (Hurricanes and Nor'easters) may be of much more significance.

### **Precipitation (Typical Rain Storms)**

Average annual precipitation in the northeastern United States increased by approximately 5 inches (more than 10%) between 1895 and 2011.

### **Typical Rain Storms Projections**

Annual precipitation is expected to increase by as much as 20% between 2071 and 2099 compared to the late 20th century. Most of the precipitation increases will be in winter and spring in the form of rain or snow. Fall and summer will experience less of an increase.

### **Extreme Precipitation (Hurricanes and Nor'easters)**

The Northeast experienced a 50% increase in total annual precipitation from storms classified as extreme events between 1901 and 2012. Here, "extreme" is defined as the number of times each year that the 24-hour rainfall amount exceeds the largest 1% of precipitation events in that year.

### **Hurricanes and Nor'easters Projections**

Extreme precipitation events are projected to increase in frequency and in the amount of precipitation produced. In particular, the rainfall amount produced by hurricanes is projected to increase. However, current climate models and analyses are not as good at projecting future changes in the frequency or magnitude of extreme precipitation events.

### **Preparing for Changes in Storms, Hurricanes and Nor'easters**

According to the Commission consideration of future increases in precipitation and projected future precipitation should be applied as follows:

1. Buildings and infrastructure should be designed to withstand storm intensities based on the most current precipitation data.
2. Infrastructure should be designed to manage a 15% increase in the frequency of extreme precipitation events after 2050.

### **Madbury Roads, Culverts and Streams**

Perhaps the greatest hazard to Madbury which will should prepare for will be in our roads, culverts and streams. Heavy rainfall combined with spring runoffs have already had serious impacts on us. Since the future is expected to have more of these events, it seems incumbent upon us to review our current standards in these areas.

We can expect, more rapid deuteriation of road foundations and surfaces. More streams overflowing their banks or simply increasing the speed of erosion. Our culverts may become swamped and result in dangerous road flood and additional damage to our roads.

### **Conclusion**

While the prediction of the future is always a testy business, the Water Resources Commission believes that the above recommendations be taken into account in any future planning for the Town.