

Plymouth

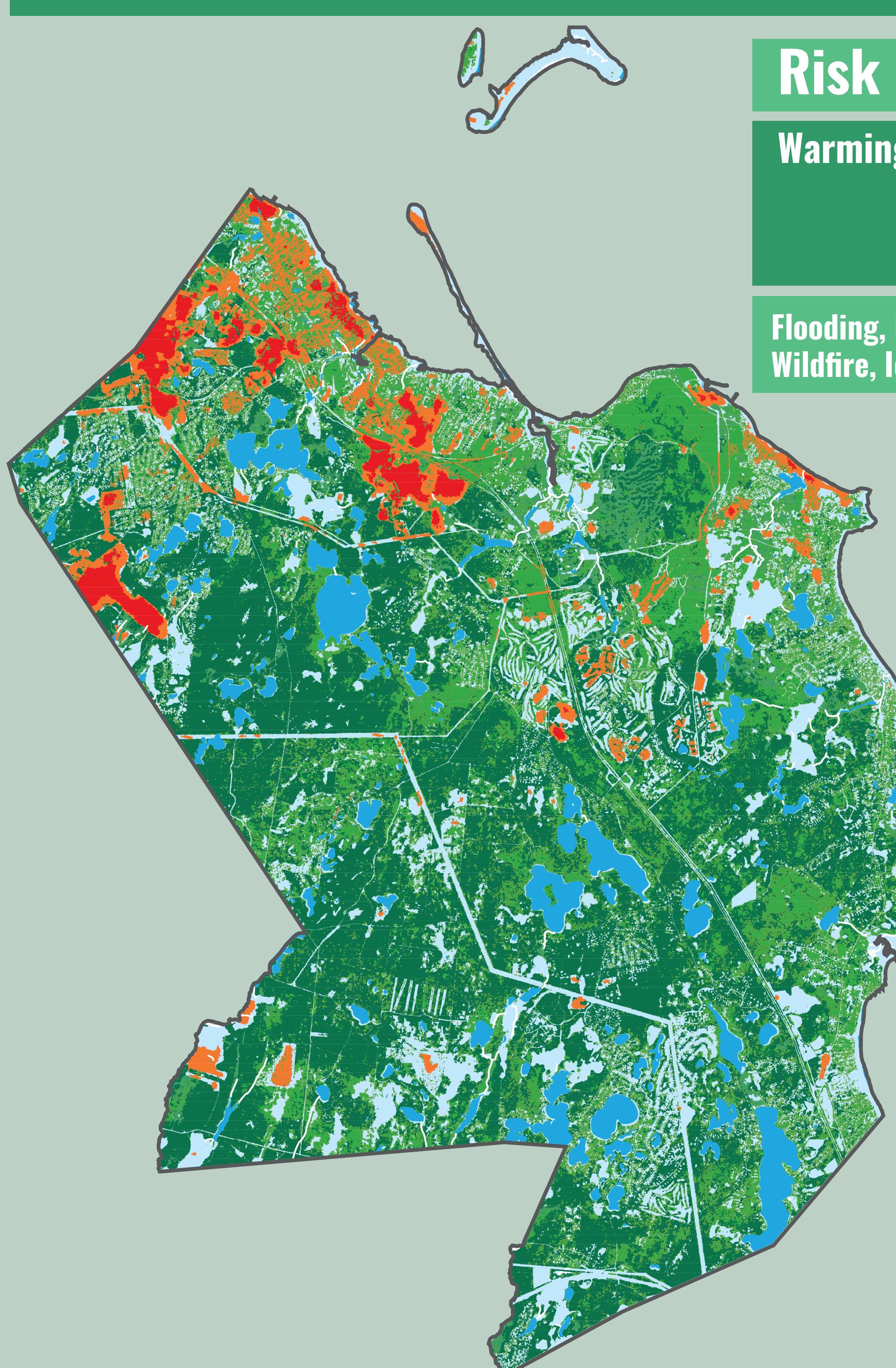
Natural Resources

Natural Resources lessen climate impacts by absorbing and storing carbon dioxide and by serving vital protective functions. Forests, open space, wetlands, rivers, and streams protect drinking water quality and quantity, provide flood control, and give relief from extreme heat. Healthy ecosystems are more resistant to stresses from a changing climate and better able to protect against heat and flooding.

Trees

Trees are important in mitigating the impact of extreme heat. Tree shaded surfaces can be 25-40 degrees cooler than peak temperatures of unshaded surfaces. About 54% of Plymouth's land area is covered in tree canopy. The canopy captures 22,147 tons of carbon dioxide a year, removes 2.7 million pounds per year of air pollutants and avoids 198 million gallons of stormwater runoff a year.

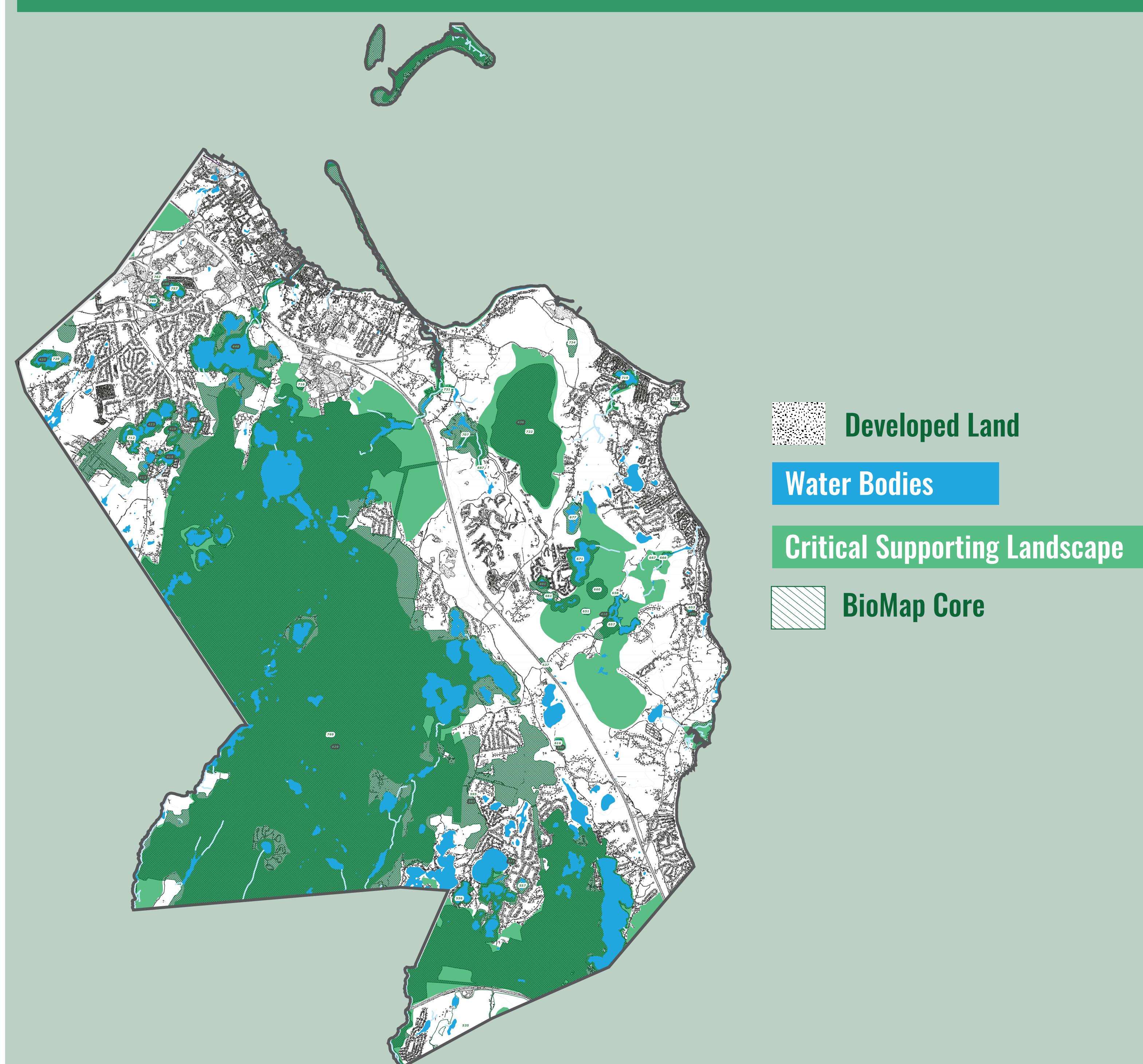
Risk	Impact
Warming	Expected to shift forest type from Maple/Birch/Beech forest to Oak/Hickory forest similar to New Jersey. New pests and diseases
Flooding, Drought, Wildfire, Ice Storms	Impaired waters, toxic exposure, contaminant leaching, weakened and damaged trees



Water Bodies
Deciduous Forest
Evergreen Forest
Forested Wetland
Land Surface Temperature: 97° to 99° F
Land Surface Temperature: Over 100° F

Valuable Habitat

Core Habitat and Critical Natural Landscapes are state-identified intact landscapes, or exemplary natural communities, that are better able to withstand climate stresses and support the long-term viability of biodiversity and ecosystem services. Plymouth contains 30,785 acres of BioMap Core Habitat and 30,839 acres of Critical Natural Landscape, each of which is nearly 50% protected. Plymouth has 26% of its total land area as protected open space.

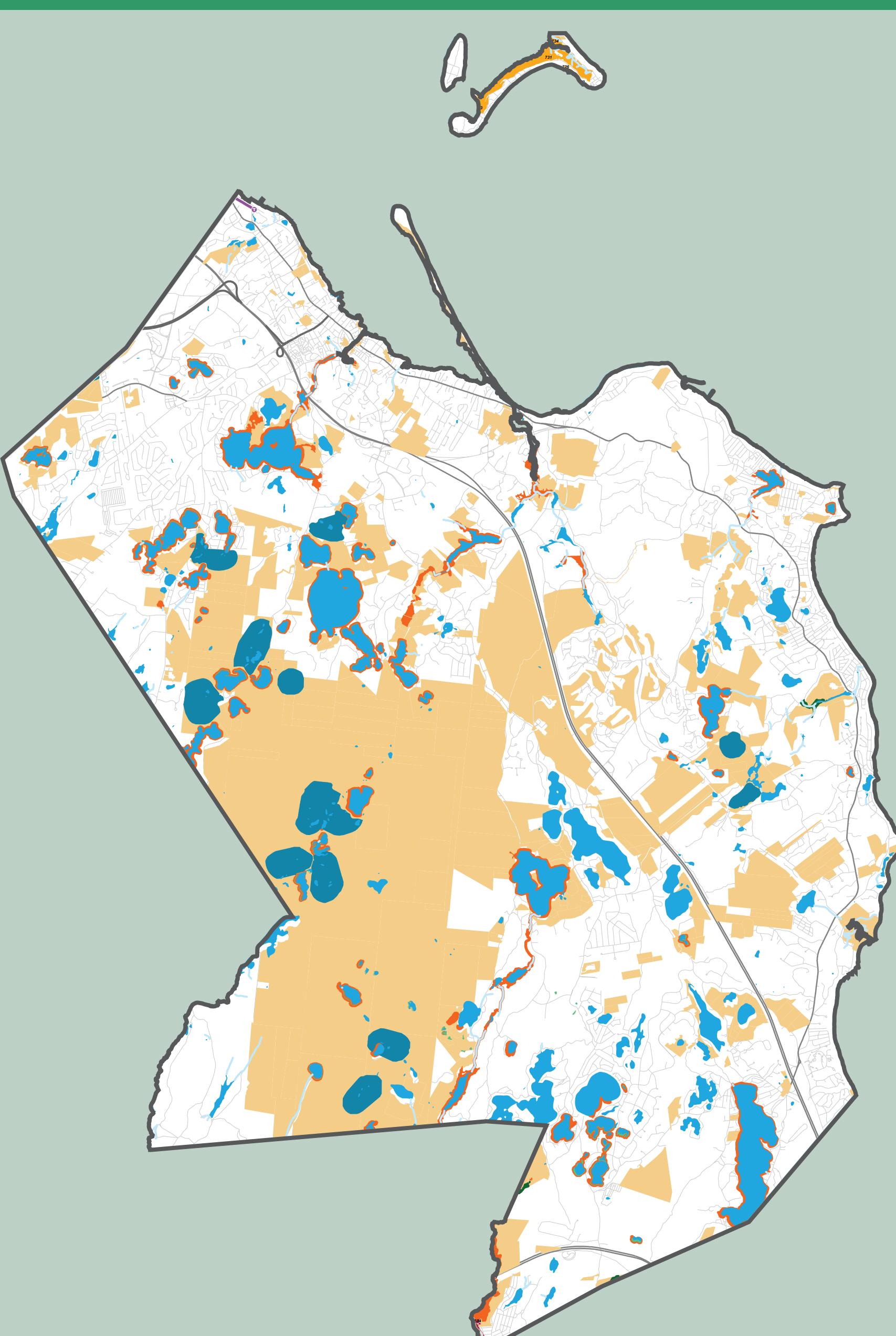


Aquatic Systems

Freshwater wetland systems sustain critical ecosystem functions in climate change, such as restoring drinking water quantity and quality, providing flood control, and maintaining overall ecosystem health for climate resilience. Plymouth contains over 340 ponds and the headwaters to 10 rivers. Many of these are BioMap Wetland Cores and only four of the ponds are considered in need of restoration according to the Clean Water Act, mostly for algal blooms. Wetland resources are at risk to climate change due to several factors: 1) drought, 2) increasing temperatures, and 3) extreme precipitation events. The vulnerability is decreased water supply or low flow, contamination from flooding, and diminished habitat.

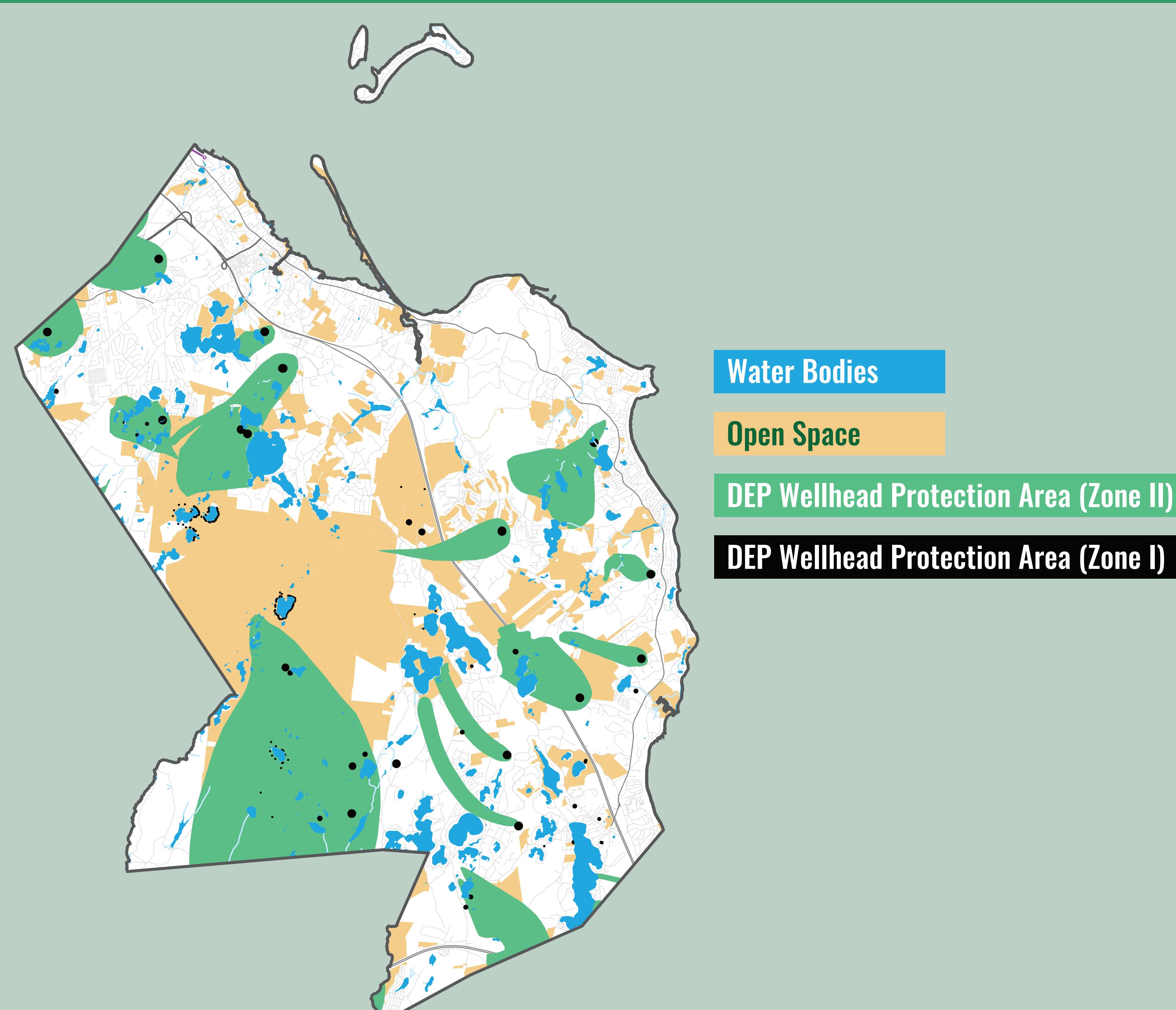
Risk	Impact
Drought/ Warming	Seasonal no-flow/ low-flow, reduced absorption capacity, diminished fish habitat, algal blooms, low dissolved oxygen, reduced drinking water supply
Flooding	Impaired waters, toxic exposure, contaminant leaching
Extreme Precipitation	Scouring, impaired waters, sewer overflows

Water Bodies **Open Space**
Vernal Pool Core **Priority Barrier Beach - Salt Marsh**
Priority Wetlands
Wetland Core
Aquatic Core



Drinking Water Systems

The Plymouth-Carver Sole Source Aquifer, the second largest in the State, provides drinking water to Plymouth residents and six surrounding towns. Climate Change and land use can deplete the water table, increase pollution of ponds and streams, require more wildfire suppression, and contaminate the aquifer. Changing precipitation patterns will cause drought or flooding, which can stress supply or increase contamination, particularly for Plymouth, whose aquifer does not have a hydrogeologic barrier like clay that can prevent contamination.



Sources

MassGIS (Bureau of Geographic Information); BioMap2: Conserving the Biodiversity of Massachusetts in a Changing World; Massachusetts Department of Fish and Game; Massachusetts Department of Environmental Protection; MassGIS (Bureau of Geographic Information); National Land Cover Database (NLCD)