Proposal Narrative

Findings: The risk analysis of the top 1% Nor'easters (15 cases) and hurricanes (7 cases) shows that the worst storm would generate up to $5 million in damages to the MIT campus, without any intervention. Based on a report from the city of Cambridge, MIT could lose up to $400,000 in productivity every day if the institute closes. Based on our cost analysis, the flood risk in 2050 does not warrant a major intervention, even for the 1% highest sea level rise scenario. This finding agrees with the results from other independent studies, such as those conducted by the City of Cambridge Vulnerability Assessment (CCVA) and the Massachusetts Department of Transportation investigation (MASSDOT).

Intervention Analysis: We analyzed the savings-to-cost ratio of two interventions - (1) installing a storm tank between Massachusetts Avenue and Vassar Street, and (2) building a sea wall at Boston Harbor. Both interventions would be substantial investments.

1. **Storm Tank:** The storm tank, based on a bid for the City of Cambridge Port Project, would cost roughly $22 million. For the worst case storm, our analysis finds that the storm tank would only save about $18,000 of damage on the MIT campus.

2. **Sea Wall:** The sea wall would cost upwards of $200 million based on the original cost of the Charles River Dam (adjusted for inflation), and new construction techniques that makes dam and sea wall construction more affordable. Yet, for the worst case storm in 2050, the sea wall is expected to only save about $1.3 million in damages to the MIT campus. Since South Boston is at a much greater flood risk, such a construction project might be economical after incorporating parts of the greater Boston area into the cost analysis.

Recommendation: Based on our analysis, a major intervention to mitigate flood risks in 2050 is not cost effective. Instead, we propose two milder interventions. Our first recommendation is to reorganize academic buildings so that, wherever possible, valuable equipment is above the first floor. This is because the highest flood projections only flood the first floor and basements. The institute could save up to $2 million alone (based on content evaluations from similar properties) by transferring all critical equipment and records to higher floors. Our second recommendation is to take flood-proofing measures in the buildings that are most at risk (i.e. those near the intersection of Massachusetts Avenue and Vassar street). If the campus were to adopt this strategy, it would provide a perfect opportunity to concentrate large, community-focused spaces on the first floor, while keeping valuable equipment safe from flood risk.