UNH Stormwater Research – Green Infrastructure Adaptation to Intensifying Rainfall

Jessica Zielinski, BS Sustainability Studies

Advisor: Dr. Can B. Aktas, Professor of Civil and Mechanical Engineering, Sustainability Studies Program Coordinator

MISSION and RESEARCH GOALS

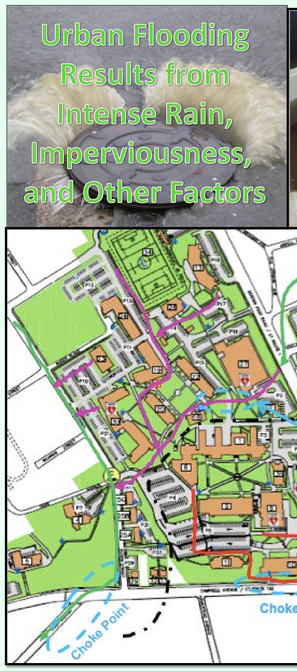
- Understand and communicate the significance of stormwater issues
- Research and understand major contributors to typical urban flooding
- Determine climate change projections for the West Haven area; report the anticipated implications for local urban flooding
- Propose green infrastructure adaptation measures based upon review of relevant green infrastructure life cycle and cost assessments

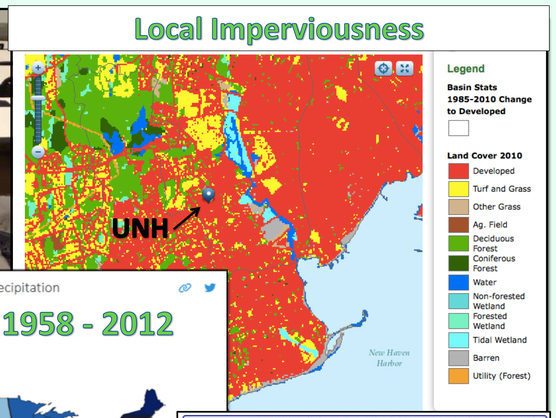
METHODOLOGY

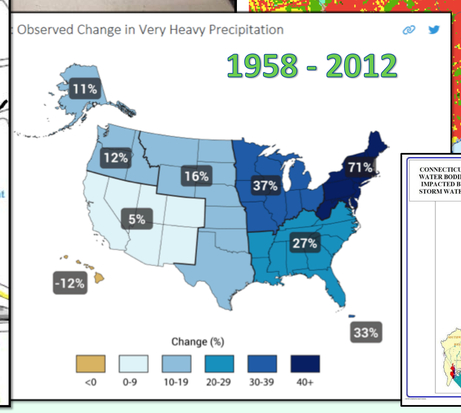
- Investigate UNH's 2012 urban flooding event to understand major contributing factors
- Obtain UNH site specifics: soil types, percent imperviousness, climate projections, etc.
- Research local stormwater history, impacts, and current practices, as well as national trends; Report about green infrastructure's growing role as a stormwater management strategy
- Canvass available green infrastructure life cycle and cost assessments for common and / or conflicting scientific findings pertaining to economic, social, and environmental impacts

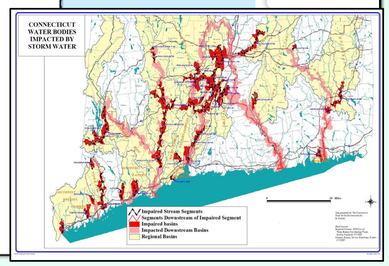
RESULTS

- Imperviousness of locality contributes immensely to stormwater runoff; this runoff is a leading cause of water degradation
- Climate projections for the Northeast U.S. predict more intense precipitation to be handled by already overburdened systems
- Green infrastructure cost effectively addresses stormwater issues, provides additional benefits that traditional infrastructure lacks
- Material choice and transportation during construction and maintenance of green infrastructure features typically lead to the most impacts



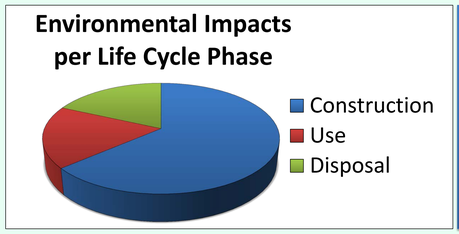


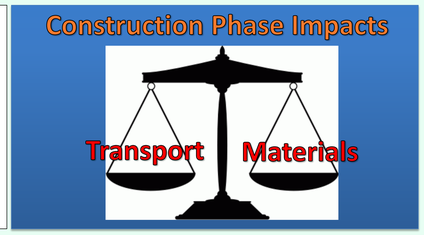




Green Infrastructure (GI) Examples

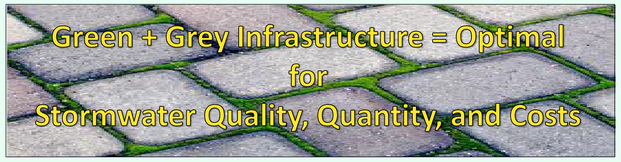
Rain Garden
Permeable Paving
Bioswale
Green Roof
Retention Pond
Rain Barrel / Cistern
Tree Planting / Native Prairie





UNH's Bethel Hall

Before & After



Additional Benefits of Green Infrastructure

- Reduces -

- Urban Heat Island Effect
- Stream Erosion
- Heating / Cooling Needs
- Air Emissions
- Strain on Pipes, Pumps, Etc.
- Water Pollution
- Combined Sewer Overflows

- Increases -

- Community Amenities
- Habitat
- Job Opportunities
- Stream & Water Quality
- Roof Longevity
- Groundwater Recharge
- Energy Savings

RECOMMENDATIONS and PROJECT CONTINUATION

- UNH leadership continues to work with DOT and other stakeholders about the local urban flooding issues
- To adapt to projected increases in rainfall intensity, all new and retrofit construction should incorporate GI; Specifically, UNH should convert unused turf areas to native vegetation, direct downspouts to infiltration or storage features, and retrofit impervious parking areas with permeable options as the need for repaving arises
- UNH should stay informed about the University of New Hampshire's Stormwater Center research findings

REFERENCES

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ACKNOWLEDGEMENTS

Mr. & Mrs. Carrubba, Bill Bucknall, Stephen Tagliatela, Steven Kaplan, Carol Withers, and the UNH SURF Program
Mr. Louis Annino and UNH Facilities Dept.
Dr. "Jon" Can B. Aktas