Rhode Island Flood Mitigation Association 2023 Conference

Thursday, May 25, 2023 | 8:00 am-4:30 pm

University of Rhode Island

ABSTRACTS

Common Fence Point - Adapting to Coastal Change | Jeff Prater & Nicole Gotovich

In 2018, a group of like-minded Common Fence Point (CFP) neighbors kicked off the CFP Preparedness Committee with the vision to be prepared for and more resilient to acute hazards, such as flooding from intense storms and extreme tides as well as from impacts of long-term climate change such as rising sea levels and the erosion of their coast. The Preparedness Committee with a strong endorsement from the Town of Portsmouth, applied for and was awarded a grant from the RI Department of Environmental Management through the RI Coastal and Estuarine Habitat Restoration Trust Fund. This presentation details the execution of the grant, "Restoring and Increasing Stewardship of Common Fence Point's Coastal Habitat". Partners include: the Common Fence Point Improvement Association/Trustees, Common Fence Point residents, University of Rhode Island, Narragansett Bay Research Reserve, RI DEM Mosquito Abatement, Save The Bay and the RI Coastal Resources Management Council.

Community Leadership in Action with WRWC's New Voices/Nuevas Voces Program | Alicia Lehrer

New Voices/Nuevas Voces is a program that prioritizes the voices of residents living on the frontlines of climate change. Through leadership and climate preparedness training cohorts of adults take part in the 8 month New Voices/Nuevas Voces Program. We will discuss how the program began, its amazing results and what's next for the Woonasquatucket River Watershed's newest leaders.

Wood-Pawcatuck Watershed Planning Project | Darrell Moore

The Wood-Pawcatuck watershed has historically been challenged with riverine and drainage-related flooding in developed areas. An increase in impervious surface area, the physical modification of rivers and streams, stormwater conveyance structures and climate change have and will continue to exacerbate flooding problems in this watershed. This talk aims to highlight the flood resiliency needs within the Wood-Pawcatuck watershed.

URI's Flood hazard modeling, monitoring, and visualization systems | Nathan Vinhateiro

In response to increasing and uncertain flood risk due to climate change, research teams from the University of Rhode Island have led the development of several new state-of-the-art, hazard modeling and forecasting systems that have direct application to Rhode Island communities. These range from advanced hydrodynamic storm surge models to novel monitoring and visualization tools, including the following major initiatives: STORMTOOLS RI CHAMP, CERI, MYCOAST, and Augmented reality (AR). This presentation will be an opportunity to hear about ongoing development of these tools, their intended applications, target audience, and how these programs complement each other.

Delineating High-Resolution Urban Drainage with Stormwater Infrastructure | Peter Steeves

The U.S. Geological Survey's StreamStats program is a publicly-accessible web application (https://streamstats.usgs.gov) that can be used to delineate drainage areas, compute basin characteristics, and estimate flow statistics for user-selected locations on streams. StreamStats services are typically implemented at the statewide or watershed scale, and although the three core functionalities remain consistent, many states have implemented custom tools to address specific water-resources planning and management needs. Users are able to view the network of stormwater

pipes and inlets, delineate drainage areas derived from lidar topography and stormwater infrastructure, and compute land-use/land-cover basin characteristics that are consistent with Municipal Separate Storm Sewer System MS3 (MS4) pollutant loading export rates. This presentation will provide details of the StreamStats' application using a case study for the Mystic River basin in Massachusetts.

Deepening Public Understanding of Flood Risks through a Climate Change Vulnerability Index | Noah Slovin

The Connecticut Climate Change Vulnerability Index (CCVI) was developed by SLR Consulting in partnership with the Connecticut Institute for Resilience and Climate Adaptation (CIRCA). The CCVI incorporates sensitivity, exposure, and adaptive-capacity and social vulnerability metrics. Significant community and stakeholder participation contributed to model validation. The project created a robust tool to help stakeholders and the public better understand how flood exposure – both within and outside of Special Flood Hazard Areas – interacts with sensitivity and adaptive capacity to create different levels of vulnerability and risk. Stakeholders, local planners, and developers can use this tool in decision-making around investments, grant funding, policy, planning, and design. CIRCA is now creating an interactive online CCVI to facilitate public access and education and raise public awareness of flood risks.

Tanyard Brook Culvert Replacement Project | Nicole Iannuzzi

BETA Group, Inc. (BETA) worked with the Town of Bristol to replace a 4,500-foot culvert in the residential area surrounding Tanyard Brook, where horrific flooding was frequently and issue with heavy rain events. A hydraulic and hydrologic analysis of the brook and drainage networks that were subsequently incorporated into the Town-wide GIS network. BETA presents their successful solution, including a new culvert system incorporating green infrastructure design. BETA also worked with the Town to help secure a $1.8M grant from the Community Development Block Grant (CDBG) Disaster Relief Fund to support the project's construction.

The Pocasset River Plan: Hybrid Design Approaches for a Resilient Urban Watershed I Andrea Judge

This presentation tells the story of the Pocasset River Watershed project that is, through innovative design and creative planning, turning a traditional gray infrastructure flood risk project, largely composed of floodwalls in residential areas, to a nature-based, resilient design which will be transformative for the six neighborhoods it stretches resulting in a resilient watershed and a resilient neighborhood.

Mitigating Flood Risks in an Inland Community | Greg Avenia, PE, Courtney Eaton, PE, Kyle Johnson

The Town of Canton, MA, with the help of community stakeholders, identified inland flooding as their top priority climate hazard and in partnership with Kleinfelder, embarked on a Flood Vulnerability and Mitigation study, funded by a State of MA Municipal Vulnerability Preparedness Program Action Grant. The Town of Canton, being completely inland, is facing a different set of challenges than a similar coastal community might. The Town used this study as an opportunity to build a framework for including flood mitigation in the conversation of any major infrastructure project such as roadways and utility.

NRCS-USDA Helps RI with Funding, Technical Assistance, and Finding Solutions for the Future as Climate Change Looms | Darrell Moore

The Watershed Protection and Flood Prevention Act, also known as Public Law 566 or PL-566, authorizes the USDA Natural Resources Conservation Service (NRCS) to help state, local and Tribal government agencies and organizations (project sponsors) to plan and implement watershed projects. PL-566 is a voluntary program for locally led watershed projects to solve natural and human resource concerns within targeted watersheds. In Rhode Island, NRCS is focusing PL-566 and Emergency Watershed Protection (EWP) Programs to expand our climate change mitigation efforts and apply

NRCS conservation practices. Watershed projects can include flood prevention and damage reduction, development of rural water supply sources, erosion and sediment control, watershed protection, fish and wildlife habitat enhancement, wetland creation and restoration, water quality improvement, and increased recreational opportunities. RI NRCS has three active EWP projects addressing Hurricane Ida flooding concerns affecting residents in Providence, Middletown and Narragansett, and three PL-566 Watershed Projects, as well as Preliminary Investigation Feasibility Reports for 8 other projects across RI.

Funding for Climate Resilient Projects to Benefit Your Community | Rae-Anne Culp

Abstract: Natural Hazards pose a serious risk to RI communities. Because of climate change, many natural hazards are expected to become more frequent and more severe. Reducing the impacts these hazards have on lives, properties and the economy is a top priority for many communities. There are funding opportunities that can help your community become more resilient.

Grant Funding for Watershed Implementation Projects | Tom Ardito & Ian Dombrowski

The Southeast New England Program (SNEP) is a bi-state geographic program focused on the coastal habitats and waters of Rhode Island and southeastern Massachusetts. SNEP's missions is to foster collaboration among regional partners across southeast New England's coastal watersheds to protect and restore water quality, ecological health, and diverse habitats by sharing knowledge and resources, promoting innovative approaches, and leveraging economic and environmental investments to meet the needs of current and future generations. This presentation will introduce SNEP and highlight funding opportunities of potential interest to members of the Rhode Island Flood Mitigation Association

Hydrodynamic separators and floodplain management ordinances & building codes to reduce flood risk | Morgane Houssais

Hydrodynamic separators have been more and more commonly installed in cities this last decade, as a way to prevent the clogging of sewage systems during storms' peak water flow and the resulting peak sediment transport. Interestingly, to function properly, they need to be regularly emptied by city water resources management departments: the record of these regular clean-ups offers a remarkably high-quality and frequent measurement of sediment transport (a notably hard measurement to obtain in the natural environment). In this presentation, we present a first attempt at calculating effective sediment transport in Worcester, using the city data compilation from 29 hydrodynamics separators currently installed, among which a few of them have been functioning for the last 13 years. As more and more data trickles in, we should be able to differentiate signals of urban sediment sources (from poorly managed construction sites) from the climate-change-driven increase in precipitation intensity. In the end, the use of such data will help us to assess the net effect of stormwater and flooding risk increase on the effective erosion (and infrastructure deterioration) throughout the city. Such assessment would participate in bettering the prevention and mitigation, locally and globally, of flooding impacts in urban areas.

Fragility Analysis of Dunes Reinforced with Geosynthetic Sand Containers | Christopher Baxter

Nature-based solutions, such as dunes reinforced with geosynthetic sand containers (GSCs), are increasingly being used to stabilize coastlines and protect communities from smaller storm events (e.g. 50-year storms) while at the same time providing flexibility in design considering the uncertainty regarding rates of sea level rise and the increasing destructive power of storm events. Using risk-based hazard assessments, such as fragility curves, it is possible to quantify the resiliency of reinforced coastal systems to address these dynamic conditions. This presentation describes a fragility analysis of the U.S. Federally funded GSC-reinforced dune in Montauk, NY. This dune was constructed in 2016 and experienced significant erosion of the protective berm and sand covering the GSCs during a 1-year

storm event that same year. The methodology developed for this fragility analysis can be incorporated into various hazard mitigation and loss prevention tools to better inform all stakeholders about the benefits and drawbacks of adaptive, nature-based coastal protection systems.

Integrating CRS into a Local Hazard Mitigation Plan – Improving the Engagement Process: A Case Study using the Town of Westerly 2023 Hazard Mitigation & Flood Management Plan | Kim Jacobs & Alyse Oziolor

The Community Rating System (CRS) is a voluntary program incentivizing communities to go beyond the minimum National Flood Insurance Program (NFIP) requirements by offering a reduction in the NFIP flood insurance premiums paid by property owners/residents in the municipality.
For communities currently in the CRS program, or considering participating, integrating a Hazard Mitigation Plan (HMP) 5-year update with CRS activity 510 (floodplain management planning), is an effective means to acquire up to 382 CRS points (75% of points needed to enter the program). Integrating CRS into a HMP adds negligible cost to the project, and a reduction in flood insurance premiums may improve public support for implementing flood mitigation measures. Through the Town of Westerly 2023 Hazard Mitigation & Flood Management Plan (HM & FMP), the presentation will identify lessons learned and best practices, including how the two planning programs align and differ, how to maximize CRS credit in your HMP, and how the CRS planning process effectively integrates and improves local government, community, and stakeholder engagement, which helps to build an informed and resilient community.

Benefit-Cost Analysis 101: Using FEMA BCA Toolkit | Bin Wang

Benefit-Cost Analysis (BCA) is a method that determines the future risk reduction benefits of a hazard mitigation project and compares those benefits to its costs. To receive public funding such as FEMA's Hazard Mitigation Assistance (HMA) Grant, applicants need to use FEMA-approved methodologies and tools — such as the BCA Toolkit — to demonstrate the cost-effectiveness of their projects. A typical BCA requires many different sources of input data/parameters, making the analysis not only time consuming but also labor intensive, especially for large, community wide projects. This presentation will provide a high-level introductory overview of the FEMA BCA methodology and BCA toolkit for those who are somewhat new to the BCA process; share project experiences in assembling key input parameters and steps, by using the FEMA BCA Toolkit (version 6.0); and share one or two case (example) studies to demonstrate how BCA works in the decision-making process.

FFRMS - A New Approach to Flood Resilience | Katie Rand

Flood risk is increasing. Structures built to meet or exceed the NFIP minimum standards incur 65% less flood damage. The Federal Flood Risk Management Standard (FFRMS) was authorized by Executive Order to address future and current flood risk and to ensure projects funded by taxpayer dollars are resilient. This presentation will outline the goals of FFRMS and the evolving status of its implementation at FEMA and beyond.