

# Delaware Green Infrastructure for Coastal Resilience Training – Notes

May 5, 2016

St. Jones Reserve, Dover, DE

## Hazard Related Issues

- Tidal wetland loss
- Non-sewered communities and flooding
- Coastal flooding
  - Affects transportation (e.g. emergency response)
  - Quality of life
- Increased impervious cover and adds to impacts from rain/flood
- Changes in floodplain maps and changes in ability to develop
- Dune erosion
- Combined sewer outflows and flooding
- Historic damage
- Housing damage

## Ecosystem Services to Address Hazards

- Stormwater retention
- Erosion reduction
- Flood retention
- Wave attenuation
- Beach stabilization
- Stormwater and flood control
- Cultural services

## Barriers to Green Infrastructure Implementation

- Perception
  - Our own perception
  - Public perception
- Lack of political will
- Lack of contractors who are educated or trained
- Cross coordination
- Poor landscaping
- Permitting
- New things
- Uncertainty
- Cost of not doing anything (not available)
- Applying for grants
  - No staff

- Money to continue to report project milestones
- Training for maintenance of bioswales
- Property owner opposition
- Preserving the view shed
- Community/local opposition to state projects
- Funding
  - State grants require match (most communities can't match)
  - Prevailing wage requirements – higher cost
  - Concern about long term responsibility and maintenance costs

### **Solutions to Barriers Identified**

- Bend the language where appropriate; talk to audiences about what they value and use visualizations
- Educate on visual appeal
- Get kids/schools involved (and other community members) on installing and maintaining GI
- Communicate with business owners that they have a competitive edge
- Certificate program as an incentive
- More forums like this, but bring in a new audience and go in more depth if needed
- Partner with each other (help with funding)
- University students
- Getting nonprofits to help walk through the process
- DeIDOT Risk Map (multi-faceted) global risk map showing more than just risk
- Tree City USA, cost effective and engage kids
- Early engagement in planning process
- USDA grants cover 75% of cost

### **Local Green Infrastructure Projects:**

- Dover – Silver Lake
  - Increase Dickinson Creek communication and contact nonprofit bioengineers
    - Milford Neck conservation – Highway 301 (91 acres) – mitigation environment
- Dunleith (Rt 9) neighborhood
  - Reduce flooding with rain gardens, basins in stub roads working with Newcastle Conservation District
  - Contact: Jessica.verchick@aecom.com
- Swann Keys – lower Sussex County
  - Educating community on GI, network building
  - Living shorelines with oyster reefing around 4.5 acres of marshes; dredge creek and place spoils into marsh grasses and replant
  - Contact: Barbara Shamp at cherokee928@gmail.com

- Kalmar Nyckel restoration project along Brandywine River/Brownfield site
  - Remedial action involves indigenous plantings for E&S, stormwater management, shoreline stabilization
  - Contact: Brownfields, DNREC (Jim Poling)
  
- Milford living shoreline on the Mispillion River
  - Contact: Rob Pierce, City of Milford
  
- Pervious road shoulders, DE Statewide
  - Jim Pappas (DeIDOT)
  
- Wetland conservation statewide on the watershed scale
  - Contact: Alison Rogerson (DNREC)
  
- Urban street trees in Wilmington, DE
  - Contact: Ann Mattingly (DE Horticulture)
  
- Permeable pavers at Fenwick Town Hall
  - Contact: Merritt Burke
  
- Living shoreline at Blackbird Creek, Townsend
  - Contact: Kari St. Laurent
  
- Park/stormwater masterplan & future improvements in Maryland/Delaware
  - Contact: Lauren Good
  
- DeIDOT/KCI – Leatherman’s Run
  - BMPs to address water quality impacts associated with I-95
  
- Town of Blades rain barrel at town hall
  
- Outreach and monitoring
  - Check outfalls for pollutants to ID & track “illicit discharge”
  - Stormwater management practice
  - Contact: KCI
  
- Saltwater inundation through dune breaches in Green Creek, NJ
  - NFWF planning and design grant awarded for study
  - Contact: Katelynn Wintz

- Reduce existing impervious area and making it parkland and filter strips in Bowers
  - Contact: Ron Hunsicker
  
- Living shoreline in Seaford
  - Contact: Jules Bruck
  
- Green infrastructure for coastal highway resilience in US coastal areas
  - Grant funding to state and metro transportation agencies
  - Contact: Tina Hodges FHWA
  
- Living shorelines in Lewes Canal
  - Installed in 2014, coir logs, oyster bags
  - Study: living shoreline (accreting) vs. control site (eroding)
  - Contact: Brittany Haywood, DNREC
  
- Sand pumping and flood proofing buildings in Indian River Inlet
  - Contact: Jeff Shockley, Sussex County, DE
  
- Brandywine riverfront northeast
  - Urban neighborhood project (EJ)
  - Brownfield remediation
  - Shoreline stabilization (without hardscaping)
  
- Remediation and restoration
  - Sediment erosion and control
  - Public access
  - Create a sense of place
  - Create a master plan
  - DNREC Community Environmental Project Award
  
- Porous pavement for parking garage and green roof (16 acres) in Wilmington, DE
  - Contact: Deirdre Smith
  
- Herring Run drainage improvements
  - Tax ditch branch needs cleaning
  - State wetlands areas
  - DeIDOT drainage improvements
  - Private stormwater system improvements
  - Downstream from 2 major commercial developments
    - Walmart shopping center
    - Seaford Village Shopping Center

- NFWF project funded for SVSC on site
    - Improvements – large parking area (water quality improvements)
    - Contact: Jen Nelson (Resource Smart, LLC)
    - Contact: Josh Littleton (City of Seaford)
- South Main Street utility upgrades in Smyrna, DE
  - Green streets & permeable pavement
  - Contact: pvigneri@smyrna.delaware.gov
- Delaware St. – Grant & Planning Stage in Newcastle Delaware
  - Stormwater quality
  - Battery park open space project
    - Contact: jeff@newcastlecity.org
- Funding a research project to add charcoal and iron to ditches and swales to improve water quality
  - Contact: carol.cain@state.de.us
- Stormwater retrofits – Dewey Beach
  - CIB, DNREC, DeIDOT
  - Contact: Jim Tyler, Town of Dewey Beach
- Vacant land retrofit, Wilmington Land Bank
  - Contact: Vik Krishnamurthy, DCH
- Blue courtyard
  - Contact: Vik Krishnamurthy, DCH

### **What do you need to take action?**

- Resources
  - Information (see USB)
  - Assessment tools to avoid traps or surprises (e.g. ENVISION)
- Maintenance
  - Funding doesn't cover it post maintenance
    - Use maintenance as in-kind match/leverage
  - Business development community and corporate partners
  - Volunteers/community outreach
- Funding
  - FHWA grants
- Costs vs. Uncertainty

- Will it work?
- Perception is often that green infrastructure is a luxury not a necessity