Compensatory Mitigation in North Carolina & Challenges in Urban Settings

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Compensatory Mitigation Defined

Section 404 of the Clean Water Act (CWA)

regulates the discharge of dredge and fill material in waters of the United States, including many wetlands and streams

Compensatory Mitigation (permitting component of CWA)

defined as offsetting unavoidable impacts to wetlands, streams, and other aquatic resources via restoration, establishment, enhancement, and/or preservation

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NC Compensatory Mitigation

Part of the 404/401 permitting process

Subject to review and approval by Federal and State Agencies

Success/Credits of projects based on performance standards
DMS Programs

DMS

Riparian Buffer ILF

Nutrient Offset ILF

Statewide Stream & Wetland ILF

NCDOT Stream & Wetland ILF
650 total projects

Over 200 active

2.7 million stream credits

Approx. 4 million linear feet

Over 12,000 wetland credits

Approx. 29,000 wetland acres

Average 20 projects contracted per year (44 projects contracted last year)
We Suffer from Urban Stream Syndrome

Describes the ecological degradation of streams draining urban land
(Walsh et.al 2022)

Flashy hydrograph
High nutrient concentrations
Altered channel morphology
Changes in groundwater discharge
Degraded (or absent) riparian vegetation

Disruption of the hydrologic cycle
NC Mitigation in Urban Areas - CHALLENGES

- Credits
- Cost
- Goals
- Site Location
- Design
- Public Perception
- Maintenance
Credit Ratios

- Restoration 1:1 (1’ of stream restoration = 1 credit)
- Enhancement I 1.5:1
- Enhancement II 2:1

Predictable ratios allow for economically feasible restoration
**Urban Credit Structure**

Non-urban Credit Structure is not Applicable to Urban Stream Restoration

Additional Considerations for economical feasibility

- Stormwater Measures
- Non-traditional Buffer widths
- Educational Value (greenways, interpretative centers, signage)

Freedom Park Sugar Creek, Charlotte, NC
Cost
- Double/Triple Land
- Stormwater Control Measures
- Retrofit Constraints

Measurable Goals
- Nutrients
- Aquatic habitat
- Biology
- Vertical and Lateral Erosion
- Buffer Vegetation

Site Location

- Constraints
  - Sewer lines
  - Power lines
  - Buildings
  - Culverts

- Willing landowners

Capital Blvd adjacent to Pigeon House Branch
Design

• Hydrology – Water, Water, Water
• Sediment Supply and Transport
• Existing Infrastructure
• Stormwater Control Measures
• Riparian Vegetation

Courtesy Capital Region Watershed District
Alluvial deposition on bench in Hillsdale Park Greensboro, NC
Confined Stream
Starmount park country club Greensboro, NC

Confined stream and buffers on bench
Chavis Park Raleigh, NC
Public Perception

‘deficit model’
of public understanding and from a lack of fit between the expectations of restoration and policy workers and those of their local publics

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• Aesthetics
• Concerns e.g., crime, snakes
• Expectations
Maintenance

• Stormwater Control Measures (SCM)
  SCMs must be maintained properly
  Maintenance needs depend on the type of SCM
  SCMs inspected on a minimum quarterly basis

• Costs

• Vegetation Management

Stormwater Wetland
one cell of an experimental 3-tiered stormwater wetland in need of maintenance
Oak planting being overtaken by honeysuckle, Chavis Park, NC
Functional Uplift in Successful Urban Mitigation
Hope for the Future?

North Carolina Natural Infrastructure Program (NCNIP)
2020 NC General Assembly amended DMS enabling legislation
Blueprint
Stoney Creek Pilot
Flooding funds are targeted for Municipalities
NC In-Lieu Fee Program Basics

Developer Impacts → Mitigation

Mitigation Bank Credits

In-Lieu Fee to DMS

Permittee Responsible