

# DRAFT FOR DISCUSSION PURPOSES ONLY

## CAROLINA NORTH Landscape, Natural Habitat, and Water Quality Draft Metrics December 14, 2006 Report Out

### ACTIVITY CATEGORY: PRESERVATION/CONSERVATION AREAS

#### Goal - Create a space with more biodiversity than it has today.

##### Metrics

- Miles of stream, acres of wetland, and acres of landfill restored/rehabilitated
- Develop and implement an invasive species management plan
- Tree loss and replacement – no net tree loss
- Establish baseline inventories of indicator species (flora and fauna) to track over time.
- Use a diversity of plants and strata in all landscape plantings that are native to the maximum extent practicable.

#### Goal - Identify existing site features that we want to celebrate, protect, and enhance and design for better access to experience their value.

##### Metrics

- Use the ecological assessment data and gather additional data as needed to identify stream, forest, and other sensitive areas to protect, avoid, or highlight for educational purposes.
- Design view corridors from campus structures to these special features.
- Maintenance and preservation of 150 meter wide forested riparian buffer on Bolin Creek through Carolina North property.
- Percent green space in built environment
- Distance from the entrances to the project's residential and teaching/research buildings to public space, such as a park, plaza, or open greenspace, etc.
- Develop a soils management protocol to monitor and amend soils annually.

#### Goal - Replicate the natural, undisturbed hydrologic function of the land

##### Metrics

- At a minimum, meet the stormwater management criteria of the Town of Chapel Hill for new development. In addition, treatment strategies shall be capable of limiting nitrogen export to 4.8 lb/acre/yr and phosphorus export to 0.8 lb/acre/year in accordance with the Jordan Lake Watershed Draft Criteria established by the North Carolina State Environmental Management Commission.
- Provide water quality treatment for all impervious areas. Alternatively, capture and reuse the runoff from impervious areas.

### ACTIVITY CATEGORY: DEVELOPING AREAS

#### Goal - Restore disturbed ecological systems concurrent with development activities.

##### Metrics

- Restoration actions should be initiated within one year of initial disturbance.

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- Inventory areas of invasive species on site.
- Remove invasive species present in development areas and manage these areas to prevent their reoccurrence.

**Goal - Build on existing disturbed areas before considering natural landscapes and allow natural site features to influence building siting and utility location.**

Metrics

- Location of initial phases of development on disturbed areas such as the runway, maintenance facility, parking lots, and landfill.
- Percent of site that is disturbed.
- Total contiguous area cleared at one time.
- Do not develop sites on slopes greater than 15% OR if slopes greater than 15% are disturbed, employ redundant and effective erosion and sediment control techniques that are inspected several times a week.

### **ACTIVITY CATEGORY: GENERAL OPERATING PRINCIPLES**

**Goal - Integrate research, education, and outreach in both built and non-built conditions. Pursue these opportunities during planning, construction, and post-construction phases.**

Metrics

- Number of students and faculty involved annually in a formal data collection and assessment initiative to record existing site features and conditions prior to construction to establish a baseline condition to serve as a foundation to future research.
- Work with undergraduate and graduate faculty to establish a research plan for Carolina North that includes studying protected, restored, and developed areas.
- Establish an education and outreach initiative that explains sustainability goals and metrics Carolina North will be targeting

**Goal - Use plant species for a healthy ecosystem that are native to the maximum extent practicable, will conserve native wildlife, decrease the amount of water needed for landscape maintenance, reduce long-term maintenance, reduce soil erosion by production of long root systems, and protect water quality by controlling erosion and moderating floods and drought.**

Metrics

- Develop a list/database of indigenous plants including recommendations for plant types based on key site factors.
- Establish a composting program and on site location that provides for all fertilization and mulching needs on site. Organic fertilizer should be used if additional fertilizer is needed.

**Goal - Reduce the heat island effect by preserving forest patches, reforesting areas, and planting street, courtyard, and plaza trees.**

Metrics

- Percent canopy cover in the built areas.
- Percent canopy cover or shade for sidewalks, paths, parking lots, streets, plazas, stormwater BMPs, etc.

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**Goal - Quantify and understand the existing natural capital of the site to inform the planning process and associated conservation/development strategies.**

Metrics

- Quantification of forest stand value in terms of hardwood resources, carbon sequestration credits, and more under current conditions.
- Quantification of other site resources with respect to embodied energy (aka emergy), carbon sequestration potential, and other natural capital currency.
- Develop a masterplan that never decreases the site natural capital

**Goal - Maintenance of natural systems should be included as part of the site's operating budget. Maintenance of the natural systems should take an adaptive management approach.**

Metrics

- Establish and sustain an active forest management program that considers harvesting of timber for use in site construction. **[Note this was a goal articulated at the Nov 27-29 work session].**
- Develop and adopt an integrated organic pest management program.
- Eliminate reliance on commercial pesticide and herbicide use after 10 years.

### Other Discussion Points

#### Relation to Living Campus Vision

- **People, prosperity, planet (aka triple bottom line)**
- **Carbon neutral**
- **Pedagogy**

Reference Site Condition – Typical North Carolina Piedmont Forest  
Could use Bolin Creek west of Seawell School Road

Natural Metrics: Energy (biomass), hydrology, nutrient cycling, plant succession, disturbance

Human Metrics: Design, construction, living, learning, operations, maintenance