Sustainable Landscape Management

- Economic Challenges in Landscape Management
- Proactive Landscape Planning
- Responsible Landscape Management Practices
  - Turf Management Tiers
  - Nutrient Management
  - Sustainable Buffers and Meadow Management
  - Large-scale Recycling
  - Adjustment of Business Practices
One of many definitions...  

Sustainability - "[to meet] the needs of the present without compromising the ability of future generations to meet their own needs."

Do Americans think about long-term costs?

Human Welfare and Ecological Footprints compared

Earth’s biocapacity = 2.1 hectares per person

Data sourced from:
- Global Footprint Network 2008 report (2005 data)
- UN Human Development Report 2007/08
Municipal landscape management realities:

- Additional funding for landscape management activities typically takes a back seat to building new projects.

- Funding and other resources to absorb landscape management costs are shrinking.

- Each decision that minimizes new landscape management costs will help slow the widening gap!
Virginia Beach Landscape Management

- Total FY 2008-09 Budget – $18,264,548
- Adjusted for inflation, since 2002, the total budget has been flat – it’s going backwards in FY ‘09 and FY ’10
- During that same time we picked up 71 new sites:
  - 14 divided roadways
  - 15 municipal buildings
  - 23 parks
  - 2 elementary schools
  - 12 natural areas
  - 2 trails
  - 3 other sites
Virginia Beach Landscape Management

- Mowed turf – approximately 6000 acres
- Natural Areas managed – 2400 acres
- Mulch installed annually – 13000 cu. yds. (in house)
  - That’s over 150 tractor trailer loads!
- Schools sites maintained - 91
- Athletic fields lined and mowed annually – 358
- Athletic events prepared for annually – 7526
  - Field lining and infield grooming
  - Over 4000 of these at Princess Anne Athletic Complex
## Sustainable Sites Initiative – Addresses Landscape Management!

<table>
<thead>
<tr>
<th>Maintenance plan topics to be addressed by the integrated design team including the maintenance contractor or staff</th>
<th>10-year desired outcome from maintenance practice</th>
<th>Required actions to achieve 10-year desired outcome (include specific details below)</th>
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| Invasive Species Management | | | |
| Invasive species control and removal: Prescribe treatments for invasive species identified on-site. **Note:** Include proposed methods to manage the species and control their spread; description of the treatment phases; follow-up treatment timelines and techniques; and a long-term monitoring plan for existing invasive species. | | | |
Some current annual maintenance costs...

- Turf on a 10-day mowing cycle – $2210 per acre
- Mulched planting beds – $400 per 1000 sq. ft.
  - Shrub pruning once per year
  - Mulching once per year – 2” dress up
  - Weed control
- Litter Control – $415 per acre

These costs have remained relatively constant for the last 10 years.
Landscape management costs should be considered when making design decisions!
Six Turf Mowing Tiers

- Tier 1 – Highest Profile Sports Facilities
- Tier 2 – High Profile Building Sites, Activity Areas, Metro and Signature Parks
- Tier 3 – Neighborhood and Community Parks, Schools and Building Sites
- Tier 4 – Divided Highway Medians and Roadsides
- Tier 5 – Undivided Roadways, Ditches and Slopes
- Tier 6 – Open Spaces, Stormwater Features and Shorelines
**Tier 1**

**Highest Profile Sports Facilities**

- Examples: PAAC and School Stadium Fields
- Mowed 2 or more times weekly
- Mowed each time using different patterns
- Usually mowed 1.25” tall or less during growing season; 1.5” and taller in off-season
- Usually has aggressive fertilization and weed control program
Tier 2
High Profile Building Sites, Activity Areas, Signature and Metro Parks

- Examples: Resort event parks and Municipal Center
- Mowed at least weekly
- Mowed using different patterns
- Bermudagrass mowed 1-1.5” tall
- Fescue mowed 2-3”
- Has some fertilization and weed control
**Tier 3**

Neighborhood and Community Parks, Schools, Building Sites

- Examples: Fire Stations, School Common Areas
- Mowed on 10 or 14 day cycles
- All turf mowed at 2-3” (2” minimum!)
- Different directions not required, but be cautious of clipping build-up and ‘haystacks’
- Infrequent fertilization or weed control
Tier 4
Divided Highway
Medians and Roadsides

Examples: Dam Neck and Princess Anne Roads
Mowed on 18 day cycles
All turf mowed at 3” (3” minimum!)
Different directions not required, but be cautious of clipping build-up and ‘haystacks’
Tier 5
Undivided Roadways, Ditches and Slopes

- Examples: Roundhill Dr., urban shoulders and odd parcels
- Mowed on 30 day cycles
- All turf mowed at 3” (3” minimum!)
Tier 6
Open Spaces, Stormwater Features and Shorelines

- Examples: Lake Ridge, Mount Trashmore shoreline, backsides of ditches
- Usually mowed annually or by work order
- Should look neat from the road
- Also reduces view obstructions
Nutrient Management
**Nutrient Management - Nitrogen**

- Only 112 acres of turf on a formal nutrient program
- 126,700 lbs. of fertilizer applied annually
- 44,591 lbs. organic fertilizer applied
  - 35% of total fertilizer
- 15,057 lbs. complete fertilizer with slow release N
  - 11.5% of total fertilizer
- 13,410 lbs. of water soluble N
  - 57% of total N – always applied in small doses
- 10,259 lbs. of slow release N
  - 43% of total N
Nutrient Management - Phosphorus

- Most soils in Virginia Beach are naturally high in phosphorous – we do soil samples frequently and before ever implementing ANY fertilization program.
- 126,700 lbs. of fertilizer applied annually.
- Only 1325 lbs. of Phosphorous applied – 1.1% of all fertilizer applied.
- Saves about $1700 for the cost of phosphorous.
- Also better for the waterways!
Why Buffer Management?

- Green Ribbon Committee was appointed by City Council in 2006 to make recommendations regarding water quality improvements for the City of Virginia Beach.

- Buffer management is now suggested to:
  - Reduce the impact and amount of runoff
  - Promote and preserve existing natural buffers
Goals of Buffer Management

- Improves operator safety
- Reduces equipment damage
- Reduces soil erosion
- Improves aesthetic quality
- Filter pollutants in runoff
- Provides wildlife habitat
- Inhibits goose activity
Reduce soil erosion
Improves aesthetic quality
Filter pollutants in runoff
Buffer Management

- Utilizes annual mowing of the widest buffer possible to allow meadow growth along shorelines during the growing season – minimum 20’ width desired

- Mow the buffer at a 6” minimum height in late fall or winter

- NO meadow mowing shall be performed between March and September

- Remove woody vegetation above the waterline annually while it is small – may leave trees or shrubs in pre-determined areas
Buffer Management
Buffer Management
Large-scale Recycling
9600 cu. yds. of woody debris stored at our yard

This has a value of $144,000 in landfill space

Grinding operation costs $18,700 (at $1.95 per yd.)

3800 yds. of mulch produced at $4.92 per yd.

Saves $23,104 in mulch cost

Also saves about $9,000 in labor costs for trips to the landfill

Total savings to the taxpayers – $176,104 per year!
Large-scale Recycling
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Large-scale Recycling
Adjustment of Business Practices

Organizational Development

Development/Growth

Mature

Sustainability

Declining State

Time
Adjustment of Business Practices
Adjustment of Business Practices

Landscape Management Division

- Asset Management Bureau
- Maintenance Management Bureau
- Life Cycle Management Bureau
- Special Zones Management Bureau
Adjustment of Business Practices can:

- Minimize air pollution
- Conserve fossil fuels
- Reduce energy use in facilities
- Maximize asset life through proactive services
- Provide better service to customers
- Can allow focus on the “big picture”
- Lead to economic sustainability