Conservation Landscaping Recommendations to the Baltimore County Council

Conservation Landscaping Working Group
Baltimore County Advisory Commission on Environmental Quality

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Photo by Britt Slattery: http://www.chesapeakelandscape.org/

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Executive Summary

A. Introduction

From April 2006 – February 2007, the Baltimore County Advisory Commission on Environmental Quality (CEQ) facilitated a collaborative process with Baltimore County's Departments of Environmental Protection and Resource Management, Recreation & Parks, Education, and Public Works.

The CEQ found that no cohesive policy or consistent set of programs exist for landscape practices on County lands and facilities. As a result, loss of plant and wildlife habitat, creation of off-site impacts (e.g., erosion), proliferation of non-native aggressive invasive species, and inefficient use of resources and energy may be occurring in Baltimore County.

The purpose of this report is to recommend the adoption of a county-wide policy for **Conservation Landscaping** (**CL**) design and maintenance practices as developed by this multidisciplinary group (hereafter CL Committee). A comprehensive CL strategy will minimize environmental degradation, enhance cost effective maintenance practices and improve the living environment for citizens of Baltimore County.

The CL Committee believes that development and implementation of a CL Policy will serve well the interests of Baltimore County in keeping with the initiatives of the County Executive and County Agencies for Green Renaissance and the County's recognition as a Nature-Friendly Community and a gold award Chesapeake Bay Partner Community.

B. Program Recommendations

The CL Committee recommends that Baltimore County adopt the following recommendations:

Policy: Adopt a Countywide CL Policy to clearly communicate to the public and County staff the purpose, goals, and importance of CL benefits on County properties.

Management: Establish an inter-agency CL Work Group to develop a County-wide CL Policy based on the recommendations of this report and as determined by the administration.

Funding: Provide financial support for agency implementation through the County's operating and capital improvements budgets. Apply for additional funding from foundations, State and Federal grants.

Educating County Employees: Educate County employees and appropriate contractors about the desired CL practices and benefits.

Evaluation: Develop a strategy to assess current CL practices on County lands. Identify opportunities for their expansion that will achieve the goals of the CL policies.

Tracking the Effectiveness of CL Projects: Develop performance and cost-effectiveness tracking criteria to monitor the success of specific efforts.

Public Education and Outreach: Raise public awareness of CL practices as an alternative to mow-dependent landscapes.

Build Partnerships: Encourage collaboration and partnerships with other public and private organizations and businesses to supplement the County's efforts in achieving the CL goals and objectives.

C. Conservation Landscaping - Goals and Benefits

CL is the application of landscape principles that retains the natural features and vegetation and helps mitigate human impacts on the natural environment.

1. Air Quality Improvement
   Goal - Improve air quality by expanding tree canopy and reducing usage of maintenance equipment.
   Benefits - Improved air quality benefits human health, plants and wildlife.

2. Water Quality Improvement
   Goal - Improve water quality by minimizing soil erosion and/or enhancing the nutrient uptake capacity of the landscape.
   Benefits - Vegetated buffers along stream banks and shorelines intercept surface runoff and subsurface water pollutants.

3. Stormwater Management
   Goal - Manage stormwater runoff rates by establishing multiple vegetative canopy tiers.
   Benefits – Improved stormwater management increases groundwater infiltration and recharge, improves water quality, reduces peak flows and resultant erosion, and restores the natural forest profile that provides wildlife benefits.

4. Ecosystem Management
   Goals - Protect, manage, expand, connect, or restore native plant communities, wildlife habitat, and greenways.
   Benefits - Native plant species can increase the diversity of avian populations, beneficial insects, and animals that are essential to ecosystem health and function.

5. Energy Conservation
   Goal - Reduce energy consumption by reducing required landscape maintenance practices and energy consumed by air conditioning and heating of buildings.
   Benefits - Utilizing standard canopy cover practices around buildings can reduce air conditioning by as much as 30%. Tree shaded neighborhoods are 3 – 6 degrees cooler than treeless areas.

6. Resource Reduction
   Goal - Reduce long-term levels of fuel and materials needed to maintain or establish landscapes and grounds.
   Benefits - Lowers maintenance cost and enhances environmental quality.

7. Pesticide/Fertilizer Reduction
   Goal - Reduce or eliminate fertilizer and/or pesticide applications using Integrated Pest Management (IPM) principles.
   Benefits – Reduces costs and improves environmental quality.

8. Education

 Goal - Promote the use of CL techniques and practices on Baltimore County land and facilities..

 Benefits - Practicing CL helps establish an ethic of environmental protection among both County employees and citizens and will encourage private property owners to adopt similar practices.

9. Community Engagement

 Goals - Increase neighborhood pride and environmental stewardship by encouraging citizens to assist County staff with landscaping maintenance.

 Benefits - Gives communities a vested interest in CL and provides a connection with the natural environment.

10. Landscape Management and Maintenance

 Goals – Improve maintenance manpower and equipment.

 Benefits - Lowers maintenance cost, air and noise pollution, and enhances environmental quality.

D. Acknowledgements

 The CL wishes to acknowledge the support that we have received from Fairfax County, VA who are in the process of implementing a Natural Landscaping policy initially in response of the need for compliance to the Clean Air Act. This project would also not have been successful to this point if it were not for the support, dedication, and cooperation of the members of the CL Committee and their respective departments.

Conservation Landscaping Recommendations to the Baltimore County Council

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A. Introduction

From April 2006 – February 2007, the Baltimore County Advisory Commission on Environmental Quality (CEQ) facilitated a collaborative process with Baltimore County's Departments of Environmental Protection and Resource Management, Recreation & Parks, Education, and Public Works.

The purpose of this report is to recommend the adoption of a county-wide policy for **Conservation Landscaping** (**CL**) design and maintenance practices as developed by this multidisciplinary group (hereafter CL Committee). A comprehensive CL strategy will minimize environmental degradation, enhance cost effective maintenance practices, and improve the living environment for citizens of Baltimore County. The CEQ found that no cohesive policy or consistent set of programs exist for landscape practices on County lands and facilities that specifically address the stated benefits. As a result, loss of plant and wildlife habitat, creation of off-site impacts (e.g., erosion), proliferation of non-native aggressive invasive species, and inefficient use of resources and energy may be occurring in Baltimore County. However, there are currently many examples of existing CL practices on county lands on which to build an overall policy.

The CL Committee believes that development and implementation of a CL Policy will serve well the interests of Baltimore County in keeping with the initiatives of the County Executive and County Agencies for Green Renaissance and the County's recognition as a Nature-Friendly Community and a gold award Chesapeake Bay Partner Community.

B. Program Recommendations

As a result of the work of this collaborative process, the CL Committee recommends that Baltimore County adopt the following recommendations:

Policy: Adopt a Countywide CL Policy to clearly communicate to the public and County staff the purpose, goals, and importance of CL benefits on County properties. Official County policies and practices will help ensure consistent application of CL.

Management: Establish an inter-agency CL Work Group to develop a County-wide CL Policy based on the recommendations of this report and as determined by the administration. This Policy will provide oversight and facilitate continued inter-agency cooperation to assure that the goals and benefits are achieved. In addition to developing a stand-alone policy, the CL Work Group should identify opportunities to embed CL concepts and guidelines into existing County Code and policies, the Baltimore County Landscape Manual, and County R.O.W regulations. The relevant goals, concepts, principles, and practices of CL should also be embedded in future natural resource management plans such as urban forest Management, Small Watershed Action Plans (SWAPS), the Master Plan, and air quality plans.

Funding: Provide financial support for agency implementation through the County's operating and capital improvements budgets. Apply for additional funding from foundations, seek State and Federal grants, and partner with local businesses and non-profit organizations.

Educating County Employees: The key to the success of achieving the full benefits of CL rests on educating all County employees and appropriate contractors about the desired CL practices and benefits: Enhanced environmental quality for all Baltimore County residents and more cost effective maintenance. CL projects will need to be implemented so they coordinate with the official uses(s) of the facility, while incorporating the input of the on-site staff.   County employees will need to incorporate CL in the design and maintenance of new facilities.

Evaluation: Develop a strategy to assess current CL practices on County lands. Identify opportunities for their expansion that will achieve the goals of the CL policies. While some preliminary assessments have been done on County lands, the process needs to be expanded and refined, using GIS and GPS. An implementation plan needs to be developed using criteria based on achievability, benefits, staffing, and funding.

Tracking the Effectiveness of CL Projects: Develop performance and cost-effectiveness tracking criteria to monitor the success of specific efforts. The performance and cost data could be used as a baseline to evaluate the level of cost-effectiveness and environmental benefits that are likely to be achieved by proposed projects.

Public Education and Outreach: The traditionally held culture of mow-dependent landscapes needs to be modified to encompass CL practices. This needs to be supported/accompanied with concentrated public outreach and education.

Build Partnerships: Encourage collaboration and partnerships with other public and private organizations and businesses to supplement the County's efforts in achieving the CL goals and objectives; for example; local watershed organizations, Irvine Nature Center, public and private universities, Baltimore County Forest Conservancy District Board, faith-based networks, and the Chesapeake Conservation Landscaping Council.

C. Conservation Landscaping - Goals, Benefits and Recommended Practices

CL is the application of landscape principles that retains the natural features and vegetation and helps mitigate human impacts on the natural environment.

1. Air Quality Improvement
    Goal - Improve air quality by expanding tree canopy, which increases air-filtering vegetation bulk, and by reducing usage of maintenance equipment that pollutes.
    Benefits - Improved air quality benefits plants and wildlife and reduces illnesses of citizens of the County and the surrounding jurisdictions that have been identified as having degraded air quality by the United States Environmental Protection Agency. In addition, the Clean Air Act allows for State Implementation Plan credits for increased air-filtering tiered tree canopy.
    Recommended Practices -
    - Evaluate current County operations on public lands and street rights-of-way to assure existing tree canopy is being retained wherever possible.
    - Develop tree measures for inclusion in State's air quality management plans for Baltimore County.
    - Establish large scale no-mow zones planted with whips and small nursery stock trees

- Increase vegetation mass/tree canopy cover in parking lots to filter vehicle emissions and cool heat-island-effected pavement areas.
- Establish tree preservation areas in conservation easements on public lands.
- Limit mowing operations in summer months when pollution levels peak.

2. Water Quality Improvement

   Goal - Improve water quality by minimizing soil erosion and/or enhancing the nutrient uptake capacity of the landscape. This goal will be supported by existing riparian restoration projects, Low-Impact Development bio-retention practices, Best Management Practices, and erosion and sediment control practices that utilize Integrated Vegetation Management (IVM) areas.

   Benefits - Native vegetation in drainage ways enhances the infiltration of contaminated stormwater runoff. Root systems improve soil permeability and help the uptake of pollutants and nutrients. Vegetated buffers along stream banks and shorelines intercept surface runoff and subsurface water pollutants.

   Recommended Practices -
   - Re-establish Riparian buffers with tree and woody plant species per DEPRM regulations and practices.
   - Stabilize Stream banks using bio-logs, fiber mats, emergent and submerged wetland plants, etc.
   - Establish rain gardens where appropriate.
   - Use CL practices on properties adjacent to major waterways.
   - Protect and manage riparian plant communities, including invasive species control.

3. Stormwater Management

   Goal - Manage stormwater runoff rates by establishing multiple vegetative canopy tiers, and improving the soil permeability through the use of groundcover and other methods.

   Benefits – Improved stormwater management increases groundwater infiltration and recharge and thus lessens plant stress during dry periods, improves water quality through uptake of nutrients and absorption of metals and other pollutants, reduces peak flows and resultant erosion and restores the natural forest profile that provides wildlife benefits.

   Recommended Practices -
   - Establish vegetation filter strips in parking lots where appropriate.
   - Use green roofing products where appropriate.
   - Install rain barrels where appropriate.
   - Introduce organic amendments to soils.
   - Use other Low Impact Development techniques related to landscaping.
   - Reduce amount of impervious surfaces on sites (e.g., parking lots, athletic areas, storage areas).
   - Use MDE 2000 Stormwater Design Manual as reflected in the Baltimore County Stormwater Manual for CL practices.

4. Ecosystem Management

   Goals - Protect, manage, expand, connect, or restore native plant communities, wildlife habitat, and greenways.

   Benefits - CL protects and restores habitats for wildlife. Native plant species can increase the diversity of avian populations, beneficial insects, and animals that are essential to ecosystem health and function.

Recommended Practices -
- Control invasive exotic species.
- Plant dominant/indicator species to help re-establish specific plant communities and wildlife habitat.
- Identify and map specific plant communities to assist in the selection of appropriate native plant materials in restoration projects.

5. Energy Conservation

Goal - Reduce energy consumption by reducing required landscape maintenance practices and energy consumed by air conditioning and heating of buildings.

Benefits - Utilizing standard canopy cover practices around buildings can reduce air conditioning by as much as 30%. Tree shaded neighborhoods are 3 – 6 degrees cooler than treeless areas.

Recommended Practices -
- Establish and/or increase no-mow Conservation Landscapes using IVM practices.
- Plant no mow zones with seedlings, alternative groundcovers, or woody seed mix.
- Remove turf grass and replace with mulch beds and ground cover in interior parking lot islands and projections.
- Plant over-story deciduous trees 20 to 40 feet away from eastern and western sides of buildings to reduce passive solar gain through windows, hot walls, and roofs.
- Plant rows of evergreen trees and shrubs to intercept and reduce wintertime wind speeds, thereby decreasing heating costs.
- Establish reduced mowing schedules.

6. Resource Reduction

Goal - Reduce long-term levels of fuel and materials needed to maintain or establish landscapes and grounds, and reduce energy consumption in buildings from effects of shading and windbreaks.

Benefits - Use of life-cycle cost analysis ensures that choices will provide the lowest total cost (including operation and maintenance) over the lifetime of the project or product, as demonstrated with the Meadow Case Study.

Recommended Practices -
- Reduce the frequency and extent of mowing with or without replanting.
- Partner with non-governmental organizations, other volunteer organizations, and local businesses, including the Sheriff's Office work release program, to support landscaping maintenance activities.
- Replace high maintenance plants with low maintenance plants.
- Plant non-invasive shrubs and tree species that obtain appropriate dimensions for location.
- Select plant species with growth requirements that are compatible with the site.
- Implement life-cycle cost analysis for planning and purchasing.

7. Pesticide/Fertilizer Reduction

Goal - Reduce or eliminate fertilizer and/or pesticide applications using Integrated Pest Management (IPM) principles.

Benefits – Reduces costs and improved environmental quality, particularly in areas of formal lawns around government facilities or in specialized turf areas such as athletic fields. While reduced fertilizer usage and IPM may not apply to most County facilities, specialized areas and those for educational purposes may benefit from the following practices.

Recommended Practices -
- Reduce the overall amount of fertilizers and pesticides applied by reducing the amount of turf, where possible, and by managing natural areas using IVM practices.
- Use IPM on landscapes rather than an annual blanket treatment of pesticides.

8. Education
   Goal - Promoting the use of CL techniques and practices on Baltimore County land and facilities will encourage private property owners to adopt similar practices on their own properties. A secondary goal would be to provide educational opportunities for students, using the CL as study areas on public school campuses.
   Benefits - Practicing CL helps establish an ethic of environmental protection among both County employees and citizens. The County can use CL as a community outreach educational tool, basically leading by example.
   Recommended Practices -
   - Elected Officials – Educate and inform County Council and the Administration regarding the benefits of CL on public lands.
   - County Employees - Train employees to manage landscapes using IVM practices. Support training programs and grants for education.
   - General Public-
     o Promote successful outreach projects such as Towson Gardens Day, Towson Festival, and the African American and Hispanic Festivals held each spring at the County Courthouse, where the DEPRM promotes BayScapes. Use these successful events as a template for other County celebrations/festivals.
     o Develop educational materials for use on County and DEPRM website, CEQ (Commission on Environmental Quality) link, and E-stream (DEPRM newsletter).
     o Develop multi-media materials such as brochures, press releases, newspaper articles, and videos that reach all of Baltimore County.
     o Promote existing programs such as the National Wildlife Federation's "Nature Stewards" program (Irvine Nature Center is NWF approved local facilitator/trainer) and the School Yard Reforestation and Wildlife Habitat. Program (SYRWHP) of the Baltimore County Forestry Conservancy Board to construct demonstration sites at County facilities and school properties.
     o Construct multi-function Conservation Landscaping projects on high visibility government sites that include interpretive signage.
     o Collaborate with the Baltimore County Public Schools Office of Outdoor Science to embed CL into public school curriculum (e.g., SYRWHP).
     o Promote Conservation Landscaping practices on County facilities and buildings as a model of design and practices that are beneficial to the County as well as all citizens in their personal preferences for landscaping.

9. Community Engagement
   Goal - Increase neighborhood pride and environmental stewardship by encouraging community associations and non-profit grass-root organizations to assist County staff with the maintenance of landscaping at libraries, schools, parks, and government centers.
   Benefits - Give communities a vested interest in CL and provide a connection with the natural environment.

Recommended Practices -
- Enlist neighbors and Garden Clubs in helping "Green Schools" with garden planting and maintenance around schools.
- Develop programs that encourage individual or groups interested in planting and maintaining CL gardens or exhibits on County property.
- Incorporate CL practices or projects into Green Renaissance initiative.
- Encourage gardening groups such as the Masters Gardeners to attend CL workshops.
- Encourage local landscape businesses to participate in CL workshops to encourage the use of IVM practices and CL services for private landowners.
- Develop programs for various special needs populations (i.e., at-risk youth, alternative education, and therapeutic recreation, e.g. Talmar – Cromwell Valley Park).

10. Landscape Management and Maintenance

Goal - Improve maintenance manpower and equipment.

Benefits - Lower maintenance cost, air and noise pollution, and enhance environmental quality.

Recommended Practices -
- Establish a maintenance and management strategy that includes cost effective environmental goals.
- Design environmentally friendly landscapes that can reduce maintenance (e.g., reduced mowing areas and frequency of mowing).
- Add low emission equipment to the existing purchasing criteria, which include competitive bids, efficiency, longevity and the availability of parts.
- Train equipment operators that can be shared between agencies, where appropriate.
- Use GIS in the landscape design process and GPS in the operation of maintenance equipment.
- Use and expand IPM programs to eliminate the need for annual blanket treatment of herbicides and pesticides.
- Control invasive plants to minimize their negative effects on desired plants.
- Reduce use of expensive and polluting fertilizers.

D. Definitions

The following definitions are recommended and where appropriate are consistent with those used for the Baltimore County's Builders for the Bay initiative.

Conservation Landscaping: Application of landscaping techniques to retain natural features and vegetation and their beneficial effects.

Integrated Pest Management (IPM): Integrated Pest Management (IPM) is a decision-process that uses all available pest management strategies to prevent economically damaging pest outbreaks, while reducing risks to human health and the environment. IPM is a continuum along which there are many levels of adoption. It can range from simple monitoring to properly timed pesticide use all the way to "biointensive" IPM, in which there is a total elimination of synthetic pesticides-- as in organic farming.

Integrated Vegetative Management (IVM): Integrated Vegetation Management is a system of controlling undesirable vegetation in which (1) undesirable vegetation within an ecosystem is identified and action thresholds are considered, and (2) all possible control options are evaluated and selected

control(s) are implemented. Control options, which include biological, chemical, cultural, manual, and mechanical methods, are used to prevent or remedy unacceptable, unreliable, or unsafe conditions. Choice of control option(s) is based on effectiveness, environmental impact, site characteristics, worker/public health and safety, security, and economics. The goal of an IVM system is to manage vegetation and the environment to balance benefits of control, costs, public health, environmental quality, and regulatory compliance. (*source: federal inter-agency Memorandum of Understanding*)

Landscaping: The physical modification of the natural environment to serve the needs of people by planting and/or altering the contours of the ground.

Life cycle cost analysis: Total cost of a project by considering the purchase price, operating expenses, and disposal costs.

Native plant: A plant or plant species that lives or grows naturally in a particular region without direct or indirect human intervention.

Naturalized plant: A plant or plant species introduced from some other part of the world that now exists in the wild without the direct or indirect human intervention.

Natural vegetation: A plant community that develops in the absence of human activity.

Primary source document= Fairfax County Natural Landscaping Five-Year Implementation Plan

Appendix:
List of current conservation landscape practices on BCPS and Rec & Parks lands.
List of current landscape maintenance practices and equipment – DPW - Bureau of Highways, Rec & Parks and BCPS

References: (Available to appropriate county agencies)
1. Rock Creek Park Invasive Non-Native Plant Mitigation Program
   A National Park Service (NPS) experiment in non-native invasives control. This sobering study addresses the serious nature of the issue, and the costs, limitations and challenges of coping with invasives; it deals frankly with the necessity of chemical measures in highly infested areas.
2. Fairfax Co. Plan – Benefits & Application of Natural Landscaping and Five-year Implementation Plan
   A project initiated by the county Board of Supervisors in 2004 as part of the air quality plan.
3. McNeil Consumer Healthcare Project – PA
   An eight-year study that demonstrated the cost savings of converting 24 acres of lawn to native wildflower and grass meadows.
4. Mindwin Preserve Project
   A Midwest Prairie invasives control NPS project that deals with the use of relatively non-harmful chemical controls that were necessary to restore this prairie and its stream buffers.
5. Selected Resources for Nature-Friendly Landscaping
   Web-based list for landscaping, lawn care, invasive and native plants, water conservation, etc.
6. Kinder Park
   The Kinder Farm Park Management Plan is a model of cost and energy savings achieved by keeping large areas of the Park in forest or meadow areas requiring less maintenance. The Plan identifies eight landscape types, each with its own maintenance and schedule. Need for invasives control is stressed, as is using each area efficiently in keeping with its intended use.