Revised DRAFT 2008

Maryland's Coastal and Estuarine Land Conservation Plan

Maryland
Department of Natural Resources

http://www.dnr.state.md.us

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This document was prepared by the Chesapeake & Coastal Program, Watershed Services Unit, Chesapeake Bay and Watershed Program of the Maryland Department of Natural Resources.

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This document was funded by the Coastal Zone Management Division of the Maryland Department of Natural Resources pursuant to National Oceanic and Atmospheric Administration award nos. NA03NOS4190086.

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Printed on recycled paper.

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Table of Contents

I. Executive Summary

Established in response to overwhelming coastal development pressures, the federal Coastal and Estuarine Land Conservation Program (CELCP) is intended to assist states and local governments in protecting coastal and estuarine areas that have significant conservation, recreation, ecological, historical, or aesthetic values. The Program prioritizes lands that have significant ecological value.

Funding for CELCP grants is provided through annual Congressional appropriations and administered by the National Oceanic and Atmospheric Administration (NOAA). Pursuant to the NOAA CELCP Program guidance, states must develop a CELCP plan in order to nominate projects for funding. Maryland's CELCP Plan provides NOAA and potential project applicants a description of focus areas for acquisitions and the process for nominating projects for funding.

In order to be eligible to receive federal CELCP funds to acquire coastal and estuarine property through this program a project must:

- Be within Maryland's designated coastal zone (state's 16 coastal/estuarine counties and Baltimore city);
- Be held by the State or local governments for land protection;
- Provide permanent conservation protection;
- Be matched on a 1:1 basis using non-federal sources of cash, in-kind services, or suitable lands;
- Have demonstrated ecological value;
- Have a management plan for restoring and maintaining ecological integrity;
- Offer public access or other public benefit(s) consistent with protecting ecological integrity;
- Be submitted to the Chesapeake & Coastal Program (CCP) of the Department of Natural Resources (DNR) for consideration;
- Be assessed and ranked in a competitive process administered by CCP;
- Be nominated by CCP to NOAA; and
- Be awarded funding by NOAA following a competitive review.

Maryland's CELCP Plan is not intended to be a new state program. Nonetheless, the Plan can help fill a shortcoming in the State's conservation efforts. While the State of Maryland is close to reaching its land conservation goals set forth in the *Chesapeake 2000 Agreement*, only about one-quarter of the State's most ecologically valuable lands are protected. By Executive Order in February 2007 Governor O'Malley created BayStat; a statewide tool to assess, coordinate and target Maryland's Bay restoration programs, and to inform citizens on progress. In response, DNR developed a new targeting and ranking framework for land conservation based on ecological priorities. This new science-based framework aims to use conservation funding strategically and effectively to maximize the positive impact on the State's Bay restoration efforts. Maryland's CELCP Plan has been developed to advance these land-conservation objectives. The Plan targets those lands which have the greatest ecological value by employing the science-based Green Infrastructure hub and corridor methodology. Along with the protection of ecological integrity, the State's Plan prioritizes those projects which leverage multiple funding sources and the multiple objectives of existing State and local restoration and protection plans.

Maryland's CELCP Plan affirms the State's commitment to land acquisition as an important component in fulfilling the State's coastal restoration and protection responsibilities. The CELCP

Program may provide a significant source of funding to supplement the State's land preservation efforts. The Plan, with its reliance on a science-based means for evaluating properties for acquisition, and emphasis on the contextual relationship of properties to ecosystems and management plans, places the State in a strong competitive position for federal funding awards.

II. Introduction

BACKGROUND ON THE CELCP PROGRAM

The Department of Commerce, Justice, and State Appropriations Act of 2002 (Public Law 107-77), directed the Secretary of Commerce to establish a Coastal and Estuarine Land Conservation Program (CELCP) "for the purpose of protecting important coastal and estuarine areas that have significant conservation, recreation, ecological, historical, or aesthetic values, or that are threatened by conversion from their natural or recreational state to other uses," giving priority to lands which can be effectively managed and protected and that have significant ecological value. Pursuant to this directive, the National Oceanic and Atmospheric Administration (NOAA) issued guidelines to establish the eligibility, procedural, and programmatic requirements for participation in the CELCP (Vol. 68 *Fed. Reg.* No. 116, June 17, 2004, p. 35860).

The CELCP Program federal guidelines describe:

1. Eligibility requirements for financial assistance;
2. Requirements for the development and approval of state coastal and estuarine land conservation plans;
3. Information on the application, ranking and review processes; and
4. Allowable costs and conditions on the use of funds.

MARYLAND'S COASTAL AND ESTUARINE LAND CONSERVATION PLAN

The Maryland Chesapeake & Coastal Program has developed the Maryland Coastal and Estuarine Land Conservation Plan to further the Governor's Land Conservation Policy as described in *Maryland's Land Conservation Programs: Protecting the Chesapeake Bay Watershed* (December 2003), and to meet NOAA requirements to qualify for competitive property acquisition matching grants. This Plan provides a description of existing land conservation programs in the State; threats to significant coastal resources; an assessment of priority land conservation needs; and guidance for submitting project proposals to the State for nomination to NOAA for funding.

COORDINATION AND PUBLIC INPUT IN THE DEVELOPMENT OF MARYLAND'S PLAN

NOAA guidance stipulates that State plans will be developed and submitted by the state lead agency, in conjunction with: the state's coastal management program (if different from the lead agency); National Estuarine Research Reserves in that state; state or federal agencies involved in coastal land acquisition, conservation, or management in the state; and other interested parties. Further, NOAA requests that the plan contain a description of any multi-state or regional coordination that has taken place in the development of the plan.

At the outset of the development of Maryland's Plan, key organizations were contacted to brief them about the CELCP planning process, discuss Maryland's initial approach, and obtain information and

opinions about priority coastal and estuarine conservation needs. Over 40 individuals and agencies were contacted during the plan formulation phase including:

> The Nature Conservancy; The Trust for Public Land; The National Park Service; Maryland Department of Planning; Maryland Department of Environment; University of Maryland; NOAA Coastal Services Center; U.S. Geological Survey; NOAA Office of Ocean & Coastal Resource Management; Maryland DNR (several units including the Chesapeake Bay National Estuarine Research Reserve Program); U.S. Fish and Wildlife Service (Chesapeake Bay Field Office and Hadley, MA Regional Office); Virginia Coastal Program; Virginia Natural Heritage Program; Delaware Department of Natural Resources and Environmental Control (Heritage Program and Delaware National Estuarine Research Reserve Program manager); The Conservation Fund; NOAA Chesapeake Bay Program Office; Maryland Historical Trust; U.S.F.W.S. Patuxent Wildlife Research Center; U.S.D.A. Economic Research Service; National Audubon Society (PA Office); Audubon Maryland-District of Columbia; and the Coastal and Watershed Resources Advisory Committee.

Several meetings were held with the Coastal and Watershed Resources Advisory Committee (CWRAC) during the development of the CELCP Plan to solicit comments and guidance. CWRAC represents a variety of coastal interests and provides an advisory function to the Maryland Department of Natural Resources regarding coastal zone management issues. CWRAC hosted a well-attended public meeting on the draft plan in August 2004. Numerous questions and comments were received at the meeting, followed by written comments.

This Plan has been developed with assistance, reviews and guidance throughout the Department of Natural Resources and several other departments. The Plan has been drafted to support existing conservation programs and plans.

The final plan has incorporated changes in response to comments from members of the public, CWRAC, state agencies and DNR commentators. On the whole, there has been broad agreement on the approach taken with the Plan to evaluate and prioritize lands for conservation. With the rapid development of the State, there is strong support for land conservation in Maryland, and recognition that land conservation is not an end in itself. The Plan utilizes prioritized land conservation as a critical tool in achieving the State's restoration objectives.

This Plan is expected to evolve as our knowledge of conservation needs and priorities changes. In determining those changes, a continuing dialogue will be necessary with the many interests involved in land conservation in the State. In 2008, the Chesapeake & Coastal Program at Maryland's Department of Natural Resources updated sections of this plan to reflect new resource targeting and land acquisition initiatives, respond to initial CELCP plan feedback provided to the state by NOAA, and to address current coastal issues throughout the state's coastal zone.

III. Conservation Needs Assessment

This section provides background information about State land conservation programs; recent trends contributing to increasing threats of development and conversion of significant coastal resources; and an assessment of priority coastal and estuarine conservation needs.

PUBLIC PERSPECTIVES ON LAND CONSERVATION

An assessment of conservation needs in Maryland would be incomplete without an examination of public opinions regarding land conservation within the State. Two public opinion surveys have been conducted in recent years that provide insights into the attitudes of Maryland residents concerning land conservation.

In 2002, a statewide survey was conducted by the Maryland Institute for Policy Analysis and Research and the Center for Urban Environmental Research and Education of the University of Maryland, Baltimore County for the Maryland Departments of Natural Resources and Planning (Norris and Hanson, 2003). The survey was of 800 randomly selected Maryland households and contained questions about state parks; governmental actions regarding open space; and the management of growth and development. The survey results showed that Marylanders frequently use and highly rate their parks and natural resource areas and they support governmental action to protect the environment and provide land for parks and natural resource areas. Key findings indicated large majorities supported governmental action to:

- Acquire parkland (90.8 percent)
- Protect lands for wildlife, water quality, and a healthy environment (97.1 percent)
- Preserve farmland (91.9 percent)
- Provide public access to the Bay or rivers (88.6 percent)

In 1995, an "*Attitude Survey of Maryland Residents Regarding Greenways and Open Space*" was conducted by PKF Consulting for the Maryland Greenways Commission (PKF, 1995). The survey demonstrated Marylanders place a high level of importance on land conservation. It is also interesting to note that many residents thought it was important to have opportunities to access open space near their place of residence. The Commission cited the following major findings:

- The vast majority of those interviewed felt that land conservation was an important public service: 89% felt that land conservation was a good use of public funds, and 91 % said that some parts of Maryland should be left in their natural state forever.
- Over 80% of the respondents in each region felt that land conservation should keep pace with development, and the majority of people in each region expect development to increase over the next five years.
- The majority of respondents (77%) said it is important to have natural areas close to where they work and live. Almost half of the participants (44%) said they would be inclined to move if existing open space in their community were lost.
- The majority of those interviewed felt that the presence of natural areas has a positive economic effect on nearby real estate. Most people (80%) felt that parks and natural areas increase the value of nearby properties, and 76% of respondents said they would be willing to pay more for a house with natural areas close by.
- Many (63%) said that preservation of greenway corridors can help compensate for increased development in growing communities.

- Less than half of the respondents (48%) felt that state and local governments are doing enough, to preserve natural resources and open space in Maryland.

LAND CONSERVATION IN MARYLAND

Over the course of several decades, Maryland has developed an array of nationally renowned, highly successful land conservation programs. As a matter of public policy, the Maryland General Assembly has established land conservation goals and continuing sources of funding to support these innovative programs and activities.

In December 2003, Governor Ehrlich announced a policy to unify the objectives of State land conservation programs under the goal of Chesapeake Bay restoration – *Maryland's Land Conservation Programs, Protecting the Chesapeake Bay Watershed* (DNR, 2003). This policy emphasized the need for coordinated, science driven land conservation strategies and has directed the use of various geographic information system (GIS) assessment tools to guide acquisition strategies. Maryland's CELCP Plan utilizes those assessment tools and is consistent with the policies and procedures set forth by State Administrations.[1]

An important objective of the Maryland's CELCP Plan is to maximize the leveraging potential of on-going state, federal and local resources to conserve coastal resources. A summary of those efforts follows.

Maryland Historical Trust Programs (MHT): The Maryland Historical Trust was formed in 1961 to assist in identifying, studying, evaluating, preserving, protecting, and interpreting the state's significant prehistoric and historic districts, sites, structures, cultural landscapes, heritage areas, cultural objects, and artifacts, as well as less tangible human and community traditions. The MHT operates a network of programs that work together to acquire, rehabilitate or restore historic properties. The Trust currently holds easements on over 611 properties including houses, schools, mills, farms and archeological sites comprising over 8714 acres[2]. The Trust also has the responsibility for administering federal and state preservation laws to review the impacts of agencies on significant cultural resources. MHT's Office of Preservation Services provides a variety of preservation assessment and advisory services. <http://www.marylandhistoricaltrust.net/>.

Maryland Environmental Trust (MET): The Maryland Environmental Trust is a quasi-public statewide land trust established in 1967 to "conserve, improve, stimulate, and perpetuate the aesthetic, natural, health and welfare, scenic, and cultural qualities of the environment, including but not limited to land, water, air, wildlife, scenic qualities, open spaces, buildings or any interests therein…" MET accomplishes its mission principally through the solicitation and management of private landowner donated conservation easements. Various state and federal tax mechanisms provide incentives for the donation of easements. In 2003, the combined purchase and donation of easements for MET land protection totaled 9,844 acres and 81 easements. Cumulatively, MET

[1] While Maryland's CELC plan is consistent with and will further the natural resource conservation objectives of other State land conservation programs, it will not serve every objective of those programs. Under the NOAA CELC program guidance, funds cannot be used to acquire lands to be used for active recreation, such as sports facilities, water parks and playgrounds, or agriculture. Although CELC funds cannot be used to acquire interests in working agricultural lands, State policies and programs have recognized the importance of preserving working lands. Projects which propose to retire working agriculture or forest lands from production will generally not be favored.

[2] See http://www.conservemd.org/progress/index.html (10/19/04).

holds 955 permanent easements covering 120,300 acres.[3] MET has also helped form over 55 local land trusts around the State and runs the Maryland Land Trust Alliance to network with national, state, regional and local non-profit land conservation organizations.[4] The local land trusts are an important part in conservation in Maryland. The Maryland Coastal Zone Management Program funds the MET Local Land Trust Assistance Program which provides technical assistance, training, funding and cooperative land management services to local land trusts. <http://www.dnr.state.md.us/met/>.

Program Open Space (POS): Since 1969, Program Open Space has provided funding for acquisition of 323,376 acres for open space and recreation areas. Program Open Space acquires land through the state acquisition side of the Program, and also provides grants to local governments for land acquisition and park facilities development. The local side of the Program focuses on land acquisition for recreational purposes whereas the state acquisition side of the Program focuses on protection and restoration of the Chesapeake Bay and other significant natural features. Most Maryland residents live within 15 minutes of an open space or recreational area funded by Program Open Space.<http://www.dnr.state.md.us/pos.html>.

Maryland Agricultural Land Preservation Foundation (MALPF): Since its establishment in 1977, MALPF has been one of the nation's leading programs in farmland preservation and a central element of Maryland's Smart Growth and Priority Places Initiatives. To be eligible for a MALPF easement a property must contain at least 50% prime farmland soils; be located outside of a 10-year water and sewer service area; be 50 or more acres in size or contiguous to an already preserved property; have an approved soil conservation plan for the property which includes a list of all soil conservation and water quality practices needed to correct existing problems on the property along with an implementation schedule; and have a forest stewardship plan in effect if the property contains 25 acres or more of contiguous forested land. As of the end of FY 2007, MALPF has preserved more than 265,690 acres comprising almost 2,000 easements.[1] <http://www.malpf.info/>. http://www.malpf.info/tables/2007Acreage.pdf

Rural Legacy Program (RLP): Created in 1997, RLP protects contiguous rural landscapes with natural, agricultural, cultural and forestry resources. Under the RLP, local governments and land trusts work with landowners to identify conservation areas that meet statutory criteria and then compete for annual grant funding to purchase fee simple title or perpetual easements. The program has acquired in fee and easement interests in more than 58,916 acres.[5] <http://www.dnr.state.md.us/rurallegacy/>.

Conservation Reserve Enhancement Program: Through a 1997 Memorandum of Agreement, the U.S. Department of Agriculture created a partnership with the State of Maryland to augment USDA's existing Conservation Reserve Program by jointly committing resources to establish buffers, restore wetlands and retire highly erodible agricultural lands adjacent to water bodies that drain into the Chesapeake Bay. The USDA has set aside funds to enroll up to 100,000 acres of environmentally sensitive land in Maryland. Under the Program, up to 70,000 acres of riparian lands (riparian forest buffers and filter strips) may be enrolled under contract. Up to 20,000 acres of highly erodible cropland within 1000 feet of a water body may be retired, and up to 10,000 acres of

[3] As of 2008, Maryland Environmental Trust
[4] See http://www.conservemd.org/donated/MET/index.html (10/27/04).
[5] See http://www.conservemd.org/progress/index.html (10/19/04).

restored wetlands and shallow water areas can be created.[6] Eligible landowners in CREP can receive assistance for removing land from agricultural production, installing conservation practices and executing perpetual easements through DNR's POS, Rural Legacy, or MET programs. <http://www.md.nrcs.usda.gov/programs/crp_crep/crp_crep.html>.

GreenPrint Program: Established by the General Assembly as a five-year initiative in 2001, this program was designed to provide funds for the protection of highly significant groups of properties located within Maryland's green infrastructure – 2 million acres of lands critical to maintaining the long-term ecological health of the State. The GreenPrint Program identified a green infrastructure land network and conservation prioritization methodology that provides a detailed, science driven approach to protecting areas with significant ecological value. The methodology focused on protecting large, contiguous blocks of forests, wetlands and other natural lands and maintaining connectivity between those lands through a system of natural corridors. In its first two years, the GreenPrint Program protected 10 highly significant groups of properties totaling 21,146 acres. [7] <http://www.dnr.state.md.us/greenways/greenprint/>.

GreenPrint was re-launched in 2008 as the State's mapping tool to show how Maryland's land conservation programs are meeting their goals (or "strategic targets") and to show how programs can work together to meet shared goals for rural landscape conservation.

Forest Legacy Program: This program was designed to identify and protect environmentally important forest lands through the use of perpetual conservation easements. The purpose of the Program is to identify and protect environmentally important forest lands that are threatened by present or future conversion to non-forest use. The program is available only in areas identified in Maryland's Forest Legacy Assessment of Need. These areas are located in Anne Arundel, Calvert, Cecil, Charles, Harford, Queen Anne's and Worcester counties, all of which are in Maryland's coastal zone. To date, this program has protected 1,246 acres.

In addition to these land conservation programs, a substantial amount of conservation has been accomplished through the establishment of State parks, forests and management areas with over 430,000 acres being held by the Department of Natural Resources. The Maryland Department of Transportation also contributes to conservation efforts in the State through the Scenic Byways program which provides competitive grants for the purchase of conservation easements to protect scenic, historical, recreational, cultural, natural and archeological resources adjacent to designated scenic byways.

County parkland and easements acquired through the transfer of development rights comprise over 20 percent of the protected lands in Maryland with over 103,000 acres held in conservation easements and nearly 137,000 acres in parklands.[8]

These land conservation efforts are complimented by components of the National Wildlife Refuge System and National Park Service. The U.S. Fish & Wildlife Service currently manages six wildlife refuges in Maryland's coastal zone. Assateague Island National Seashore complements Assateague Island State Park preserving 24 miles of Maryland's 32 miles of Atlantic coastline. Other federal programs contributing to conservation efforts in Maryland include the U.S. Department of

[6] See http://www.conservemd.org/purchased/crep/index.html (10/27/04).
[7] *Maryland's Land Conservation Programs: Protecting the Chesapeake Bay Watershed*, p. 10 (December 2003).
[8] See http://www.conservemd.org/progress/index.html (10/27/04).

Agriculture Farmland Protection Program -- a voluntary program to assist farmers in keeping land in agricultural production – and the Forest Legacy Program of the U.S. Forest Service which can be used to protect properties greater than 100 acres that have been identified by their vulnerability to development and existing threats to endangered species.

LAND CONSERVATION GOALS

Land conservation in Maryland is in accordance with a planning process that is strategic and iterative. Every six years, the State and all local governments are required to prepare Land Preservation, Parks, and Recreation Plans (LPPRP) that identify strategies and action plans to address three land resource management categories: parks and recreation, agriculture, and natural resources. To facilitate the development of these plans, the Maryland Departments of Planning and Natural Resources published a guidance document entitled *Guidelines: State & Local Land Preservation, Parks, and Recreation Planning* (MDP, DNR, 2003). The guidance calls for the State to work with local governments and the private sector to:

1. Identify, protect, and restore lands and waterways in Maryland that support important natural resources and ecological functions, through combined use of:
    - Public land acquisition and stewardship;
    - Preservation and stewardship on private lands through easements and assistance; and
    - Local land use management plans and procedures that conserve natural resources and environmentally sensitive areas and minimize impacts to resource lands when development occurs.

2. Focus conservation and restoration activities on priority areas within the statewide green infrastructure.

3. Develop a more comprehensive inventory of natural resource lands and environmentally sensitive areas to assist the implementation of State and local programs by synthesizing local inventories with DNR's inventory of green infrastructure in each county.

4. Assess the combined ability of State and local programs to:
    - Expand and connect forests, farmlands, and other natural lands as a network of contiguous green infrastructure.
    - Protect critical terrestrial and aquatic habitats, biological communities, and populations.
    - Manage watersheds in ways that protect, conserve, and restore stream corridors, riparian forest buffers, wetlands, floodplains, and aquifer recharge areas and their associated hydrologic and water quality functions.
    - Support a productive forestland base and forest resource industry, emphasizing economic viability of privately owned forestland.[9]

5. Establish measurable objectives for natural resource conservation and an integrated State/local strategy to achieve them through State and local implementation programs.

[9] Any project that contains working uses, such as forestry and agricultural lands will be evaluated against CELCP guidelines, but are an integral part of the State's overall conservation mission.

6. Preserve the cultural and economic value of natural resource lands.

7. Encourage private and public economic activities, such as eco-tourism and natural resource-based outdoor recreation, to support long-term conservation objectives.

Maryland is also updating its "State Land Preservation, Park and Recreation Plan", which will establish a coordinated framework for land preservation that may include opportunities and priorities for potential CELCP projects. This Plan will expand on the local jurisdiction plans on a state-wide basis.

Quantitative land conservation goals in Maryland and the Chesapeake Bay Region are a relatively recent development. Table 1 provides a sampling of State natural resource related land conservation goals and achievements by program. The cumulative accomplishments of these programs through decades of land conservation initiatives at the state and local levels have been remarkable. By the end of 2003 it was estimated that a combined total of 1,187,849 acres are in some form of protection.

Table – 1

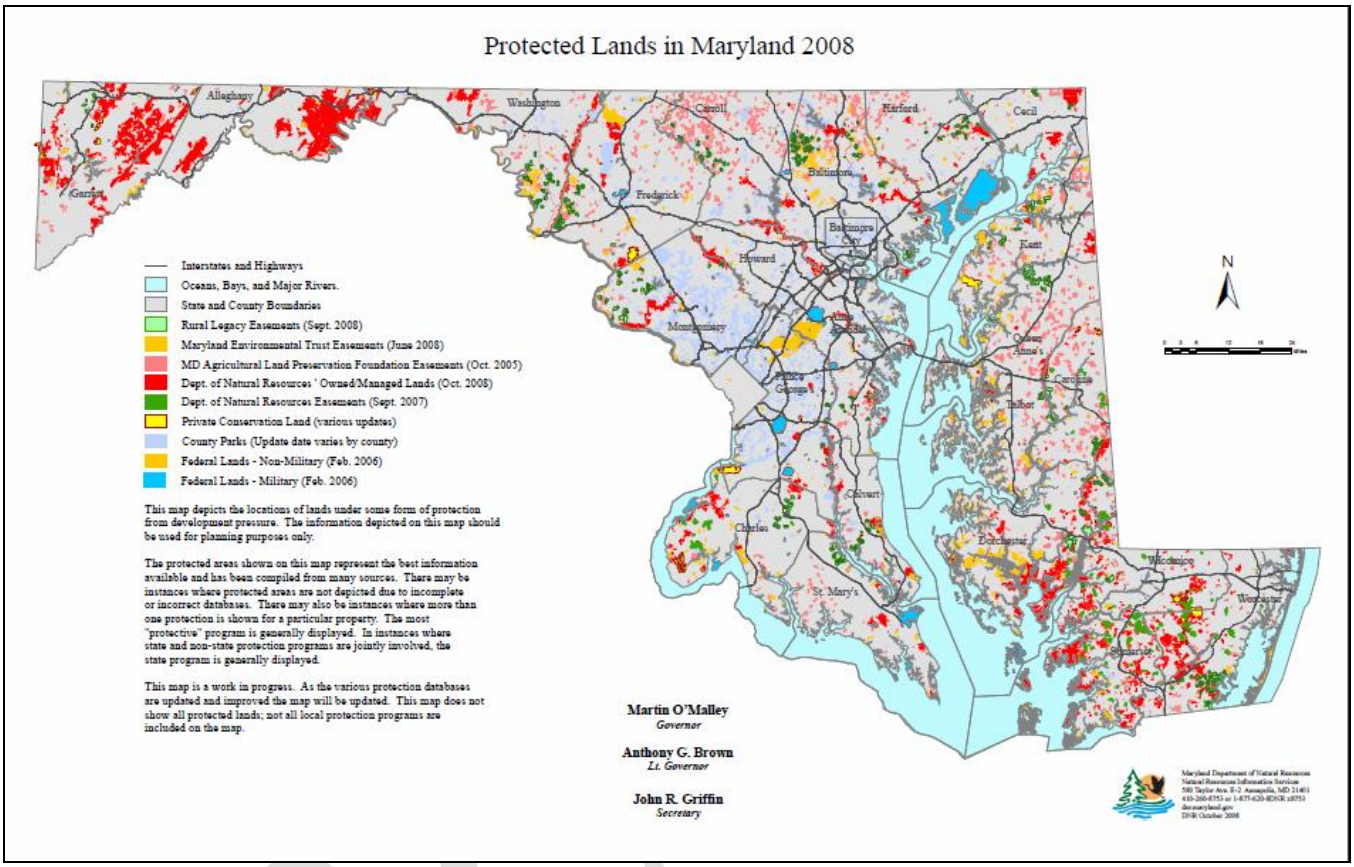
Key Conservation Program Goals and Status (2003)

Source: *Maryland's Land Conservation Programs, Protecting the Chesapeake Bay Watershed* (DNR, 2003).

Program Open Space	**Status**
Goal: Conserve strategic natural resources while providing recreational and economic opportunities, keep pace with development.	
Total land protected (1970-2003)	287,107 acres
Rural Legacy Program	
Rural Legacy goal (2012)	200,000 acres
Acres protected to 7/2003	40,129 acres
Acres needed to meet goal	159,871 acres
GreenPrint Program	
Goal : No formal goal, provides map and priorities	
Land area included in Green Infrastructure (GI)	2,000,000 acres
Land area protected at time of GreenPrint legislation	500,000 acres
Land area protected by DNR GreenPrint	21,146 acres
Land area protected by MALPF	8,625 acres
Remaining GI land area to protect (not a goal)	1,470,229 acres
Conservation Reserve Enhancement Program	
Goal: Land area to enroll in rental agreements by 2003	100,000 acres
Land: Area to protect with permanent easements (25%)	25,000 acres
Land area under CREP rental agreements FY2003	65,332 acres
Land area protected with easements FY2003	3,875 acres
Remaining land area to enroll in rental agreements	34,668 acres
Remaining land area to protect with easements	21,125 acres

The signatories to the Chesapeake Bay Agreement, *Chesapeake 2000*, committed to permanently preserve from development 20 percent of the land area in the watershed by 2010. In Maryland, this percentage comprises 1,241,605 acres. It is estimated that approximately 53,756 additional acres must be protected to meet the goal of *Chesapeake 2000*.

Figure 1 provides a statewide geographic portrayal of protected lands by program.



Despite the State's success towards meeting its land conservation objectives, there will be a continuing need for land conservation as a restoration tool. Although the State is close to meeting its objective of placing 20 percent of its lands into some form of protected status, of the approximately 2 million acres of ecologically valuable lands identified by DNR as in need of conservation, only 26% of this area is presently protected. In Maryland's coastal zone, only 24% of the 429,921 acres of land which have been identified as ecologically valuable are protected. These lands are some of the most vulnerable to development.

THREATS TO SIGNIFICANT COASTAL LAND AND AQUATIC RESOURCES

Maryland is blessed with a rich natural heritage worthy of conservation. The climate, hydrology and soil conditions found in Maryland support a broad range of species and communities in the two distinct physiographic regions of the coastal zone of Maryland. Although Maryland is ranked 42nd in size compared to other states (6.2 million acres), it hosts over 2,600 plant species or approximately 16% of the U.S. total (Pimentel, 1998).

Maryland is also a highly urbanized state that has witnessed continuing pressure from population growth, urbanization, highway construction, agriculture, air and water pollution. From 1970 to 2000, Maryland's population increased approximately 35% from just under 4 million to 5.3 million people. The Maryland Department of Planning expects that number to rise by another 1 million people or 20% by 2030. Maryland is ranked 5th among all states in percentage of land developed and in population per square mile (542) by the U.S. Census Bureau. Maryland's two major metropolitan areas, Washington D.C. and Baltimore, rank 7th and 17th respectively in total population among U.S. "urbanized areas".

Since European settlement, over half of Maryland's forests have been lost and 50% of Maryland's wetlands have been converted (Tiner and Burke, 1995). Between 1973 and 1997, over 376,000 acres of Maryland's agricultural and forestlands were converted to urban land uses. About two-thirds of this land was converted to low-density residential development (Table 2). The fragmentation of large, contiguous blocks of forest into many smaller, isolated patches is reducing habitat for wildlife requiring interior forest and promotes the spread of invasive plant and animal species. Parcelization, reflecting the subdivision and change in ownership of large blocks of land, is correlated with forest fragmentation. Small parcels of forest land are more likely to be converted to non-forest uses, such as agriculture or residential development.

The effects of forest fragmentation and adjacent developed land uses are affecting the total number and types of plant and animal species. In 1998, 344 plant and 114 animal species were listed as threatened or endangered by the Maryland Natural Heritage Program. Since 1950, 154 plant and 23 wildlife species have been extirpated (Therres, 1998).

Similarly, the effects of impervious land cover in urbanizing watersheds are adversely affecting Maryland's aquatic life. Data collected by the Maryland Biological Stream Survey found that when watershed imperviousness exceeds 25%, only hardy, pollution-tolerant reptiles and amphibians can thrive and in watersheds above 2% impervious land cover, pollution-sensitive brook trout were never found (Boward et. al, 1999).[10]

[10] A detailed discussion of threats to Maryland's green infrastructure is presented in *Maryland's Green Infrastructure Assessment: A Comprehensive Strategy for Land Conservation and Restoration* (DNR, 2003).

Table - 2
Land Use Change in Maryland, 1973-1997

	1973		1997	
Land Use Category	**Total Acres**	**Percent of Land Total**	**Total Acres**	**Percent of Land Total**
Resource lands, total	**5,469,957**	**87.7%**	**5,097,880**	**81.6%**
Agricultural land	2,424,536	38.9%	2,237,409	35.8%
Forestland	2,781,454	44.6%	2,592,026	41.5%
Other resource land	263,968	4.2%	268,445	4.3%
Urban development, total	**769,648**	**12.3%**	**1,145,927**	**18.4%**
Low density residential	241,061	3.9%	489,539	7.8%
Medium/high residential	268,748	4.3%	357,339	5.7%
Commercial/industrial/transport	112,917	1.8%	144,363	2.3%
Institutional/open	146,922	2.4%	154,686	2.5%
Total land	**6,239,605**	**100.0%**	**6,243,807**	**100.0%**

Source: Maryland Department of Planning, 2001

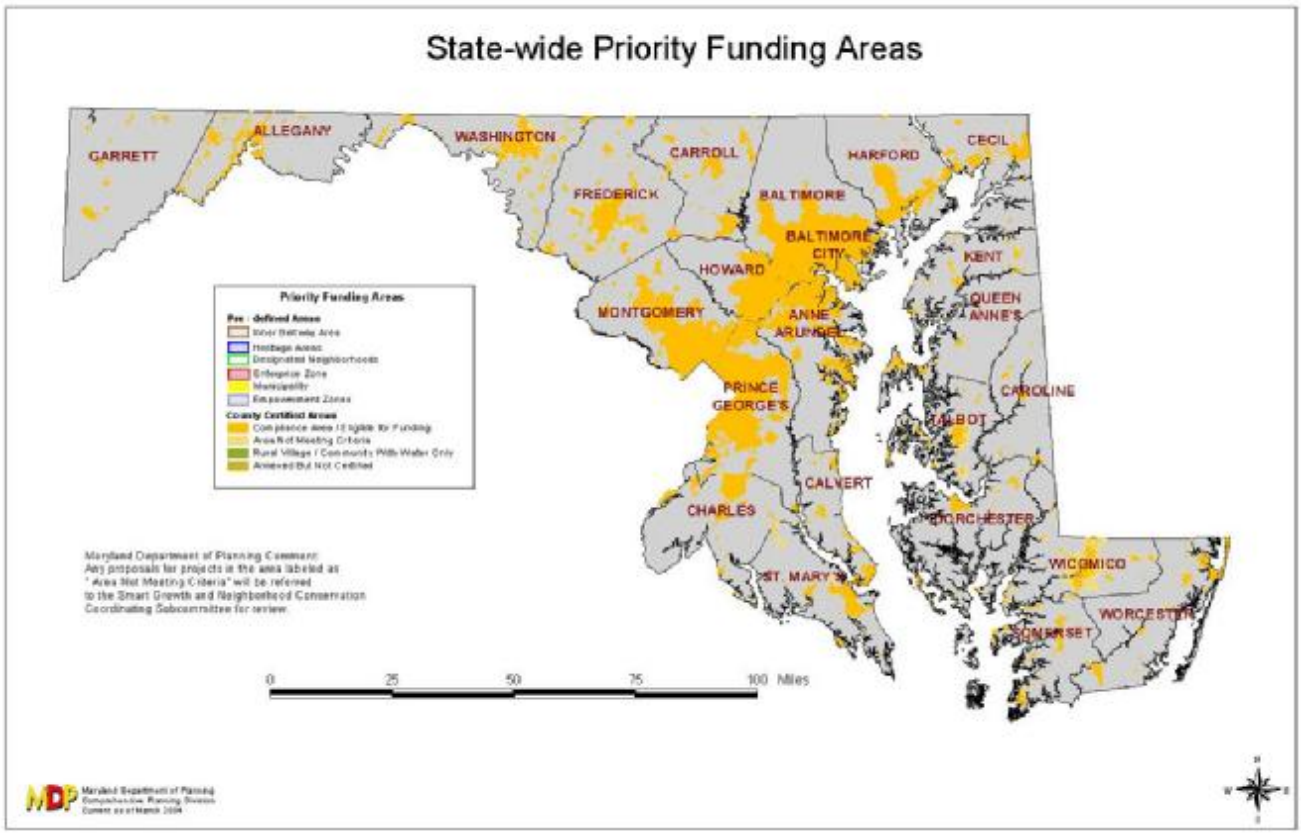
In part, these alarming conditions and trends sparked "Smart Growth" initiatives in the 1990s to limit the harmful effects of sprawl. Much emphasis has been placed on focusing growth inside "Priority Funding Areas" (PFAs). PFAs are existing communities and places where local governments want State investment to support future growth – see Figure 3. In spite of these recent efforts by State and local government officials to constrain growth within urban centers and rural towns – development activities are still significantly affecting suburban, exurban and even rural areas.

The Maryland Department of Planning has noted some important findings relative to the geographic distribution, rate and extent of development from a statewide analysis of single-family residential construction activity over the period between 1990 and 2001.[11]

- Housing unit construction consumed 207,754 acres of land or just over 17,300 acres per year
- An average of 0.74 acres of land were used for every new housing unit
- Just over one-quarter of all single-family residences were built outside PFAs, yet these units consumed nearly three-quarters of all land used for single-family residences.

[11] The information presented on development within PFAs does not represent an evaluation of the effectiveness of the Priority Funding Areas initiative as the PFA designation requirement was not in effect for the duration of the period of analysis.

Figure 2 – Statewide Priority Funding Areas



The increasing threats to ecologically valuable lands come at a time when funding for land conservation has declined, at least temporarily, due to critical shortfalls in the State's budget. In recent years, funding for POS natural resource conservation has declined substantially. The CELCP Program may ultimately provide a critically important source of funding to continue the conservation of ecologically critical landscapes.

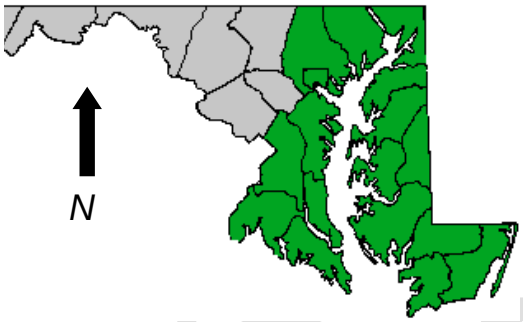
IV. Priorities for Coastal and Estuarine Land Protection

GEOGRAPHIC EXTENT OF AREAS ELIGIBLE FOR CELCP NOMINATION IN MARYLAND

Under NOAA's CELCP Program guidelines, states must define the geographic extent of coastal and estuarine areas for the purposes of the CELCP. All lands to the outermost extent of Maryland's coastal zone boundary are eligible for CELCP nomination. Maryland defines the management boundary of its Coastal Zone Management Program as the inland boundary of the counties bordering the Atlantic Ocean, Chesapeake Bay, Coastal Bays and the Potomac River, as far as the municipal limits of Washington, D.C.

Maryland's Coastal Zone Management Program Boundary

Harford County
Baltimore County
Baltimore City
Anne Arundel County
Calvert County
St. Mary's County
Charles County
Prince George's County



Cecil County
Kent County
Queen Anne's County
Talbot County
Caroline County
Dorchester County
Wicomico County
Somerset County
Worcester County

MARYLAND'S PRIORITY CELCP PLAN CONSERVATION AREAS

The Congressional directive to establish the CELCP Program identified "important coastal and estuarine areas" as those having significant conservation, recreation, ecological, historical, or aesthetic values - giving priority to lands which can be effectively managed and protected and that have significant ecological value. For the purposes of selecting potential CELCP projects in Maryland, the establishment of ecological value is regarded as a threshold for nominations.

For the purposes of the CELCP Program, "project areas" are defined as:

> [D]iscrete areas to be identified within a CELCP Plan that describe the state's priority areas for conservation based on national and state criteria, representing the values to be protected through the program and areas threatened by conversion. Project areas may consist, for example, of: geographic areas or habitat types identified by a state coastal management plan as areas of concern; significant areas within other coastal, estuarine, or watershed management plan(s) that may be priority areas for conservation; or areas that provide linkages or corridors among conservation areas within a geographical area. [12]

Biodiversity and ecologically driven elements of value are considered to be crucial factors in the CELCP "project area" identification process. Maryland has extensively identified lands which are

[12] Coastal and Estuarine Land Conservation Program: Final Program Guidelines, June 6, 2003, p.3.

potentially ecologically valuable as part of the mapping of its "Green Infrastructure" and "Ecologically Significant Areas." Maryland's CELCP Plan will rely upon information inventoried and maintained by the Maryland Natural Heritage Program and utilize the Green Infrastructure Assessment tools to identify lands that could potentially make a significant contribution to sustaining high value coastal ecosystems. Areas mapped as part of the State's "green infrastructure" (GI) or Ecologically Significant Areas (ESAs) are presumed to be ecologically valuable under Maryland's CELCP Plan. The presumption that areas identified as green infrastructure or ecologically significant areas are ecologically valuable does not assume that all tracts within the GIA/ESA footprint should be protected through acquisition.

Maryland will also screen potential CELCP lands against additional ecological records, a Chesapeake & Coastal Program aquatic resource network map, and the Blue Infrastructure Assessment. Each of these will help identify areas that contain features important to aquatic and near shore species and habitats. Additionally, in August 2008, Maryland issued a Climate Action Plan that recommends specific adaptation and response activities the state can take to minimize risk from climate change and rising sea levels. In certain areas, special consideration will be given to properties that meet CELCP guidelines and that can also be acquired to help the state adapt and prepare for changes in the landscape.

MARYLAND'S GREEN INFRASTRUCTURE

Maryland's "Green Infrastructure" (GI) is a mapped network of lands consisting of "hubs" (large blocks of contiguous forest/wetlands) and "corridors" (linear areas of natural lands) that form a physical connection between hubs (Figure 5). Within the Green Infrastructure are the bulk of Maryland's natural lands that are vital to the State's ecological health.

Hubs are un-fragmented lands, hundreds or thousands of acres in size, which provide habitat for native plants and wildlife; protect water and air quality; conserve soils; regulate climate; maintain hydrologic functions and perform other vital natural processes. Hubs are lands critical to many plant and animal species that require specific conditions to thrive. Hubs contain one or more of the following:

- Areas containing sensitive plant or animal species;
- Large blocks of contiguous interior forest (at least 250 contiguous acres, plus a 300 foot transition zone);
- Wetland complexes with at least 250 acres of unmodified wetlands;
- Streams or rivers, and their associated riparian forest and wetlands, with:
    1. aquatic species of concern,
    2. representative populations of the full suite of native fish, amphibians, and reptiles
    3. rare coldwater or blackwater ecosystems, or of importance for anadromous fish; and
- Conservation areas under public or private protection.

Corridors are at least 1,100 feet wide, linking hubs together to allow wildlife and plant propagule movement between hubs. They often follow natural features such as riparian areas, ridge tops, man-made drainage ways, and remaining pathways of less disturbed upland natural areas.

An extensive list of data sources were used to map the GI. The methods and decision rules deployed to identify the network were reviewed by dozens of experts in their fields. A complete explanation of the green infrastructure assessment is available in *Maryland's Green Infrastructure Assessment: A Comprehensive Strategy for Land Conservation and Restoration* (DNR, 2003). <http://dnrweb.dnr.state.md.us/download/bays/gia_doc.pdf>

Within state boundaries, Maryland's Green Infrastructure (version 5.1) is comprised of 1,777,475 acres of hubs and 252,997 acres of corridors in natural land cover (forest, wetland, and bare rock/sand/clay); totaling 2,030,471 acres. Open water was excluded from these calculations. In addition, altered open areas (agriculture, lawns, quarries, and cleared lands) comprise 375,546 acres in the potential green infrastructure land network. These "gaps" represent areas that could potentially be restored to a natural cover type. Developed areas (25,240 acres) were excluded from these calculations; they are usually difficult to restore.

Maryland's Green Infrastructure contains:

- 33% of Maryland's total land area (39% when gaps are included)
- 63% of Maryland's forest land, including 90% of the State's interior forest
- 87% of Maryland's remaining unmodified wetlands, including 99% of the Wetlands of Special State Concern
- 91% of Maryland's streams within interior forests
- 99.7% of Maryland's Natural Heritage Areas
- 88% of Maryland's occurrences of rare, threatened, or endangered species
- 87% of areas identified as Delmarva fox squirrel habitat
- 99.7% of interior forest in areas identified as Delmarva fox squirrel habitat
- 89% of Maryland's steep slopes (>25%)
- 44% of Maryland's highly erodible soils
- 60% of Maryland's highly erodible soils with forest cover (retaining forest on highly erodible soil protects against erosion and stream sedimentation)
- 87% of Maryland Biological Stream Survey (MBSS) sites with brook trout
- 89% of Maryland's streams with brook trout (429 of 480 mi)
- 73% of MBSS sites with high indicator of biological integrity scores or imperiled aquatic species
- approximately 80% of areas designated within the Rural Legacy Program

Any area within the hubs, corridors or gaps of the Green Infrastructure is presumed to be eligible for CELCP funding. Since gaps often involve agricultural land use, barren areas, or highly managed areas such as mowed lawns, they will typically rank toward the lower end of the spectrum of ecological value depending on the feasibility and commitment to restoration of these areas.

Map Sources for Maryland's Green Infrastructure: The latest version of the Green Infrastructure Assessment, currently version 5.1, is posted on the Department of Natural Resource's web site at: <http://www.dnr.state.md.us/greenways/gi/gi.html>. Both PDF files and GIS data are available. The Green Infrastructure and Ecologically Significant Areas are depicted in Appendix A of this document. Earlier "in-print" versions displaying the Green Infrastructure map layer for all counties are available in the *Maryland Atlas of Greenways, Water Trails, and Green Infrastructure* (Maryland Greenways Commission, 2000).

Figure – 4

Location of Maryland's Green Infrastructure

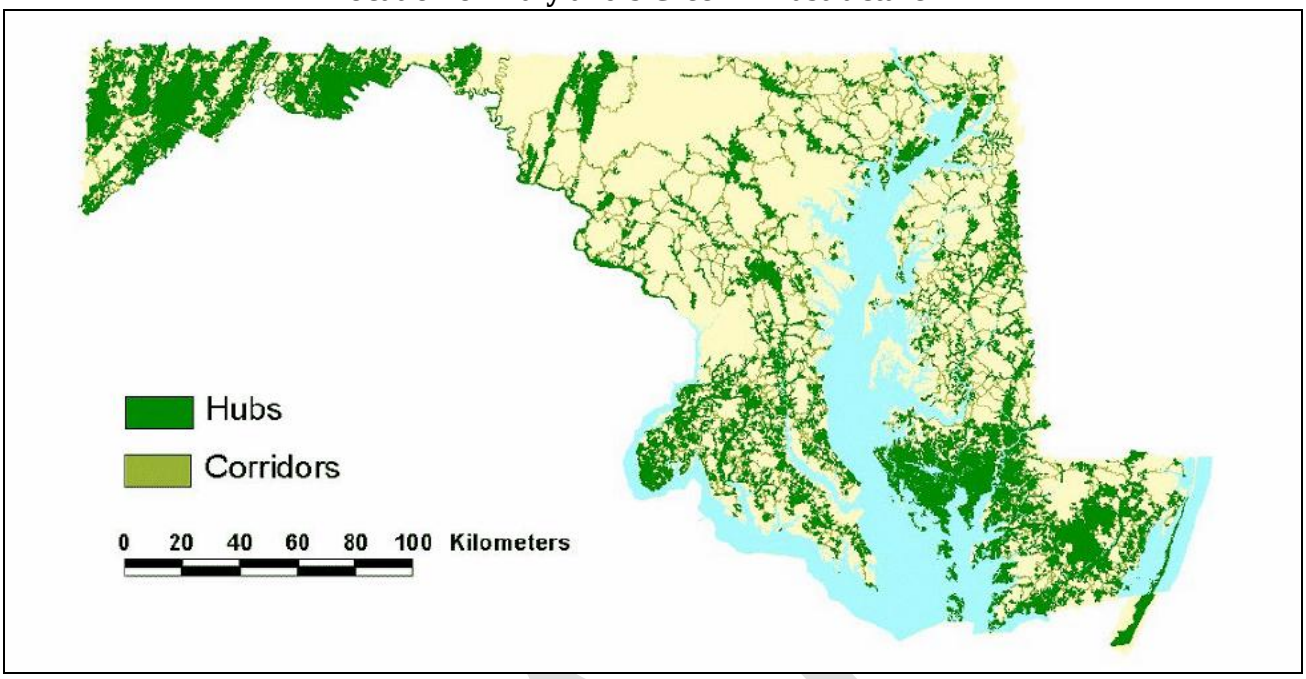


Table - 3

Green Infrastructure Statistics for Maryland's Coastal Zone

County	Total Green Infrastucture [acres]	Protected Lands in Green Infrastructure [acres]	Percent Green Infrastructure Protected	Unprotected Green Infrastructure [acres]
Anne Arundel	69,289	20,807	30.0	48,483
Baltimore	84,745	45,622	53.8	39,123
Baltimore City	1,352	908	67.2	444
Calvert	57,587	15,155	26.3	42,432
Caroline	76,084	19,180	25.2	56,903
Cecil	74,286	17,610	23.7	56,676
Charles	167,414	33,083	19.8	134,331
Dorchester	259,897	87,254	33.6	172,643
Harford	81,841	14,601	17.8	67,240
Kent	42,749	11,995	28.1	30,754
Prince George's	103,066	33,603	32.6	69,463
Queen Anne's	74,466	21,198	28.5	53,268
Somerset	126,798	52,653	41.5	74,144
St. Mary's	88,532	11,051	12.5	77,480
Talbot	43,683	8,644	19.8	35,039
Wicomico	118,218	30,288	25.6	87,930
Worcester	179,230	56,727	31.7	122,503
Total	**1,649,235**	**480,379**	**29.1**	**1,168,856**

ECOLOGICALLY SIGNIFICANT AREAS

Since 1979, the Department of Natural Resources' Natural Heritage Program has inventoried and documented the locations and status of the State's rare plants and animals, as well as its rare and most exemplary natural communities. These "elements" of biodiversity are found in a wide variety of habitats, including wetlands, uplands, and aquatic systems, and have formed the basis of the new GIS layer, called the Ecologically Significant Areas of Maryland.

Ecologically Significant Areas (ESAs) contain those element occurrences that Natural Heritage Program ecologists feel are the most viable and most precisely located in the State. The ecologists reviewed supplemental information on topography, soils, and wetlands to also include the surrounding habitat areas that those elements need to survive. The areas identified are intended to represent protection boundaries for rare species and the significant habitats and natural communities present. Within Maryland's coastal zone, habitat protection boundaries have been identified for 2,335 locations of 480 different types of rare species and natural communities.

ESAs are dynamic and are based on the information contained within the Natural Heritage Program's data systems. As the status of Maryland's rare species is revised, the locations of rare species are determined to have been altered and the populations are no longer viable, or new species discovered, Ecologically Significant Areas will be updated as needed to reflect the changes.

Statewide ESA Statistics:

- Remaining Ecologically Significant Areas: 421,060 acres
- Mean size of ESAs (not including Delmarva Fox Squirrel habitat): 542 acres
- 1,812 locations of rare, threatened or endangered plants of 357 species, of which 5 are federally-listed and 229 are state-listed.
- 380 locations of rare, threatened or endangered animals of 78 species, of which 11 are federally-listed and 55 are state-listed.
- 143 locations of rare or significant natural communities (both plants and animals) of 45 types.
- 100% of Natural Heritage Areas
- 99% of Wetlands of Special State Concern
- ESA's with Delmarva Fox Squirrel habitat: 124,772 acres
- Delmarva Fox Squirrel habitat in Dorchester County: 91,370 acres (73% of total)

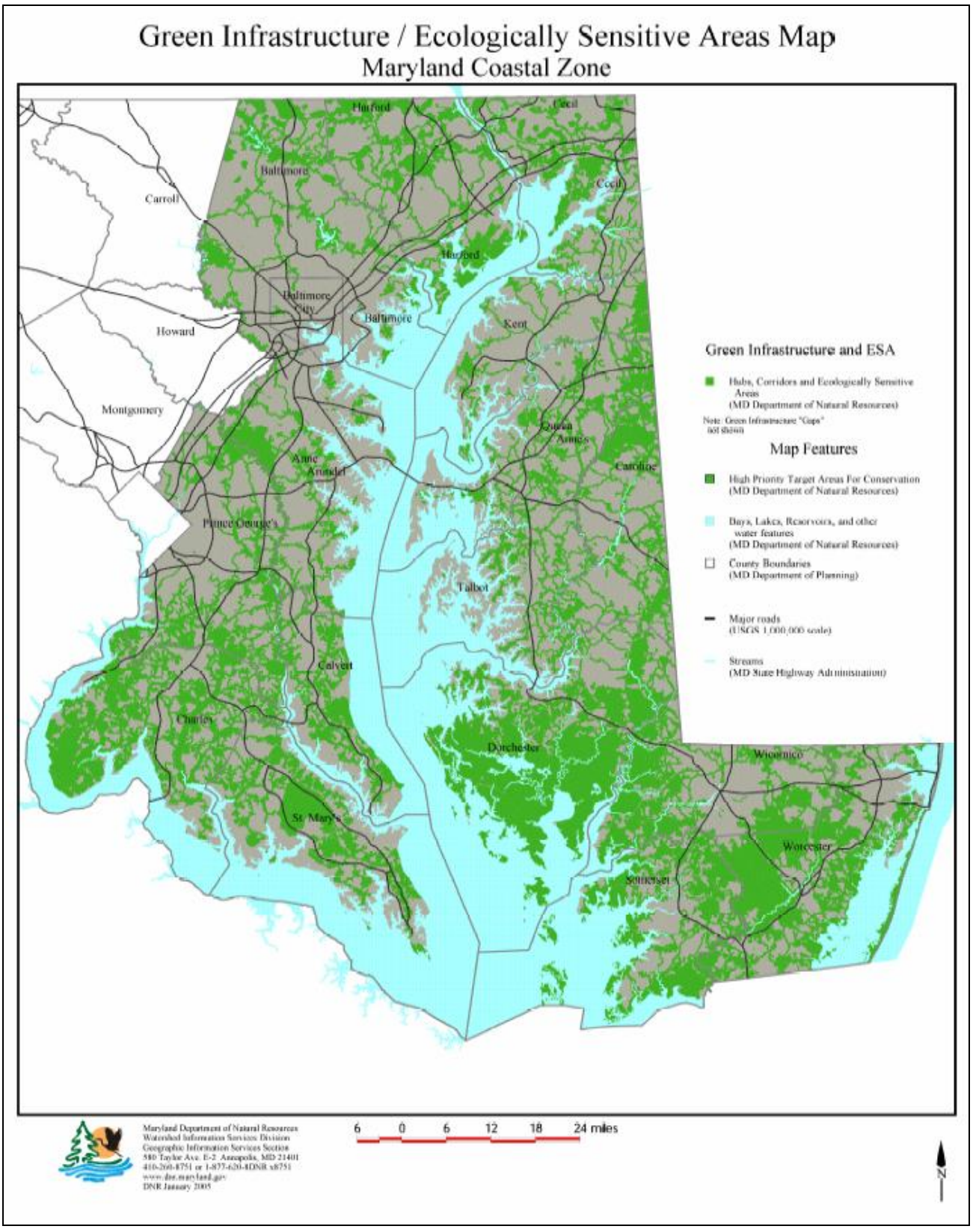
Table 4 shows detailed ESA statistics for Maryland's Coastal Zone.

Table – 4
Ecologically Significant Area Statistics for Maryland's Coastal Zone

County	Total ESA (acres)	Protected Lands in ESA (acres)	Percentage of ESA Protected
Anne Arundel	42,666	4,995	11%
Baltimore County	31,806	16,218	51%
Baltimore City	81	80	98%
Charles	46,854	15,790	33%
Calvert	25,959	6,753	26%
Cecil	25,666	4,357	17%
Caroline	3,2428	10,304	31%
Dorchester	137,875	34,284	24%
Harford	44,327	10,863	24%
Prince George's	17,901	9,418	52%
Queen Anne's	19,004	6,243	32%
Somerset	34,452	12,730	37%
Talbot	19,553	5,799	29%
Wicomico	22,518	6,279	27%
Worcester	64,970	29,239	45%
Kent	7,321	2,123	29%
St. Mary's	40,017	1,126	2%
TOTAL	**613,405**	**176,609**	**28%**

Map Source for ESAs: ESAs are shown as a combined map product along with Green Infrastructure areas in graphic format within Appendix A of this document. DNR's Natural Heritage Program maintains more detailed maps and information about ESA's that can be viewed by appointment with NHP representatives.

Figure – 5 – Green Infrastructure and ESA areas in the Coastal Zone



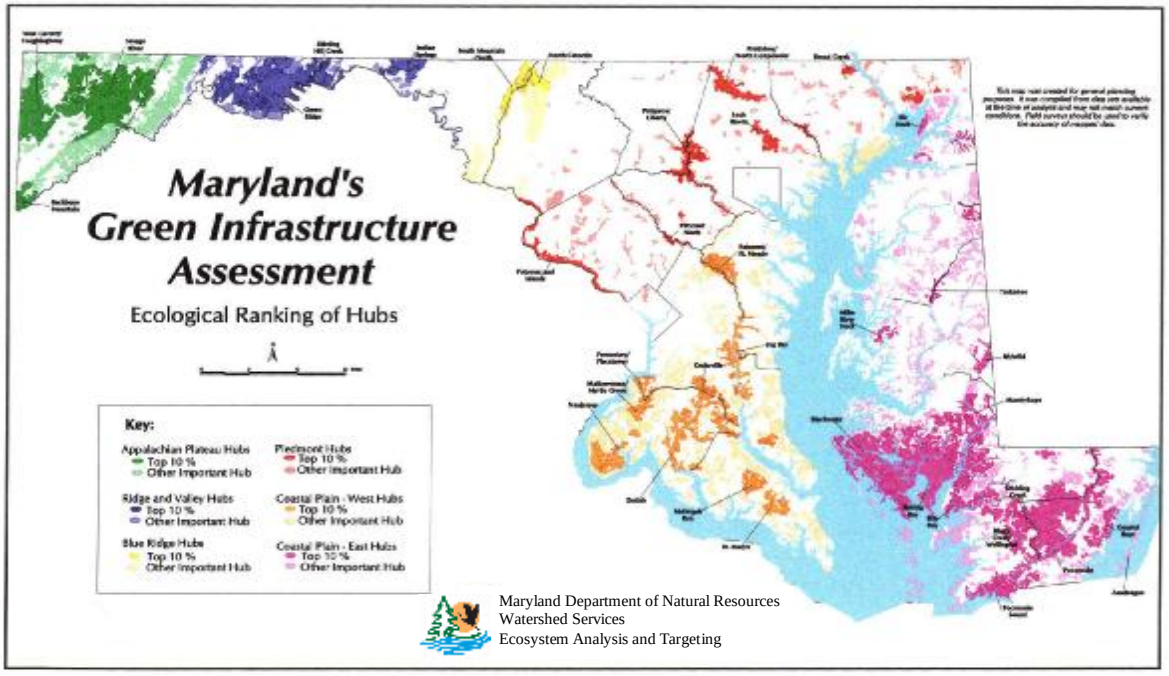
IDENTIFYING PARCELS WITH HIGH NOMINATION POTENTIAL

Areas identified on the CELCP maps are presumed to be ecologically valuable. These maps provide guidance to potential applicants and serve as a starting point for determining whether a project meets the State's objective for protecting ecologically valuable areas. The functions, values and ecological rank of individual parcels will vary greatly within a given GI/ESA area.

KEY LANDSCAPE FEATURES OF MARYLAND'S COASTAL ZONE

- Ø Headwater ecological communities
- Ø Large forest tracts
- Ø Riparian forest buffers
- Ø Atlantic Maritime forests and dune habitats
- Ø Back bay shorelines of the Atlantic Coastal Bays
- Ø Beaches
- Ø Palustrine emergent and palustrine forested wetland types
- Ø Tidal marshes
- Ø Areas for tidal wetland restoration and migration
- Ø Flood/storm surge hazard areas
- Ø Declining upland habitat areas such as grasslands.

Figure – 6
Ecological Ranking of Hubs Contained in the Green Infrastructure Assessment



Generally speaking, a parcel's ecological value is derived from landscape ecology and conservation biology "principles". The Green Infrastructure network design objectives included: 1) incorporation of ecosystems, landscapes, and processes native to Maryland; 2) recognition of the full range of Maryland's biodiversity, including viable populations of native plant and animal species; 3) protection of surface water resources to maintain hydrologic processes and 4) incorporation of the best examples of functional landscape gradients of aquatic, wetland and terrestrial ecosystems.

The GI/ESA network design draws on concepts of biological reserves and reserve networks including consideration of "core" areas, island biogeography, landscape linkages and connecting corridors for animal and plant propagule movement. Parcels that contain or provide the following characteristics are likely to rank favorably when considered for CELCP funding:

- Designated Natural Heritage Areas
- Unique natural communities or a diversity of plant and wildlife species or habitats
- Unmodified or unique wetland habitats (e.g., Wetlands of Special State Concern)
- Habitat for species dependant on interior forest conditions
- Important aquatic resources or habitats
- Habitats for rare, threatened or endangered species
- A diversity of soil types
- Are remote from roads and their effects.

THE CONTEXTUAL SIGNIFICANCE OF PROJECT PROPOSALS

Isolated conservation efforts are likely to be unsuccessful unless tied into a larger, landscape level approach. Proposed acquisitions will be considered in terms of the relationship of the property to surrounding properties and the watershed. Acquisition proposals should describe parcel characteristics and context. (See tables 5 and 6 in Section V). To facilitate the assessment of candidate acquisitions, applicants are encouraged to provide available information such as plant or animal species inventories, water quality or stream condition surveys, or other special studies that offer descriptive or quantitative measures of important ecological function or values. Below are described several sources of state data and information to assess and support the ecological value of proposed acquisitions. All of these sources provide further detail on lands captured in the Green Infrastructure Assessment and Ecologically Significant Areas. Information sources are not limited to the State generated information described below. Parcel level information can be obtained from a variety of federal, state, local, academic and non-profit sources. Applicants will be encouraged to make use of these information resources.

Forest Lands: DNR's Strategic Forest Lands Assessment (SFLA) has identified the most ecologically significant forests of the State. The SFLA has used a variety of GIS data to identify forestland ecological attributes including:

- Distribution of Forested Wetlands
- Distribution of Designated Wildlands
- Forest fragmentation patterns such as mean patch size
- Forests providing habitat for sensitive species
- High Quality Forest Interior Dwelling Species Habitat
- Percent of Watershed Forested.

In addition to utilizing the Green Infrastructure Assessment, the SFLA ecological assessment builds upon the watershed framework employed in Maryland's Unified Watershed Assessment which incorporates watershed based indicators in an effort to better understand Maryland's ecological resources and the landscape stresses which confront them. Maryland's watersheds have been evaluated based on the spatial distribution and vegetation composition of forested lands, the abundance of riparian forests, and the

presence of critical habitat and sensitive species. The influence of forests on ecological processes that translate across the watershed has also been evaluated. For example, riparian (streamside) forests improve surface water quality by filtering nutrients from water discharging into streams and reducing soil erosion. These beneficial effects are carried to downstream aquatic communities. Forests and wildlife on CELCP lands will be managed to maintain ecological integrity, healthy habitat, and the ability to regenerate native plant and animal communities in the face of invasive species, shifting disturbance mechanisms, and other threats to forest health and sustainability. <http://www.dnr.state.md.us/forests/conferences/sfla/>.

Maryland has also completed targeting of forest lands important for water quality, including forest blocks, buffers, wetlands, steep slopes, nutrient stressors, water supply priorities, and aquatic habitat priorities. The Forest Water Quality Target map is located at <http://www.dnr.state.md.us/forests/conservationgoal.asp>, and complements the SFLA analysis.

Wetlands: Wetlands in the State differ in terms of their importance, function, and rarity. Declining wetland types are identified in *Wetlands of Maryland* (Tiner and Burke, 1995) and generally include palustrine emergent and palustrine forested wetlands. The Delmarva Bay wetlands also have been identified as a particular area in need of conservation. In the Maryland portion of the Delmarva Coastal Bays, an estimated 1,500 acres of tidal wetlands and 25,000 acres of non-tidal wetlands have been lost since the 1930's. The Maryland Department of the Environment (MDE) has identified high value wetland sites throughout Maryland for restoration, preservation and mitigation. These maps should be referred to when considering sites as they may provide more specific information than what can be deduced from the CELCP maps.
http://www.mde.state.md.us/Programs/WaterPrograms/Wetlands_Waterways/about_wetlands/prioritizingareas.asp>

Proposed wetland acquisitions should consider the potential impacts of sea level rise to the property. Information provided by the University of Maryland indicates the effects of sea level rise may cause the loss or degradation of up to 70% of the state's tidal emergent marsh systems within this century (Kearney et. al., 2002), and that within 10 years, noticeable losses may be evident in highly saturated marsh systems. The impacts of sea level rise will vary given the location and type of wetland area affected. Losses can be offset in some areas by wetlands migration. Accurate elevation data through the use of LIDAR mapping technology is being acquired by the Maryland Department of Natural Resources and local governments and may be useful for projecting inundation impacts and migration potential in adjacent areas.

Streams: The health of streams is reflective of the conditions of the lands they drain. Stream water quality as measured by ambient and biotic conditions is an important measure of the ecological integrity of a parcel. The Maryland Biological Stream Survey (MBSS) provides information on the health of streams throughout the State using a range of parameters. Especially important for the purposes of the CELCP Plan are those streams whose integrity has merited designation as "reference" streams. In addition to their integral value as natural resources of the State, these streams are important to preserve as monitoring baselines by which to measure progress towards the restoration objectives for other streams. Proposed acquisitions should consider the aerial extent of adjacent and associated terrestrial ecosystems needed to buffer upland impacts.

In addition to the information MBSS provides about general stream health throughout Maryland, MBSS has also designated certain areas as "stronghold watersheds." Stronghold watersheds are those watersheds in the state that are most important for the protection of Maryland's aquatic

biodiversity. They are the places where rare, threatened, or endangered freshwater fish, amphibians, reptiles, or mussel species have the highest numbers (abundance and number of occurrences). Special protection of these watersheds is necessary to ensure the persistence of these imperiled fauna and proposed CELCP projects should consider if they are located within a stronghold watershed. <http://www.dnr.state.md.us/streams/mbss/>

Aquatic Resource Network and Blue Infrastructure: The Maryland Chesapeake & Coastal Program has developed coastal data mapping systems that compile all aquatic resource and shoreline data onto single mapping frameworks. One of these systems, the aquatic resource network, maps records of important aquatic resources and near shore habitat. This system provides a mechanism for all CELCP projects to be screened for important coastal habitat and resources. To assess near shore lands for targeting purposes, a blue infrastructure assessment will evaluate coastal habitats for ecological, physical, and anthropogenic conditions. For any land proposed for CELCP nomination in Maryland that has waterfront shoreline, this blue infrastructure assessment value will be considered.

AREAS OUTSIDE OF THOSE IDENTIFIED ON THE MARYLAND CELCP MAPS

Although the CELCP maps of the Green Infrastructure and Ecologically Significant Areas represent the most comprehensive statement of Maryland's priority conservation needs that are consistent with CELCP Program objectives, some areas worthy of consideration for acquisition, such as isolated natural heritage elements, some streams and their riparian buffers (and many poorly buffered streams), some steep slopes, and some wetlands were not captured in either model. Ecologically valuable areas outside of those identified on the CELCP maps will be considered for nomination where their ecological or adaptation value can be demonstrated (preferably in the context of the watershed or established resource restoration and management plans).

Chesapeake Bay National Estuarine Research Reserve in Maryland (CBNERR-MD) Site Expansion: Federal CELCP guidelines require that CELCP plans include consideration of the acquisition needs of components of the National Estuarine Research Reserve System (NERRS). The use of CELCP funds to meet the expansion and/or protection needs of the NERRS sites is not contingent upon a demonstration of their ecological value although much of the land surrounding the components of the Chesapeake Bay National Estuarine Research Reserve in Maryland (CBNERR-MD) – Jug Bay in Anne Arundel and Prince George's Counties; Otter Point Creek in Harford County; and Monie Bay in Somerset County — is already within the Green Infrastructure Assessment.

All three of the CBNERR-MD components are designated as hubs in the Maryland Green Infrastructure Assessment. Protecting adjacent areas that are also in the hubs, connecting these hubs with properties identified as "green links," and buffering the hubs and links with adjacent lands (particularly upstream) is important to conserving critical habitat for birds and other wildlife and protecting core Reserve lands from degradation due to development impacts. Expanding the Reserve components to protect large stretches of wetlands is also necessary to ensure that these wetlands continue to provide key ecological functions such as nutrient removal and flood buffering. The Jug Bay wetlands, for example, are part of an expansive non-tidal wetland system that serves to clean large amounts of nutrients from the Patuxent River, preventing those nutrients from reaching the Chesapeake Bay. Nutrient pollution has been identified as the primary pollution in the Chesapeake Bay, causing noxious algae blooms and hypoxia/anoxia. Another priority of the Reserve is to acquire and protect low-lying upland areas adjacent to wetlands to allow for marsh

migration in the face of impending sea level rise. Maryland is the fourth most vulnerable state to sea level rise in the nation, in part because of geologic subsidence due to isostatic rebound. CBNERR-MD is one of the NERRS sentinel sites researching the impacts of climate change.

A key land acquisition need at Monie Bay is to acquire a property at the Monie Bay component with both road and water access for a Research/Education/Cultural Visitor Center and a staging ground for Reserve programs. This property would facilitate the increased use of Monie Bay for Reserve activities, including stewardship, research, education and coastal training activities, and would be incorporated into the Reserve. This acquisition is needed to comply with NOAA's 2006 CZMA 312 Evaluation of CBNERR-MD Program Suggestion "to address access and program issues at the Monie Bay Component. Acquisition of appropriate properties to provide for a base of operations for programs and research is encouraged."

Interstate Conservation Interests: CELCP Program guidelines encourage States to consider conservation needs on a multi-state or regional scale, and to work with neighboring states for the conservation of coastal and estuarine resources within the region. Acquisitions proposed as part of these collaborative efforts will not be required to be identified on the CELCP maps although in most instances it is expected that they will support the protection of the Green Infrastructure and Ecologically Significant Areas. While specific multi-state conservation strategies have yet to be established, future discussions between Maryland and adjacent states on the development of such strategies are intended. A potential future focus area includes the Potomac River Corridor, particularly those areas which could be incorporated into established greenways and those adjacent to sensitive aquatic areas within the River such as grassbeds whose protection could benefit from a multi-state conservation strategy of upland areas. Future multi-state collaboration may also focus on protecting land areas along the Atlantic Coast flyway, and integrating water-trails.

V. State Process for Implementing the CELCP Program

LEAD STATE AGENCY

The lead state agency for implementing Maryland's CELCP Plan is the Maryland Department of Natural Resources (MD DNR). Within DNR, the Watershed Services Unit's Chesapeake & Coastal Program (CCP) has the responsibility for administering the CELCP project nomination process. In fulfilling this responsibility, the CCP will work closely with the Department's public land planning and preservation programs which include Land Acquisition and Planning, Program Open Space, and Rural Legacy, among others.

ENTITIES ELIGIBLE TO HOLD PROPERTY ACQUIRED WITH CELCP FUNDS

Definition of eligible recipients or sub-recipients: NOAA's CELCP guidelines state that NOAA may make CELCP financial assistance awards to eligible coastal states (Maryland), including the state's lead agency for implementing the CELCP (MD DNR), the state's coastal management program (CCP) or its National Estuarine Research Reserve(s) (CB-NERRs). The designated recipient may in turn allocate grants or make sub-awards to other state agencies, local governments as defined at 15 CFR 24.3, or entities eligible for assistance under section 306A(e) of the Coastal Zone Management Act (16 USC 1455a(e)) to carry out approved projects.

NOAA may, at its discretion and in consultation with the MD CCP that is responsible for implementing Maryland's CELCP program, make grants directly to any of these eligible entities in order to expedite completion of an approved project. All State and local agencies are eligible for CELCP funding. NOAA will not make grants under the CELCP to nongovernmental organizations unless otherwise directed by Congress.

State and local agencies must hold a controlling interest in acquired properties. The title or other interests in acquired property must be held in perpetuity for the purpose of conservation. The use or management of a property is not limited to public agencies so long as there is sufficient oversight of the property by a public agency to ensure that the conservation objectives for the property are being met.

Any property acquired with CELCP funds must have a long-term stewardship or management plan that addresses long-term operations, maintenance, and safety needs related to the property, as well as existing and proposed activities/uses envisioned. Stewardship strategies should provide for appropriate public access that is consistent with the particular resource protection needs of the site.

Match: Federal funds awarded under this program must be matched on a one to one (1:1) ratio. The match can be made from state, local, non-governmental or private sources in the form of cash or the value of non-monetary or in-kind contributions, such as the value of donated lands or services.

STATE SOLICITATION AND NOMINATION PROCESS

Solicitations of Proposals: The availability of CELCP funding is subject to the uncertainties of the Congressional appropriations process and limitations of federal grant cycles. When CELCP funding is

anticipated, the MD DNR, through the Chesapeake & Coastal Program (CCP), will publish a solicitation for project proposals for CELCP funding. The solicitation will describe all project information requirements – it will outline what information and supplemental materials, such as maps, a project proposal for state CELCP review should contain. The project solicitation notice will provide a timetable for all project proposal and review deadlines based on the date when final proposals are due to NOAA.

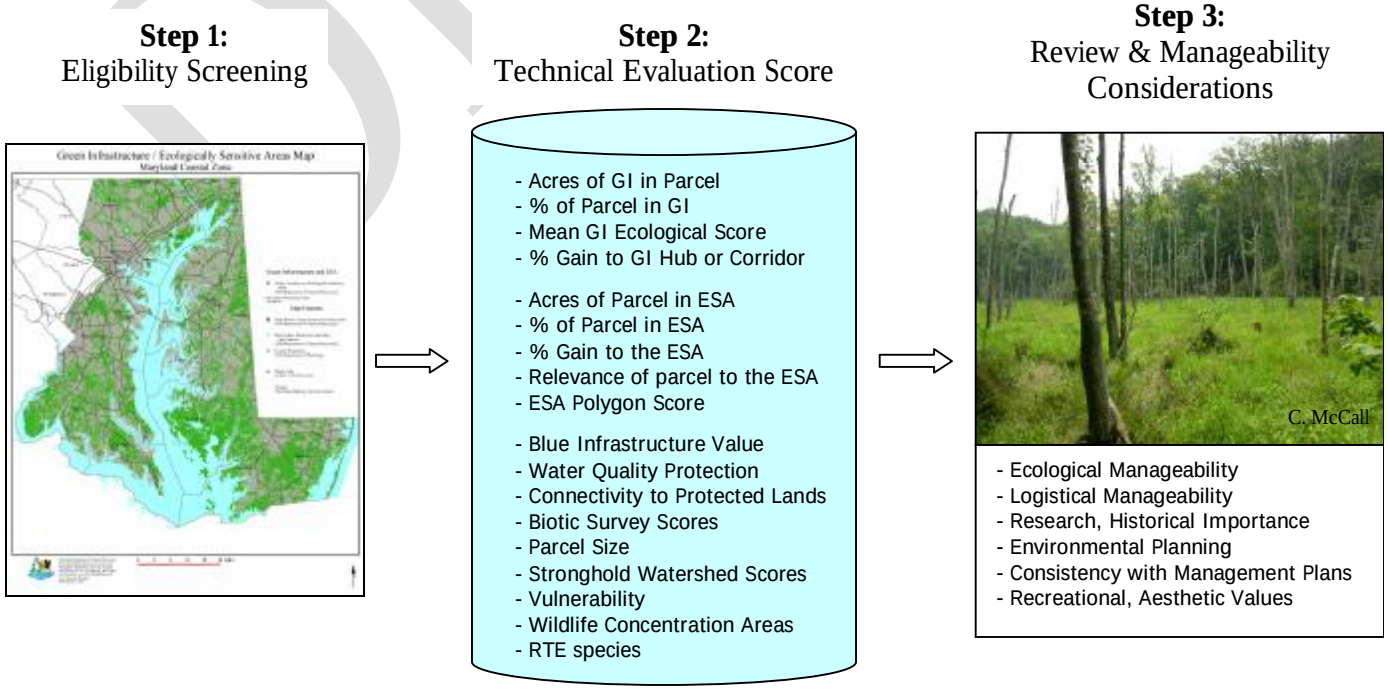
It is expected that the timeframe for nominating projects to NOAA is likely to be of short duration. For these reasons, project proposals are encouraged to be made at any time after the initial solicitation of projects is published. Those considering submitting projects for CELCP funding should first inquire with DNR's CCP on the current availability of funding. Project proposals for annual state CELCP consideration will be due to the CCP before final proposals are due to NOAA. Once project proposals are received by the CCP, a DNR workgroup will convene to review and prioritize the proposals.

Project proposals submitted outside of the federal grant cycle for CELCP funding will be held for consideration in future CELCP funding cycles or may be forwarded to other conservation programs for consideration. Properties that are already being considered for acquisition by other DNR conservation programs will automatically be considered for CELCP funding though additional information may be requested from the project proponents and these projects will be screened for eligibility against CELCP guidelines.

State Review and Prioritization: The CCP will convene a workgroup to review project proposals. This workgroup will be comprised of representatives from DNR's land conservation programs, Watershed Services Unit (which includes the CCP and the CB-NERR program), Wildlife and Heritage Service, and Forest Service; the Maryland Department of Agriculture; and others to be determined by Maryland's CELCP lead in DNR.

Review and ranking of CELCP conservation proposals will be completed in a three-stepped process. Figure 7 details the steps of the process.

Figure – 7
Three Step CELCP Proposal Review & Ranking Process



Step 1 — Establishing CELCP Eligibility and Ecological Values

Step 1 will determine whether properties proposed for nomination presumptively meet the threshold for ecological value by falling within the areas identified on the Maryland CELCP maps. Outside of these areas, applicants will be expected to demonstrate the ecological importance of the property at a state or regional scale.[13] In addition, Step 1 will also screen potential properties to ensure they meet the basic CELCP eligibility criteria (have public access, will be maintained in perpetuity, etc.) as outlined in the Federal CELCP guidelines.

Properties meeting the threshold for demonstrated ecological value and CELCP eligibility will be ranked for ecological function and value under Step 2.

Step 2 — Technical Evaluation of Proposals

In Step 2, a desktop Geographic Information System (GIS) assessment will score the ecological importance of properties according to ecologically-based parameters for assessing the Green Infrastructure (GI), Ecologically Significant Areas (ESA), aquatic resource network/blue infrastructure characteristics and other contextual environmental features. Each of the assessments will be considered separately. Although there may be overlapping data in some of the assessments, particularly in regards to habitat and factors affecting water quality, each assessment will provide a different prism in which to evaluate the ecological value of a proposed CELCP acquisition. At the conclusion of the ecological evaluation process, properties will be ranked according to their score in each assessment.

The first stage of Step 2 is to complete an overall GI and an ESA evaluation. Each parcel will receive an overall GI and ESA score that can range from "Excellent" to "Poor" and will be reported along with key ecological information identified during the assessment (e.g. acres of wetlands, feet of streams, etc.). The overall GI and ESA scores used in the analysis are shown in Figure 8.

Figure 8.

Scoring Category	Green Infrastructure	Ecologically Significant Areas
Excellent	25 to 32	41 to 64
Good	16 to 24	30 to 40
Fair	8 to 15	18 to 29
Poor	0 to 7	0 to 17

Table 5 lists the parameters and ranking scheme for the GI and ESA data. These factors have been selected due to their ability to determine the value of a proposal toward protecting ecological assets and biodiversity in Maryland. In instances where unique ESA characteristics are present that may vary from property to property (proximity or rarity information) the review committee will evaluate to what extent the characteristics of the proposed property merit an excellent, good, fair or poor rating. These cases are indicated in Table 5 with an "*".

[13] Under the federal guidance for the development of CELC plans, acquisitions for components of the National Estuarine Research Reserve are a specific area of focus. For proposed NERRS acquisitions, a demonstration of ecological importance and ranking is not required for consideration but nonetheless will aid in reviewing and comparing proposals.

Table 5. Green Infrastructure and Ecological Significant Areas Parameters

GI Evaluation Parameters (Possible 64 pts)	Ranking				
Parameter	**Excellent (8)**	**Good (4)**	**Fair (2)**	**Poor (1)**	**Weight**
Acres of GI	>65	32.1-65	18-32	< 18	**2**
Pct of Parcel in GI	>90%	69% - 90%	34% - 68.9%	< 34%	**1**
Mean GI Ecological Score	85-100	76-84.9	66-75.9	< 66	**3**
Acres of Protected Land within 1 Mile	> 434	152 - 434	5 - 151	< 5	**1**
Pct Gain to Hub or Corridor	> 10%	2.5 - 10%	1 - 2.4%	< 1%	**1**

ESA Evaluation Parameters (Possible 64 pts)	Ranking				
Parameter	**Excellent (8)**	**Good (4)**	**Fair (2)**	**Poor (1)**	**Weight**
Acres of Parcel in ESA	>65	32.1 - 65	18 - 32	< 18	**1**
Pct of Parcel in ESA	> 80%	50 - 80%	20 - 49%	< 20	**2**
Pct Gain to the ESA	> 10%	2.5 - 10%	1 - 2.4%	< 1%	**1**
Relevance of parcel to the ESA; rarity or proximity information*	50-100% within "Standard" site; Excellent	0-50% within "Standard" site; Good	50-100% within macrosite; Fair	0-50% within macrosite; Poor	**1**
ESA Polygon Score	Excellent	Good	Fair	Poor	**3**
**Note: If ESA contains species ranked as Globally Rare (G1, G2, or G3[14]), the parcel is automatically given an excellent ESA rating.					

In addition the parameters established for assessing Green Infrastructure and Ecologically Significant Area values, other contextual environmental factors are considered. These factors summarized in Table 6. Included among these parameters is the scoring provided through the Resource Lands Assessment (RLA) which models parcel relationship to water quality impacts. The RLA assesses properties at both the local and watershed scale. The local parameters assessed include a parcel's proximity to water, soil erodibility, the ability of on-site vegetation to capture and utilize nitrogen, slope, wetland function, fragmentation and other factors. The watershed parameters assess stream density, percent of forested watershed, percent of imperviousness, nutrient loads carried by the parcel and other factors.

[14] A global ranking system is used by all 50 state Natural Heritage Programs and numerous Conservation Data Centers in other countries throughout the western hemisphere. The ranks are based on standard criteria and can be used to assess the range-wide status of a species. The primary criterion used to define these ranks is the number of known distinct occurrences with consideration given to the total number of individuals at each locality. Additional factors considered include the current level of protection, the types and degree of threats, ecological vulnerability, and population trends. The following official definitions describe each rank.

G1: Highly globally rare. Critically imperiled globally because of extreme rarity (typically 5 or fewer estimated occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.

G2: Globally rare. Imperiled because of rarity (typically 6 to 20 estimated occurrences or few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction throughout its range.

G3: Either very rare and local throughout its range or distributed locally (even abundantly at some of its locations) in a restricted range (e.g., a single western state, a physiographic region in the East) or because of other factors making it vulnerable to extinction throughout its range; typically with 21 to 100 estimated occurrences.

Additional characteristics of the parcels will also be evaluated. Factors such as connectivity to other lands, vulnerability to conversion, biotic survey scores, and coastal resource and habitat characteristics will be considered. In instances where unique characteristics are present that aren't fully quantifiable (such as cases where RTE species are recorded or there are wildlife concentration areas), the review committee will evaluate to what extent the characteristics of the proposed property merit an excellent, good, fair or poor rating. These cases are indicated in Table 6 with an "*".

Table 6. Assessment of Other Contextual Environmental Factors.

Other Environmental Data Evaluation Parameters (88 pts)	**Ranking**				
Parameter	**Excellent (8)**	**Good (4)**	**Fair (2)**	**Poor (1)**	**Weight**
Resource/Forest Lands Assessment - Water Quality Protection	High	Moderately High	Moderately Low	Low	**2**
Connectivity to Protected Lands	Immediately Adjacent	Less than 0.25 miles	0.25 - 1mi w/"Natural Linkages"	0.25 - 1mi w/o "Natural Linkages"	**3**
Biotic Survey Scores (ex. MBSS, wildlife concentration areas, RTE species presence, etc.)*	4.0-4.9 IBI excellent characteristics	3.0-3.9 IBI, good characteristics	2.0-2.9 IBI, fair characteristics	1.0-1.9 IBI, limited characteristics	**1**
Parcel Size	>300ac	100-300ac	25-99ac	< 25ac	**2**
Aquatic Resource Network/Blue Infrastructure*	Excellent	Good	Fair	Poor	**2**
Vulnerability	High	Moderately High	Moderately Low	Low	**1**
Wildlife Concentration Areas* (In consult with DNR NHP)	Multiple Species - Large Area	Single Species - Large Area	Multiple Species - Small Area	Single Species - Small Area	**N/A**

Step 3 — Property Transfer, Leveraging and Management Considerations

Step 3 is the final evaluative step where a variety of subjective factors will be considered. In this step, less quantifiable issues pertaining to a property's integrity, transfer and management will be addressed. These considerations may be critical to having a project that can successfully compete in the national review process.

An important consideration will be the overall context of an acquisition, i.e., how the property relates to larger conservation and management objectives. The national criteria in the NOAA CELCP guidance provide a baseline for the Step 3 assessment. Project applicants should also address the following in their submissions:

1. Relationship to Other Management Plans: How will the proposed acquisition further existing restoration plans for coastal and estuarine waters, lands and resources? Given the emphasis on improving water quality in the Governor's Policy Document for Protecting the Chesapeake Bay Watershed, mention should be made of how the project may further the implementation of Tributary Strategies, state and local watershed restoration strategies, and/or plans to meet total maximum daily load pollution limitations. The proposal should also discuss how the proposed acquisition is intended to leverage other resources and/or objectives.

2. Site condition assessment: Step 3 evaluations may include field evaluations of proposed projects. Site specific assessments will consider —

Habitat Maintenance Issues: Is the site highly vulnerable to uncontrollable external impacts? What is the location and surrounding land use?

Restoration Concerns: What restoration is needed and what are the challenges to effective functional restoration? Is the property too small and/or degraded to maintain or reestablish normal ecosystem processes? Are special programs such as exotic species removal or hydrological restoration required? If restoration is needed, is the parcel located where it may provide an opportunity to perform restoration to meet recommendations of the Climate Action Plan (2008)?

Management requirements: Does the property have a management plan? Does the holder of the management responsibility have adequate capacity for effective long-term management of the property? Does the plan adequately take into account changing conditions on surrounding properties? Are there likely to be chronic problems with trespassers and/or neighbors?

Relevance to Environmental Research. Is there long-term environmental research that the proposal's preservation would benefit? If so, proposals should describe the relationship of the property to the research and the nature of the research.

Access: Is the federal requirement for some form of public access satisfied? Is it at a level compatible with the habitat maintenance and protection needs of the site?

Recreational, Historic, and Aesthetic Considerations: Recreational, historic and aesthetic considerations should be described in project proposals if applicable. Proposals should also describe any potential use conflicts particularly those which may devalue or threaten the ecological values of the property.

Climate Change Adaptation and Response. Maryland's Climate Action Plan (August 2008) identifies the need to retain and expand forests, wetlands and beaches as a key priority to plan for and adapt to the impacts of climate change and sea level rise. CELCP project proposals submitted to the CCP may be reviewed for information about how the property could contribute to a long-term management plan for the state to meet this natural resource protection recommendation. This review will be completed on a project-by-project basis and will allow a site analysis to identify potential habitat connectivity (i.e., wetland migration corridors) or maintenance issues, restoration opportunities and management requirements that may address recommendations in the Climate Action Plan.

3. Cost and Ease of Transfer: Is the cost of the acquisition within the expected spending limits for CELCP awards? How does the property compare in terms of benefits/costs to other properties? What potential obstacles might there be to transferring the property? How quickly can the transfer be made?

NOMINATION OF STATE CELCP PRIORITY PROPERTIES TO NOAA

Projects identified by the review team as priorities will be nominated and submitted to NOAA for the CELCP national competitive review process. The State may choose to nominate up to three projects for CELCP funding with each project standing as a separate nomination. For those properties awarded NOAA CELCP funds and which are to be acquired by the State or in which the State will retain a long-term interest, the acquisition must be approved by the Board of Public Works prior to the transfer of the property.

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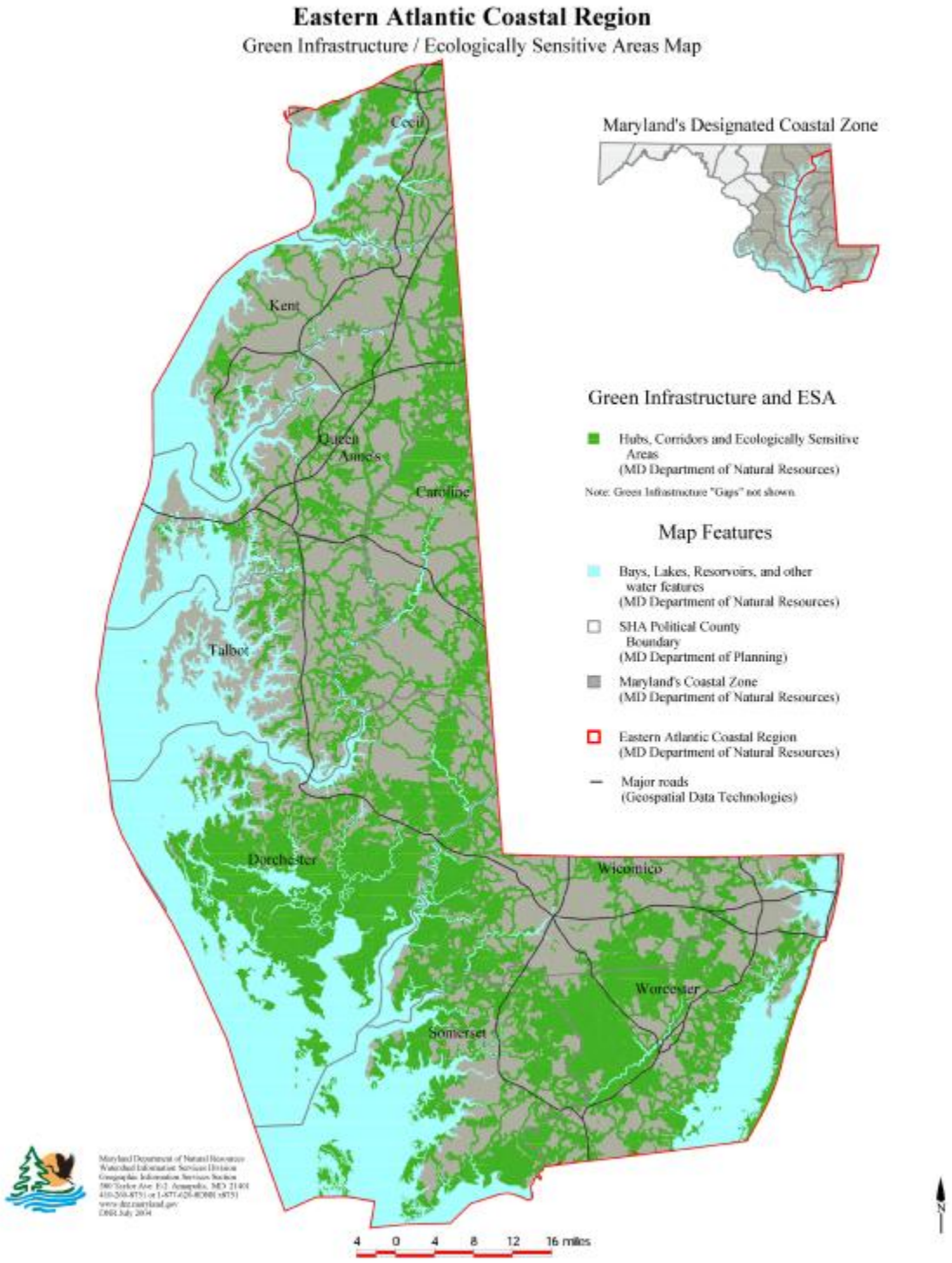
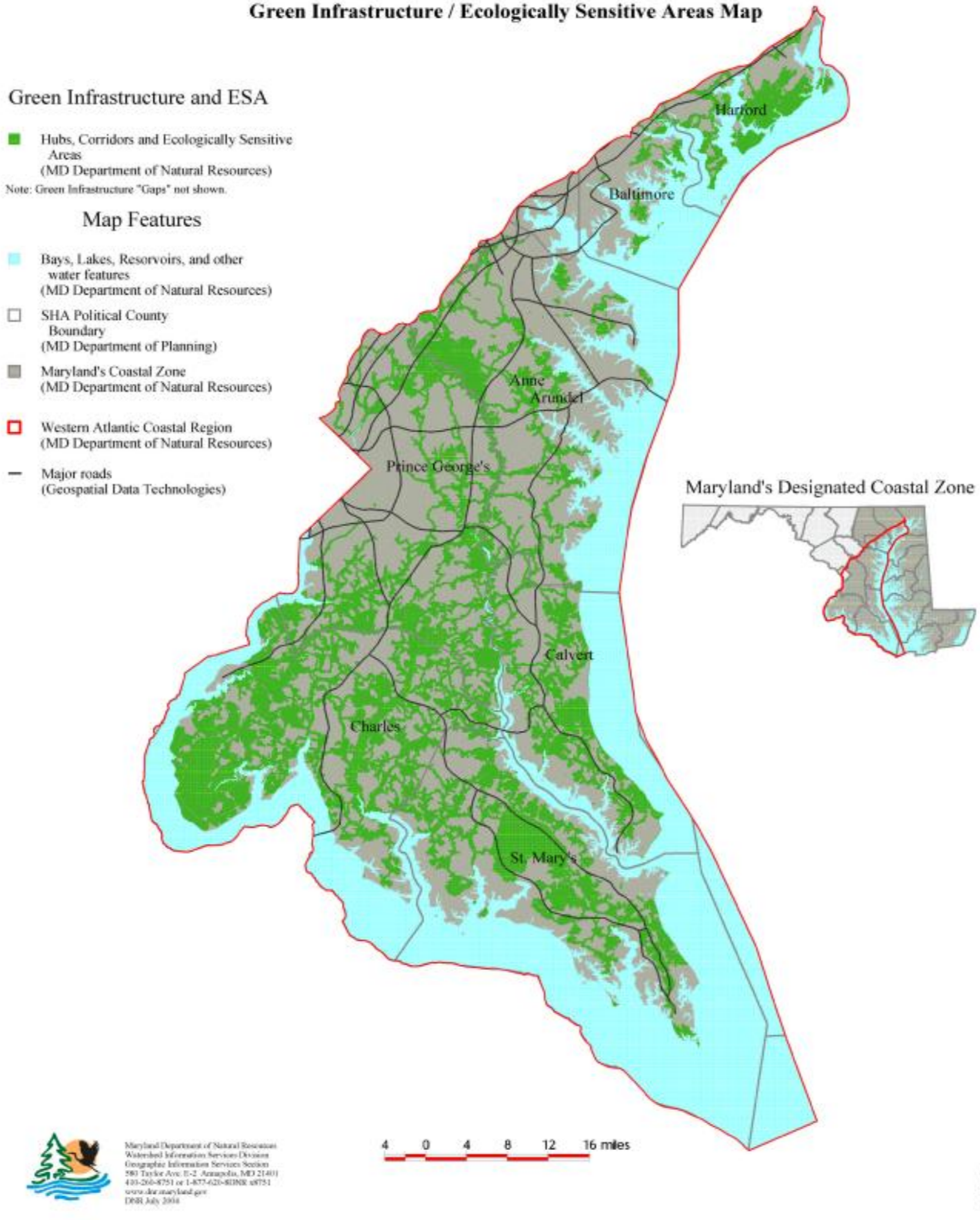
Appendix A — Regional CELCP Maps Exhibits



Western Atlantic Coastal Region

Green Infrastructure / Ecologically Sensitive Areas Map



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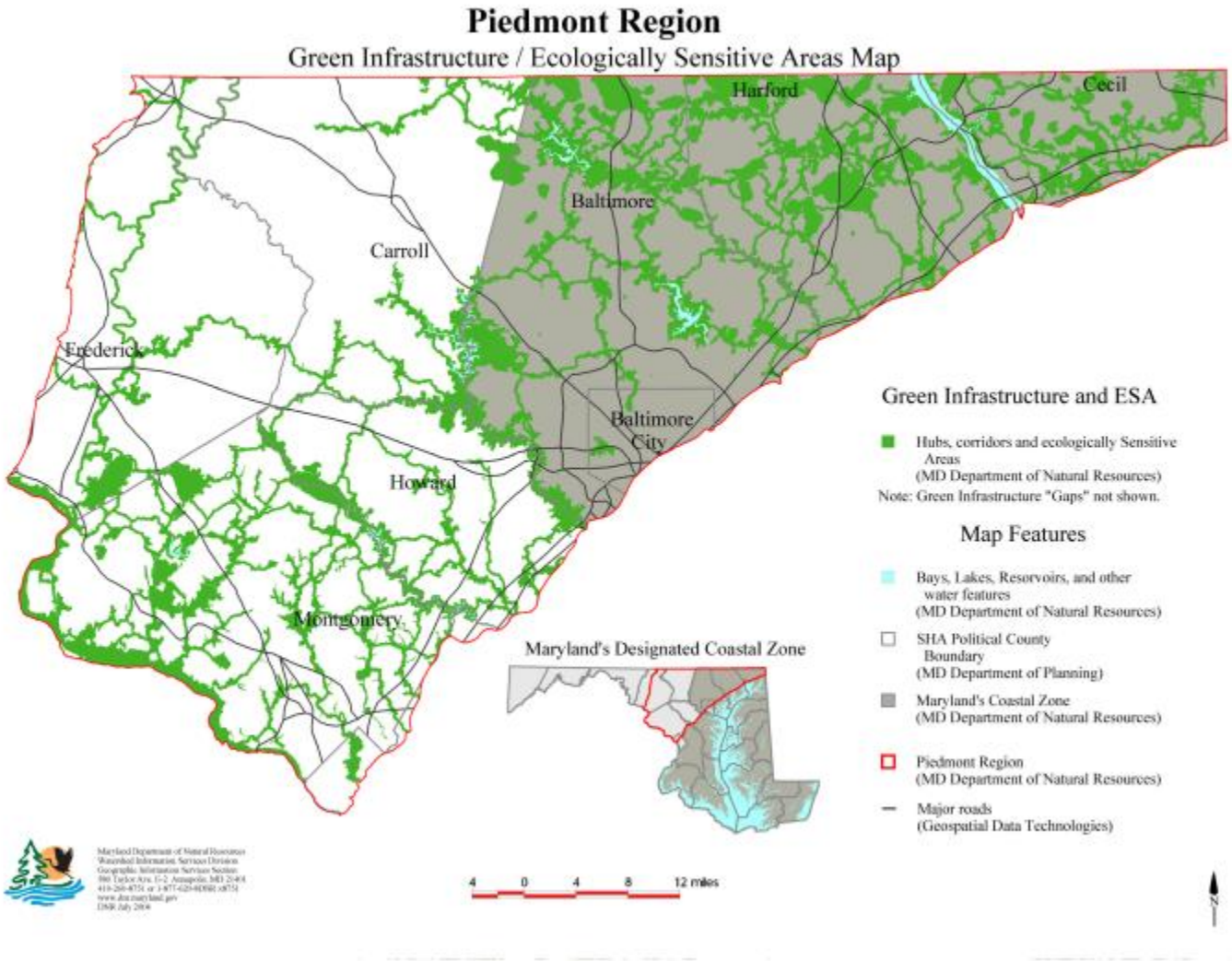
www.dnr.maryland.gov
DNR July 2004


Piedmont Region
Green Infrastructure / Ecologically Sensitive Areas Map
Harford
Cecil
Baltimore
Carroll
Frederick
Baltimore City
Howard
Montgomery
Maryland's Designated Coastal Zone
Green Infrastructure and ESA
Hubs, corridors and ecologically Sensitive Areas
(MD Department of Natural Resources)
Note: Green Infrastructure "Gaps" not shown.
Map Features
Bays, Lakes, Resorvoirs, and other water features
(MD Department of Natural Resources)
SHA Political County Boundary
(MD Department of Planning)
Maryland's Coastal Zone
(MD Department of Natural Resources)
Piedmont Region
(MD Department of Natural Resources)
Major roads
(Geospatial Data Technologies)
4 0 4 8 12 miles