

**BOARD OF SUPERVISORS
INFORMATION ITEM
COMMITTEE OF THE WHOLE**

IX.

SUBJECT: Committee of the Whole: Water Quality Protection Options

STAFF CONTACTS: Danny Davis, County Administration
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BACKGROUND

The Board of Supervisors held a Committee of the Whole discussion on December 1st to begin specific discussions about water quality protections in the County. At that meeting, the Board received a briefing from the Chesapeake Bay Local Assistance Division (CBLAD) of Virginia's Department of Conservation and Recreation. CBLAD described the components of the Chesapeake Bay Preservation Act (Bay Act) and options that Loudoun County has in adopting all or portions of the regulations. Fairfax County staff also provided information about their implementation of the Bay Act regulations and ideas for Loudoun County should the Board decide to move forward with implementing any or all of the regulations.

At the December 1st meeting, the Board asked staff to come back with additional information on a number of topics. That information is presented below and on the associated attachments.

INFORMATION SUMMARY

Comparison Matrix

The Board asked for a matrix showing what regulations are currently in place, what regulations the River and Stream Corridor Overlay District (RSCOD) would put into effect, and what the Chesapeake Bay Act regulations would require. For the Bay Act regulations, staff has separated those into three categories: Option 1 - base regulations (most commonly adopted and staff recommended option); Option 2 - base regulations plus floodplains; and Option 3 - base regulations plus floodplains and other sensitive features. The matrix, as Attachment 1, provides information for each set of regulations on the following topics: technical details, including required setbacks/buffers, development standards, and uses allowed; applicability to agricultural areas; time frame to adopt; staffing/administration of the regulations; and cost to implement/enforce the regulations.

As also requested, and complementary to the matrix, staff has provided additional information on the Bay Act regulations regarding agricultural uses (Attachment 2), which zoning districts reference "gross density" (thereby permitting density credit for property located in major floodplain) (Attachment 3), and grant funds opportunities available for Bay Act implementation (Attachment 4).

Comparison Maps

The Board also asked staff to provide maps showing the impact of various regulations on a certain area. Staff has provided four examples in Attachment 5 – two residential (Ashburn Farm and Broadlands); one agricultural (County-owned Banshee Reeks); and one commercial/industrial (along Broad Run in the vicinity of Waxpool Road). The four examples show the following information: extent of Option 1 (along with FOD and Steep Slopes, which would remain in effect); extent of Option 2; extent of Option 3; and extent of former RSCOD, which included floodplain and steep slopes.

Study of Effectiveness of Riparian Forest Buffers

At the December meeting, CBLAD referenced studies that showed the effectiveness of forested buffers in increasing water quality and providing greater protection to streams and water bodies. Attachment 6 describes the benefits of riparian forest buffers and how they protect water quality. The document does not provide empirical evidence of improvements in water quality, but it details the many facets of a forested buffer and how they act to reduce pollutants, reduce water temperature, provide wildlife habitat, and promote other positive benefits.

JLARC Study on Costs to Implement Bay Act Regulations

Another study referenced at the previous meeting was a Joint Legislative Audit and Review Commission (JLARC) report on the implementation of the Bay Act. Upon review of the report, it does not provide explicit details regarding estimated costs to a jurisdiction to implement the Bay Act regulations. However, the JLARC report does provide relevant information about the history, implementation, administration, and potential expansion of the Bay Act regulations. The executive summary is attached as Attachment 7. The full report is available from staff should Board members be interested.

County Attorney Information

The County Attorney has prepared information for the Board as Attorney-Client Privilege regarding the Chesapeake Bay Act regulations. That information has been provided previously to the Board.

STAFF RECOMMENDATIONS

Chesapeake Bay Act Regulations

Staff's recommendation regarding water quality protection is for the Board to adopt components of the Bay Act regulations. Adoption of these regulations would be in addition to the Floodplain Overlay District (FOD), Scenic Creek Valley Buffer (SCVB), and Steep Slopes regulations already in place. The Bay Act regulations include eleven performance criteria which are mandatory for Tidewater jurisdictions. For non-Tidewater jurisdictions, CBLAD has stated that these eleven performance criteria are optional. Three of the performance criteria are already being implemented throughout the County.

Criteria Already Implemented

- BMP maintenance
 - Maintenance of Best Management Practices (BMP) must be ensured by the local government through a maintenance agreement with the owner or developer or some other mechanism that achieves an equivalent objective (already adopted in Chapter 1096, Stormwater Management).
- Stormwater management
 - Stormwater management criteria consistent with the water quality protection provisions of the Virginia Stormwater Regulations (already adopted in Chapter 1096, Stormwater Management).
- Wetlands permitting
 - Local governments shall require evidence of all wetlands permits required by law prior to authorizing grading or other on-site activities to begin (already adopted in Chapter 1220, Erosion Control).

Staff has evaluated the remaining eight performance criteria and recommends adopting three of them at this time.

Criteria Recommended for Adoption

- Plan of development required for development exceeding 2,500 square feet of disturbance
 - All development exceeding 2,500 square feet of land disturbance shall be accomplished through a plan of development review process. Typically this means a Site Plan, Construction Plans and Profiles application, or Zoning/Building permit will need to be submitted. Development review will confirm the location of the Resource Protection Area and facilitate implementation of the regulations. The 2,500 square-foot threshold is consistent with Criteria 6, which requires an erosion and sediment control plan for disturbances exceeding 2,500 square feet.
- A 2,500 square foot erosion and sediment control threshold (reduced from County's current threshold of 10,000 square feet)
 - Any land disturbing activity exceeding 2,500 square feet, including construction of all single family houses, septic tanks, and drainfields, shall comply with the local erosion and sediment control ordinance. The current threshold is 10,000 square feet and installation of septic tanks and drainfields not associated with active home construction is currently exempt.
- Silvicultural BMPs
 - Silvicultural activities in Chesapeake Bay Preservation Areas (RPAs & RMAs) are exempt provided that they adhere to water quality protection procedures prescribed by the Virginia Department of Forestry in the January 1997 edition of "Forestry Best Management Practices for Water Quality in Virginia Technical Guide." The Virginia Department of Forestry (DOF) oversees and documents installation of forestry BMPs.
 - A Forest Management Plan prepared free of charge by DOF or by contract with a consulting forester is recommended, but not required.

Criteria Recommended for Future Consideration

Three additional performance criteria are defined as “general” performance criteria. The regulations require that local land development ordinances and regulations be amended to incorporate specific development standards to implement the three general performance criteria (1, 2, and 5). The Chesapeake Bay Local Assistance Division is currently developing guidance for implementation of the three general performance criteria. As such, staff recommends not adopting the following performance criteria (unless further clarity is provided by CBLAD prior to final adoption of these regulations):

- Minimize land disturbance
 - No more land shall be disturbed than is necessary to provide for the proposed use or development.
- Preserve indigenous vegetation, and minimize impervious cover.
 - Indigenous vegetation shall be preserved to the maximum extent practicable, consistent with the use or development proposed.
- Minimize impervious cover
 - Land development shall minimize impervious cover consistent with the proposed use or development.

Criteria Not Recommended for Adoption

Finally, the two remaining performance criteria are not recommended for adoption at this time.

- Soil and water quality conservation assessment requirements for agricultural activities
 - Adopting this performance criterion would require all landowners located in agriculturally zoned land or conducting agricultural activities on their property to submit a soil and water quality conservation assessment.
 - Should this performance criterion not be adopted, agricultural activities would still not be permitted within the 100-foot RPA buffer. Nonetheless, a landowner can pursue a reduction of this buffer to 50 or 25 feet by conducting the assessment described above and implementing best management practices.
- Five-year septic pump-out and reserve drainfield
 - Pump-out must be accomplished for all on-site sewage treatment systems not requiring a Virginia Pollutant Discharge Elimination System (VPDES) permit every five years. Local governments may offer the option of having a plastic filter installed and maintained in the outflow pipe as an alternative to the mandatory pump-out. Local governments may also allow owners to submit documentation certified by a sewage handler every five years that the system has been inspected and does not need to be pumped out. For new construction, a reserve sewage disposal site with a capacity at least equal to that of the primary sewage disposal site is required (Loudoun County has already adopted this in Chapter 1066.12.C).
 - The Board has previously considered requiring mandatory maintenance of septic (conventional) systems during deliberations on alternative septic systems. Staff also believes additional study of the implementation of this regulation should occur before staff recommends proceeding. As such, this option may be worth considering as a future amendment, perhaps when the ban on alternative systems is discussed prior to its sunset.

Bay Act Options

Of the three options described for the Bay Act, staff recommends moving forward with Option 1 – where the Resource Protection Area (RPA) consists of perennial streams, contiguous non-tidal wetlands, and a 100-foot buffer. Option 1 is the most commonly adopted RPA in the 84 Tidewater localities subject to the Bay Act and has been successfully implemented since the early 1990s. Generally speaking, adoption of a Chesapeake Bay Act buffer will promote consistency with surrounding jurisdictions. In addition, abundant opportunities for technical support and training are available from the Chesapeake Bay Local Assistance Division of the Virginia Department of Conservation and Recreation to assist in the adoption and implementation of a local Bay Act program.

Option 1 is preferable to the other Bay Act options due to the fact that it provides the least implementation conflicts with existing regulations; can be mapped with existing resources; and has the shortest implementation timeline. Option 1 complements existing environmental ordinances such as the Floodplain Overlay District, Scenic Creek Valley Buffer, and Steep Slopes Standards, which will remain in effect and currently address development in these sensitive areas, while providing significant water quality protection by establishing buffers along streams and wetlands. Moreover, Option 1 can be implemented by existing staff.¹

Staff further supports the adoption of a jurisdiction-wide Resource Management Area (RMA) concurrent with the adoption of Option 1. A jurisdiction-wide RMA is consistent with the countywide application of existing environmental ordinances, including the Erosion and Sediment Control and Stormwater Management Ordinance, and affords the greatest level of water quality protection. Adoption of a jurisdiction-wide RMA is also consistent with the Countywide Watershed Management Plan, prepared by CH2M Hill, presented to the Board in December 2008. Adoption of a jurisdiction-wide RMA means that whichever performance criteria are adopted by the Board will be applicable Countywide, as opposed to only in designated areas.

DECISION POINTS

Staff has identified the following key questions for the Board to consider:

1. Should the Board move forward with a Bay Act program, how expansive does the Board want to establish the RPA (i.e., Option 1, 2, or 3) ?
2. Does the Board want to establish the RMA (areas outside of the RPA) Countywide or limited to a certain area or areas?
3. Which of the 11 performance criteria does the Board want to adopt?

¹ Based on a preliminary analysis, staff notes that existing staffing levels should be sufficient to implement the regulations. However, should staffing levels be reduced in the FY10 budget, or should land development applications significantly increase, further evaluation of staffing levels will need to occur. In addition, the staffing implications will be monitored in more detail should the Board move forward with an Intent to Amend.

4. Specifically, does the Board want to adopt the Agriculture performance criterion, requiring all landowners with agriculturally zoned land or conducting agricultural activities to have a soil and water quality conservation assessment performed, or does the Board want this assessment to only be required when an agricultural landowner requests a reduction in the RPA buffer?

** Staff notes that the Board does not have to make a decision on this topic at this moment, but can further evaluate and consider these alternatives after an Intent to Amend has been adopted.*

5. Certain exceptions may be granted for uses/structures within the 100-foot RPA buffer. While some of these can be granted administratively, others require the review of a public or publicly-appointed body. The Board can designate the purview of these exceptions to fall under:

- a. The Board
- b. The Planning Commission
- c. Any other body appointed by the Board (whether an existing or new entity)

** Staff notes that the Board does not have to make a decision on this topic at this moment, but can further evaluate and consider these alternatives after an Intent to Amend has been adopted.*

NEXT STEPS

Should the Board be ready to recommend moving forward with one of the options presented, staff would request that the Board give direction for staff to prepare an item for a future business meeting directing that the work begin on the amendments with a defined work program. Staff will continue to evaluate the necessary amendments that will be required, to include further coordination with the Planning Department as it relates to the Revised General Plan. Once the actual language of the amendments is developed and prior to advertisement of a Planning Commission Public Hearing, the Board could expect to adopt the specific Resolutions of Intent to Amend.

The Board may wish to hold one more meeting to receive additional information from staff on the topics within this document or discussed at the meeting. In order for staff to prepare this information, staff would anticipate trying to schedule this meeting in mid-March, possibly in a similar fashion as a time-certain item during the second business meeting.

ATTACHMENTS

1. Comparison Matrix
2. Chesapeake Bay Act Agricultural Provisions
3. Zoning Districts That Specify Gross Density
4. Available Grant Funds Memo
5. Comparison Maps
6. Riparian Forested Buffer Information
7. JLARC Study on Bay Act Regulations: Executive Summary

Comparison between the Current Floodplain Overlay District/Scenic Creek Valley Buffer and the Previous River and Stream Corridor Overlay District/Proposed Chesapeake Bay Preservation Act

COMPARISON FACTORS	FLOODPLAIN OVERLAY DISTRICT (FOD) AND SCENIC CREEK VALLEY BUFFER (SCVB)	RIVER AND STREAM CORRIDOR OVERLAY DISTRICT (RSCOD)	CHESAPEAKE BAY ACT OPTION 1: (RPA = PERRENIAL STREAMS AND WATER BODIES AND CONTIGUOUS NON-TIDAL WETLANDS)	CHESAPEAKE BAY ACT OPTION 2: (RPA = PERRENIAL STREAMS AND WATER BODIES; CONTIGUOUS NON-TIDAL WETLANDS; AND FLOODPLAINS)	CHESAPEAKE BAY ACT OPTION 3: (RPA = PERRENIAL STREAMS AND WATER BODIES; CONTIGUOUS NON-TIDAL WETLANDS; FLOODPLAINS AND ADJACENT STEEP SLOPES)
TECHNICAL					
1. Components					
a. Perennial Streams	Included if draining more than 100 acres.	Included if draining 100 acres or more.	Included.	Included.	Included.
b. Intermittent Streams	Included where they fall within Major or Minor Floodplain.	Included where they fall within Major or Minor Floodplain.	Not included.	Not included.	Can be included under other lands.
c. Non-Tidal Wetlands	Not included as an additive element, but may fall within the FOD or SCVB.	Not included as an additive element, but may fall within RSCOD.	Included when contiguous to perennial streams and water bodies.	Same as Option 1.	Same as Option 1.
d. Major Floodplain	Included.	Included.	Not included as an additive element, but portions would likely fall within RPA. FOD would remain in effect.	Included. Would affect FOD permitted uses within RPA.	Included. Would affect FOD permitted uses within RPA.
e. Minor Floodplain	FOD: Included, but more uses allowed and may be altered (removed) for any use permitted in the underlying zoning district. SCVB: Not included.	Included.	Not included as an additive element, but may fall within RPA. FOD would remain in effect.	Included. Would affect FOD permitted uses within RPA.	Included. Would affect FOD permitted uses within RPA.
f. Very Steep Slopes	Not included, but protected by Steep Slope Standards in Section 5-1508 of the Zoning Ordinance.	Included in RSCOD when located within 50 feet of the edge of the floodplain, extending no further than 100 feet beyond the edge of the floodplain.	Not included, but Steep Slope Standards in Section 5-1508 of the Zoning Ordinance would remain in effect.	Not included, but Steep Slope Standards in Section 5-1508 of the Zoning Ordinance would remain in effect.	Included in RPA as other lands; would affect steep slope standards and permitted uses within RPA.
g. Management Buffer	Not Included.	50-foot buffer measured from edge of floodplain or from adjacent very steep slopes when present.	100 foot <i>planted buffer</i> from edge of RPA.	Same as Option 1.	Same as Option 1.
h. Minimum Stream Buffer or Setback	SCVB: 150 foot <i>setback</i> from streams and rivers draining greater than 640 acres (measured along the slope of the ground from channel scar line). Can be reduced to 50 feet with retention of existing forested area or reforestation; and to accommodate BMP facilities.	100 foot <i>setback</i> from all rivers and streams draining 100 acres or more (measured perpendicular from stream bank of active channel).	100 foot <i>planted buffer</i> from edge of RPA.	Same as Option 1.	Same as Option 1.

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i. Buffer or Setback From Potomac River	<u>SCVB</u> : 250 foot <i>setback</i> (measured along the slope of the ground from channel scar line). Can be reduced to 50 feet with retention of existing forested area or reforestation; and to accommodate BMP facilities.	300 foot <i>setback</i> (measured from stream bank).	100 feet <i>planted buffer</i> from edge of RPA.	Same as Option 1.	Same as Option 1.
j. Buffer or Setback From Scenic Designations of Goose Creek and Catoctin Creek	<u>SCVB</u> : 200 foot <i>setback</i> (measured along the slope of the ground from channel scar line). Can be reduced to 50 feet with retention of existing forested area or reforestation; and to accommodate BMP facilities.	300 foot <i>setback</i> (measured from stream bank).	100 feet <i>planted buffer</i> from edge of RPA.	Same as Option 1.	Same as Option 1.
k. Buffer or Setback From Bull Run	None	300 foot <i>setback</i> (measured from stream bank).	100 feet <i>planted buffer</i> from edge of RPA.	Same as Option 1.	Same as Option 1.
l. Buffer or Setback From Drinking Supply Reservoir	Not required by FOD. However, FSM 5.320.D.7 requires a 300-foot separation from the existing or planned shoreline of the impoundment area of any public drinking water reservoir to any land disturbing activity.	300 foot <i>setback</i> (measured from shore line).	100 feet <i>planted buffer</i> from edge of RPA. FSM 300 foot separation still applies.	Same as Option 1.	Same as Option 1.
2. Permitted Reductions	<u>SCVB</u> : Can be reduced to 50 feet with retention of existing forested area or reforestation; and to accommodate BMP facilities.	50-foot management buffer can be reduced or eliminated administratively if demonstrated that existing floodplain is sufficient in size and quality and reduction will not adversely impact other RSCOD elements; or if area outside of RSCOD is insufficient to accommodate permitted density/ intensity in base zoning.	Agricultural reductions down to 25 feet permitted (See Attachment 2). All other reductions require an approved exception.	Same as Option 1	Same as Option 1

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3. Uses Allowed (Active recreation refers to recreation uses that require constructed facilities, such as playing fields, ball courts, and playgrounds.)	<u>SCVB</u>: Does not preclude any uses, but prohibits impervious surfaces (structures, parking, etc) <u>FOD</u>: Lists the specific uses that are permitted by right and permissible with special exception approval in the major floodplain and in the minor floodplain. The FOD allows limited improvement of existing residences by-right.	The RSCOD lists the specific uses that are permitted by right and permissible with special exception approval in the district. The RSCOD is more restrictive than the FOD in regards to uses permitted. The following uses are permitted in the FOD, but not in the RSCOD: • Active recreation • Parking Areas • Structures • Temporary storage of materials or equipment • Riding Stables • Carnivals, Circuses and similar amusement enterprises However, it is noted that the RSCOD is less restrictive than the FOD for stormwater management facilities and ponds A number of uses allowed in the RSCOD have specific development standards. The RSCOD permits limited expansion of any existing structure by-right.	The Chesapeake Bay Act exempts certain uses, but in general is more restrictive than the FOD and the RSCOD in terms of the uses permitted. Most notably, the Bay Act does not exempt agriculture, however, reductions in the RPA buffer to 50 or 25 feet permitted (See Attachment 2). In addition, active recreation is not exempt. Only regional stormwater management facilities that drain or treat water from multiple development projects or from a significant portion of a watershed are permitted. A Water Quality Impact Assessment (WQIA) is required for non-exempt uses. An applicant can request an exception to allow a use that is not permitted. Such an exception is processed by the local legislative body, the local planning commission, or a special committee, board, or commission established or designated by the local government. Expansions of existing structures require the approval of an administrative exception.	Same as Option 1, but FOD is included in RPA.	Same as Option 1, but FOD and adjacent steep slopes are included in RPA. The Steep Slope Standards in Section 5-1508 of the Zoning Ordinance do not permit land disturbance on areas of very steep slopes except in very limited circumstances and therefore precludes most uses.

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4. Performance Criteria	The SCVB and FOD do not have optional performance criteria similar to the Chesapeake Bay Act. Performance Criteria #3 (BMP maintenance); #8 (stormwater management; and #11 (wetlands permitting) are already implemented by the County through other Ordinances	The RSCOD does not have optional performance criteria similar to the Chesapeake Bay Act. The RSCOD does include development standards aimed at minimizing land disturbance and tree and vegetation conservation. Performance Criteria #3 (BMP maintenance); #8 (stormwater management; and #11 (wetlands permitting) are already implemented by the County through other Ordinances	11 Performance Criteria that apply to both the RPA and RMA (can select which to adopt): 1. Minimize land disturbance. 2. Preserve indigenous vegetation. 3. BMP maintenance. 4. Plan of development required for development exceeding 2,500 square feet of land disturbance. 5. Minimize impervious cover. 6. 2,500 square-foot erosion and sediment control threshold (reduced from existing 10,000 square-foot threshold). 7. Five-year septic pump-out and reserve drainfield. 8. Stormwater Management (already adopted). 9. Soil and water quality conservation assessment requirements for agricultural activities. 10.Silvicultural BMPs. 11.Wetland permits required prior to grading or other on-site activities.	Same as Option 1.	Same as Option 1.
5. Flexibility In Zoning Dimensional Requirements	No flexibility provided.	If 25% or more of parcel is subject to RSCOD (excluding 50-foot management buffer) allows reductions in lot size, lot width, yards and parking and increased building height.	No flexibility provided.	Same as Option 1.	Same as Option 1.
6. Floodplain Issues					
a. Consistency with FEMA Regulations	Yes	No	Yes	Yes	Yes
b. Density Credit	<u>Major FP</u>: No density credit unless underlying zoning district calculates density based on <u>gross</u> acreage (See Attachment 3) <u>Minor FP</u>: Density credit provided <u>SCVB</u>: Density credit provided (only for areas outside the floodplain)	Density Credit is provided for all of RSCOD	FOD applies. Underlying density for other areas of buffer is not affected.	Same as Option 1.	Same as Option 1.

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AGRICULTURE					
1. Applicability to agricultural uses	FOD: Agricultural use permitted by-right; permits structures up to 840 SF or greater with SPEX approval.	Exempts agricultural use covered by Farm Management Plan; Structures are not exempt.	Agriculture uses not exempt. Reductions in RPA buffer to 50 or 25 feet permitted (See Attachment 2).	Same as Option 1.	Same as Option 1.
CONTINUITY/CONSISTENCY WITH OTHER JURISDICTIONS					
1. Provides regional consistency	No.	No.	Yes.	No.	No.
2. Facilitates development across jurisdictional boundaries	No.	No.	Yes.	No.	No.
TIME FRAME					
1. Time to Implement (Estimate)	N/A	18 to 24 Months.	12 months or less.	Same as Option 1.	12-24 months, dependent upon the extent of other lands selected.
2. Mapping Timelines (Time needed to create the map. Does not include the time needed for the public process and required notice needed to adopt the map)	N/A	4 to 6 weeks minimum (Considerable effort to work out which parameters should be used in the mapping process could double this timeline).	1 week for RPA initially mapped as the Major and Minor FP, plus a 100-foot buffer. 1. Site specific RPAs are delineated in conjunction with development applications.	Same as Option 1.	4 to 6 weeks minimum (Considerable effort to work out which parameters should be used in the mapping process could double this timeline).
3. Enabling Authority	Flood Damage Reduction Act, Va. Code Sections 62.1-44.108 et seq. Chapter 11, Title 15.2, Code of Virginia (Planning, Subdivision of Land and Zoning). Soil Conservation Districts Law, Va. Code Sections 21-2(c), 21-2(d). Virginia Environmental Quality Act, Va. Code Section 10-178. Erosion and Sediment Control Act, Va. Code Section 21-89.2. Potomac River Basin Compact, Va. Code Section 62.1-69.1. National Flood Insurance Act of 1968, 42 U.S.C. 4001 et seq.	Flood Damage Reduction Act, Va. Code Sections 62.1-44.108 et seq. Chapter 11, Title 15.2, Code of Virginia (Planning, Subdivision of Land and Zoning). Soil Conservation Districts Law, Va. Code Sections 21-2(c), 21-2(d). Virginia Environmental Quality Act, Va. Code Section 10-178. Erosion and Sediment Control Act, Va. Code Section 21-89.2. Potomac River Basin Compact, Va. Code Section 62.1-69.1.	Title 10.1 Conservation, Chapter 21 Chesapeake Bay Preservation Act [Title 10.1, Chapter 5 (E&S) and Chapter 6 (SWM) have been adopted as Chapter 1220 (E&S) and Chapter 1096 (SWM) of the Loudoun County Codified Ordinance]	Same as Option 1	Same as Option 1

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		National Flood Insurance Act of 1968, 42 U.S.C. 4001 et seq. Section 10. 1-2100 et seq. (The Chesapeake Bay Preservation Act) and Section 15.1-489, of the Code of Virginia.			
STAFFING/ADMINISTRATION					
1. Program Coordination	FOD: Zoning Administrator and Floodplain Manager. SCVB: Zoning Administrator.	Zoning Staff and Deputy Division Chief, Environmental Teams.	Deputy Division Chief, Environmental Teams.	Same as Option 1.	Same as Option 1.
2. Soil and Water Quality Conservation Assessment	N/A	N/A	Loudoun SWCD & Cooperative Extension	Same as Option 1.	Same as Option 1.
3. Perennial Flow Study Review	N/A	N/A	Environmental Review Team and Water Resources Team.	Same as Option 1.	Same as Option 1.
4. Boundary Confirmation	Zoning Administrator and Director of Building and Development	Zoning Administrator, Director of Building and Development and Environmental Review Team.	RPA - Performed by existing Environmental Review Team and existing Water Resources Team.	Same as Option 1.	Same as Option 1.
5. Boundary Updates	Zoning Administrator and Director of Building and Development	Zoning Administrator, Director of Building and Development and Environmental Review Team.	RPA - Environmental Review Team and Water Resources Team.	Same as Option 1.	Same as Option 1.
6. Exception Request Coordination	N/A	N/A	Environmental Review Team.	Same as Option 1.	Same as Option 1.
7. Enforcement	Zoning Staff.	Zoning Staff.	Complaint Response Team.	Same as Option 1.	Same as Option 1.
8. Preparation of Farm Management Plan	Prepared by existing staff at the Natural Resources Conservation Service and Loudoun SWCD.	Prepared by existing staff at the Natural Resources Conservation Service and Loudoun SWCD.	N/A	N/A	N/A
9. Soil and Water Quality Conservation Assessment	N/A	N/A	Loudoun SWCD, Cooperative Extension, and DCR	Same as Option 1.	Same as Option 1.
10. Preparation of Forest Management Plan	N/A	Virginia Department of Forestry	N/A	N/A	N/A
11. Review of Floodplain Alterations	Water Resources Team.	Water Resources Team.	N/A	N/A	N/A
12. Flexible Zoning Requirement Review	N/A	Zoning Staff.	N/A	N/A	N/A
13. 50 Foot Management Buffer Reductions	N/A	Zoning Staff	N/A	N/A	N/A
14. Determinations/Interpretations of Regulations	Zoning Staff	Zoning Staff	Deputy Division Chief, Environmental Teams	Same as Option 1.	Same as Option 1.

Comparison between the Current Floodplain Overlay District/Scenic Creek Valley Buffer and the Previous River and Stream Corridor Overlay District/Proposed Chesapeake Bay Preservation Act

COMPARISON FACTORS	FLOODPLAIN OVERLAY DISTRICT (FOD) AND SCENIC CREEK VALLEY BUFFER (SCVB)	RIVER AND STREAM CORRIDOR OVERLAY DISTRICT (RSCOD)	CHESAPEAKE BAY ACT OPTION 1: (RPA = PERRENIAL STREAMS AND WATER BODIES AND CONTIGUOUS NON-TIDAL WETLANDS)	CHESAPEAKE BAY ACT OPTION 2: (RPA = PERRENIAL STREAMS AND WATER BODIES; CONTIGUOUS NON-TIDAL WETLANDS; AND FLOODPLAINS)	CHESAPEAKE BAY ACT OPTION 3: (RPA = PERRENIAL STREAMS AND WATER BODIES; CONTIGUOUS NON-TIDAL WETLANDS; FLOODPLAINS AND ADJACENT STEEP SLOPES)
15. Review of Special Exception Applications	Zoning Staff, Water Resources Team, Environmental Review Team.	Zoning Staff and Environmental Review Team.	Environmental Review Team	Same as Option 1.	Same as Option 1.
16. Review of Conformance to Development Standards	Zoning Staff and Environmental Review Team.	Zoning Staff and Environmental Review Team.	Environmental Review Team	Same as Option 1.	Same as Option 1.
17. Review of Conformance to Restoration/Mitigation Standards	Zoning Staff and Environmental Review Team.	Zoning Staff and Environmental Review Team.	Environmental Review Team	Same as Option 1.	Same as Option 1.
COST TO ENFORCE/IMPLEMENT					
1. Relative Cost to Implement	N/A	High - Intensive mapping. - Intensive implementation. - Less agency and locality support. - Intensive public education required.	Low - Minimal mapping. - Straightforward implementation and minimal conflict with existing requirements. - Abundant agency and locality staff training and support. - Minimal public education required due to regional consistency.	Medium - Minimal mapping. - More difficult to implement due to conflicts with existing FOD requirements. - Reduced agency and locality staff training and support due to inclusion of “Other Lands.” - Increased public education required due to inclusion of “Other Lands.”	High - Intensive mapping - More difficult to implement due to conflicts with existing FOD and Steep Slopes requirements. - Reduced agency and locality staff training and support due to inclusion of “Other Lands.” - Increased public education due to inclusion of “Other Lands.”
2. Implementation assistance provided by DCR	<u>FOD</u> : Yes. <u>SCVB</u> : No.	No.	Yes.	Yes.	Yes.
Acronyms Used in Matrix: BMP: Best Management Practices DCR: Virginia Department of Conservation and Recreation E&S: Erosion and Sediment Control FOD: Floodplain Overlay District FP: Floodplain FSM: Facilities Standards Manual RMA: Resource Management Area RPA: Resource Protection Area RSCOD: River and Stream Corridor Overlay District SCVB: Scenic Creek Valley Buffer SWCD: Soil and Water Conservation District SWM: Stormwater Management					

Chesapeake Bay Act Agricultural Provisions

9VAC10-20-120.9 General Performance Criteria

- Land upon which agricultural activities are being conducted, including but not limited to crop production, pasture, and dairy and feedlot operations, or lands otherwise defined as agricultural land by the local government must have a soil and water quality conservation assessment (conservation plan) conducted that evaluates the effectiveness of existing practices pertaining to soil erosion and sediment control, nutrient management, and management of pesticides, and, where necessary, results in a plan that outlines additional practices needed to ensure that water quality protection is being accomplished consistent with the Act.

All agricultural operations, as defined by the local government, must obtain a conservation plan prepared free of charge through a joint effort by the Loudoun Soil and Water Conservation District, the Virginia Department of Conservation and Recreation, and Virginia Cooperative Extension.

9VAC10-20-130.5.b Development Criteria for Resource Protection Areas

- The RPA buffer may be reduced to 50-feet when at least one agricultural best management practice, which in the opinion of the local soil and water conservation district board, addresses the more predominant water quality issue on the adjacent land – erosion control or nutrient management is being implemented. The best management practice plus the remaining buffer must achieve water quality protection equivalent to the 100-foot buffer. If nutrient management is identified as the predominant water quality issue, a nutrient management plan, including soil tests, must be developed, consistent with the Virginia Nutrient Management Training and Certification Regulations administered by the Virginia Department of Conservation and Recreation.
- The RPA buffer may be reduced to 25-feet when agricultural best management practices which address erosion control, nutrient management, and pest control, are being implemented on the adjacent land. A nutrient management plan, including soil tests, must be developed, consistent with the Virginia Nutrient Management Training and Certification Regulations administered by the Virginia Department of Conservation and Recreation. This collection of best management practices plus the remaining buffer is presumed to achieve water quality protection equivalent to the 100-foot buffer.

The 100-foot buffer may be reduced to 50-feet or 25-feet for agricultural operations upon implementation of agricultural best management practices. A nutrient management plan prepared free of charge by the Virginia Department of Conservation and Recreation may be required for the 50-foot reduction and is required for the 25-foot reduction.

Zoning Districts That Specify Gross Density

January 23, 2009

Zoning Administration has interpreted the Revised 1993 Loudoun County Zoning Ordinance (“the Ordinance”) to permit the land area in the major floodplain portion of the Floodplain Overlay District (FOD) to count when calculating density if the Ordinance specifies “gross density” or specifies that density is based on gross acreage. (The land area in the minor floodplain portion of the FOD is always allowed to count when calculating density.) The following zoning districts/ development options specify gross density:

- 2-100 AR-1 (Agricultural Rural-1)
 - Principal/Subordinate Subdivision Option
 - Cluster Subdivision Option
- 2-200 AR-2 (Agricultural Rural-2)
 - Principal/Subordinate Subdivision Option
 - Cluster Subdivision Option
- 2-300 A-10 (Agriculture)
 - Cluster Development
- 2-500 CR-1 (Countryside Residential-1)
 - Cluster option
 - Compact Cluster Development Option
- 2-600 CR-2 (Countryside Residential-2)
 - Compact Cluster Development Option
- 2-700 CR-3 (Countryside Residential-3)
 - Compact Cluster Development Option
- 2-1000 JLMA-1 (Joint Land Management Area-1)
- 2-1105 JLMA-2 (Joint Land Management Area-2)
- 2-1200 JLMA-3 (Joint Land Management Area-3)
- 2-1300 JLMA-20 (Joint Land Management Area-20)
- 2-1400 TR-10 (Transition Residential-10)
- 2-1500 TR-3 (Transition Residential-3)
- 2-1600 TR-2 (Transition Residential-2)
- 2-1700 TR-1 (Transition Residential-1)

Zoning Districts That Specify Gross Density

January 23, 2009

- 3-100 R-1 (Single Family Residential)
 - Cluster Developments reducing lot size up to 20%
 - Cluster Development reducing lot sizes 20% to 50%
- 3-200 R-2 (Single Family Residential)
 - Traditional Design Option
 - Cluster Development reducing lot sizes up to 20%
 - Cluster Development reducing lot sizes from 20% to 50%
- 3-300 R-3 (Single Family Residential)
 - Traditional Design Option
 - Cluster Development reducing lot sizes up to 20%
 - Cluster Development reducing lot sizes from 20% to 50%
- 3-400 R-4 (Single Family Residential)
 - Traditional Design Option
 - Cluster Development reducing lot sizes up to 20%
 - Cluster Development reducing lot sizes from 20% to 50%
- 3-500 R-8 (Single Family Residential)
- 3-600 R-16 (Townhouse/Multifamily Residential)
- 3-700 R-24 (Multifamily Residential)
- 4-900 PD-CV (Planned Development-Countryside Village)
- 4-1000 PD-TREC (Planned Development-Transit Related Employment Center)
- 4-1100 PD-TRC (Planned Development-Transit Related Center)

COUNTY OF LOUDOUN
DEPARTMENT OF BUILDING AND DEVELOPMENT
MEMORANDUM

DATE: January 12, 2009

TO: Alex Blackburn, Deputy Division Chief, Environmental Team

FROM: Susan Breen, Grants Administrator

SUBJECT: Information on Grant Funding Trends

The downsizing of opportunities for grant funding has not just been a result of the economic problems of 2008. This trend began earlier in this decade as many of the federal and state grantor agencies' budgets were cut. Grant funding has steadily become a smaller percentage of the Gross Domestic Product (GDP) for several years. The majority of grant related programs need increased annual funding to sustain the continued successes of the programs. Many of these programs have had to cut back on services due to the shortage of continued grant funding.

With this reduction in funding the focus of the funding opportunities has narrowed. Where there once were many opportunities across the nation that encouraged water resource programs (or grants in other programs – health, social services, etc.) the current opportunities are narrowing with many programs targeting only specific geographic areas. In the case of water resource funding many of the NOFAs are written for specific regions or bodies of water, i.e. the Chesapeake Bay.

The Virginia Department of Conservation and Recreation temporarily suspended their grants programs due the 2002 General Assembly budget cuts. DCR does not indicate when this suspension will end but their website refers the user to other programs. Unfortunately, many of these programs have been scaled back or narrowed in scope.

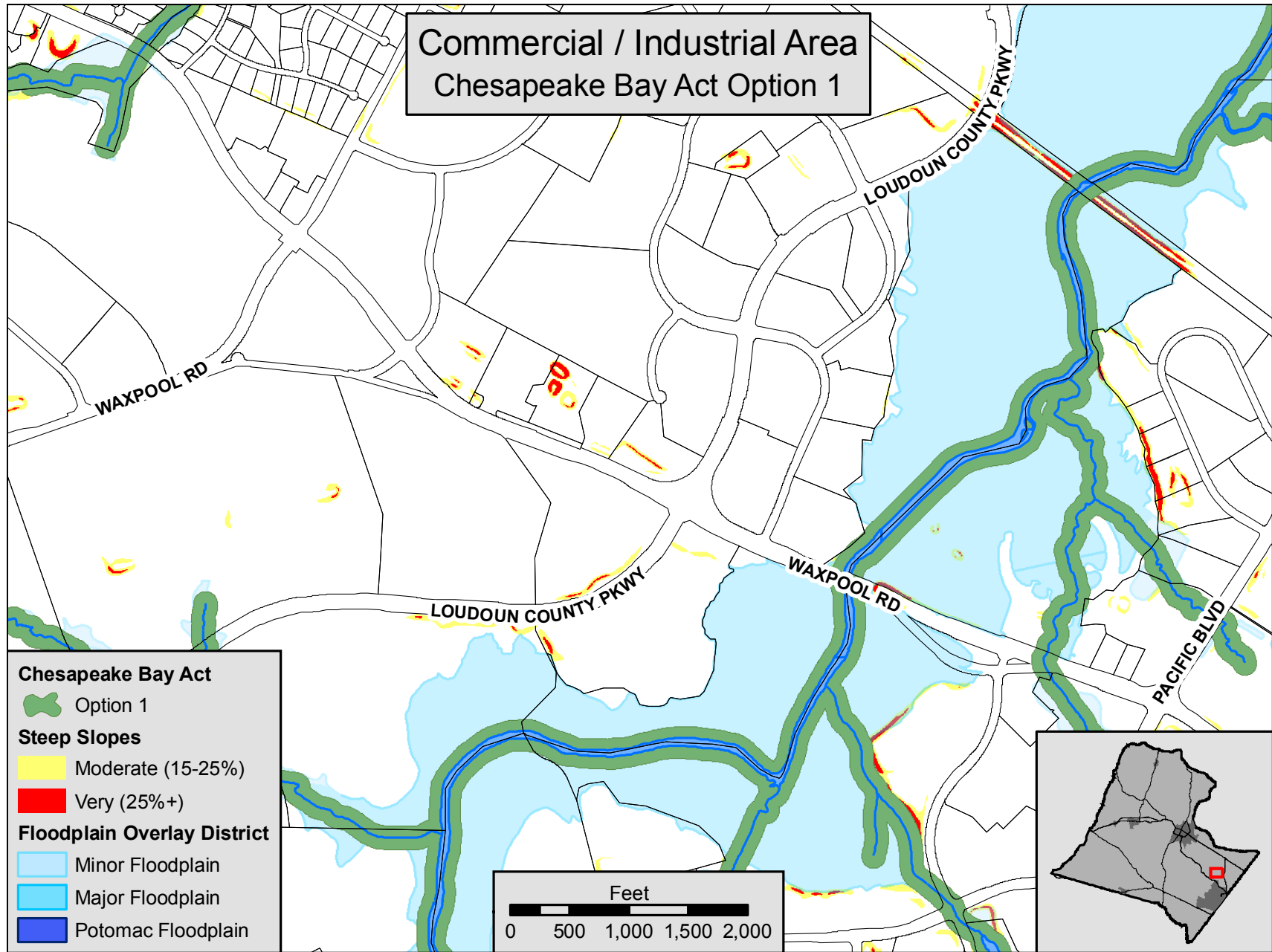
As the funding opportunities have decreased the competition for the available funds have increased. With stiffer competition the Department will need to be more aggressive in grant searches. Rather than seeing if we fit an opportunity when the NOFA is released, staff needs to develop priorities for grant funded projects and develop outlines for future projects. By laying this groundwork the development of a competitive grant proposal in the brief turn around time from NOFA release to application deadline will not be as challenging to meet.

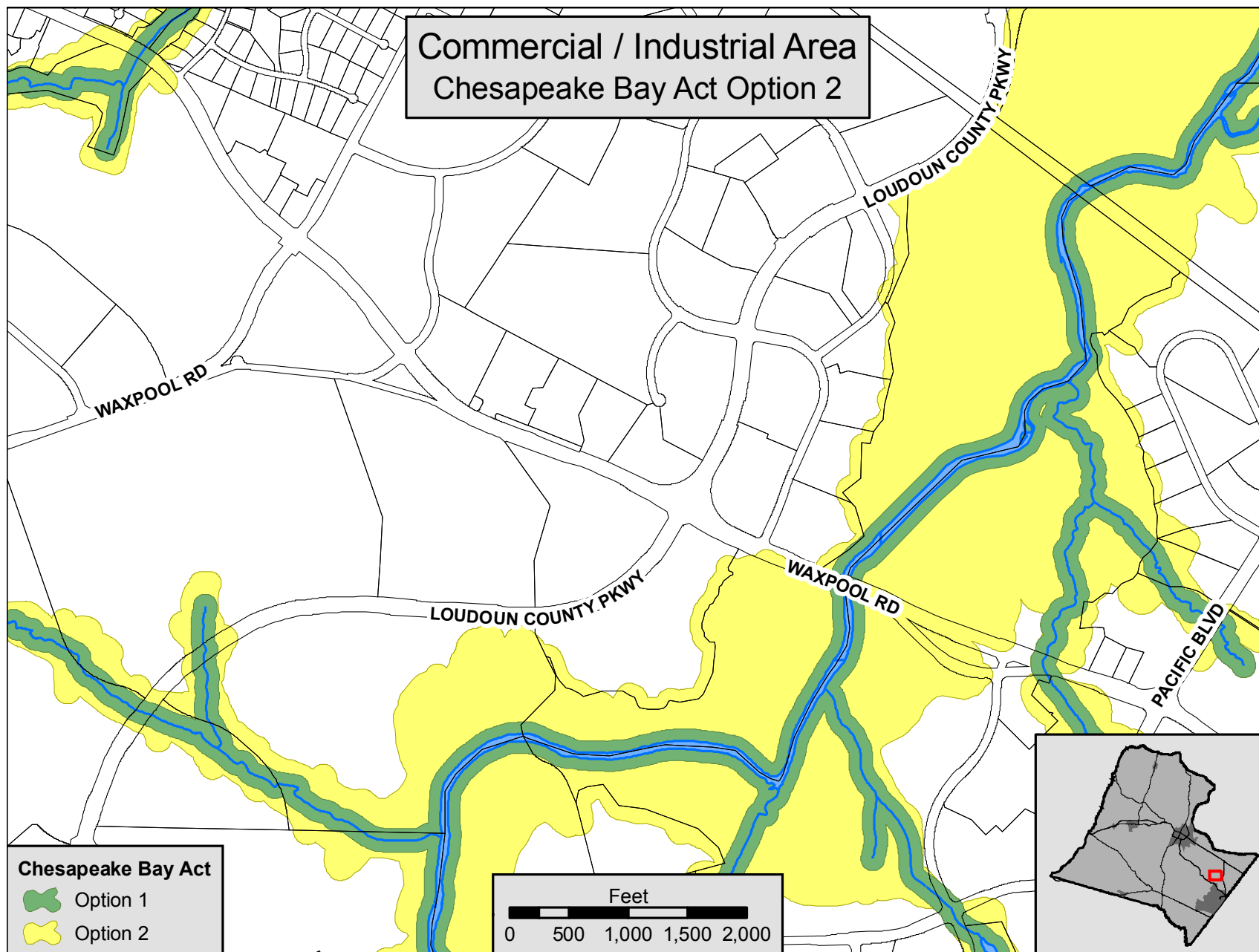
This type of pre-proposal outline file will allow us to have more time to determine what the department goals and objectives are, number of man hours to successfully complete the project, and how we can provide a grantor agency with a finished product they can promote on a regional or national scale. This last part is critical in making us more competitive during these tough grant times. As we saw during our visit to the EPA in July, they were very pleased with the progress and

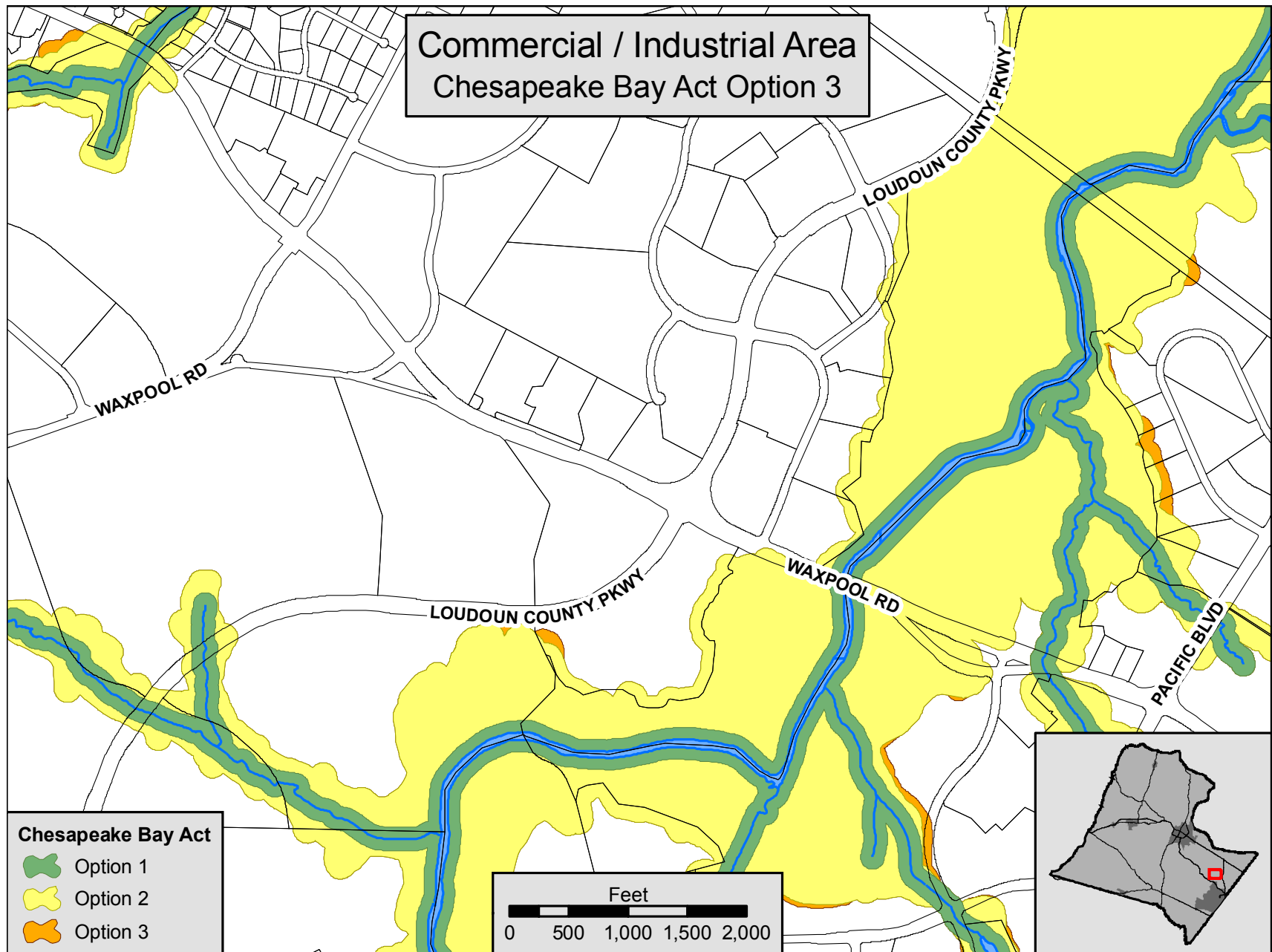
successes of our Wetlands Grant Program and encouraged us to share with our counterparts in other areas. They also intend to share our program with other grantees.

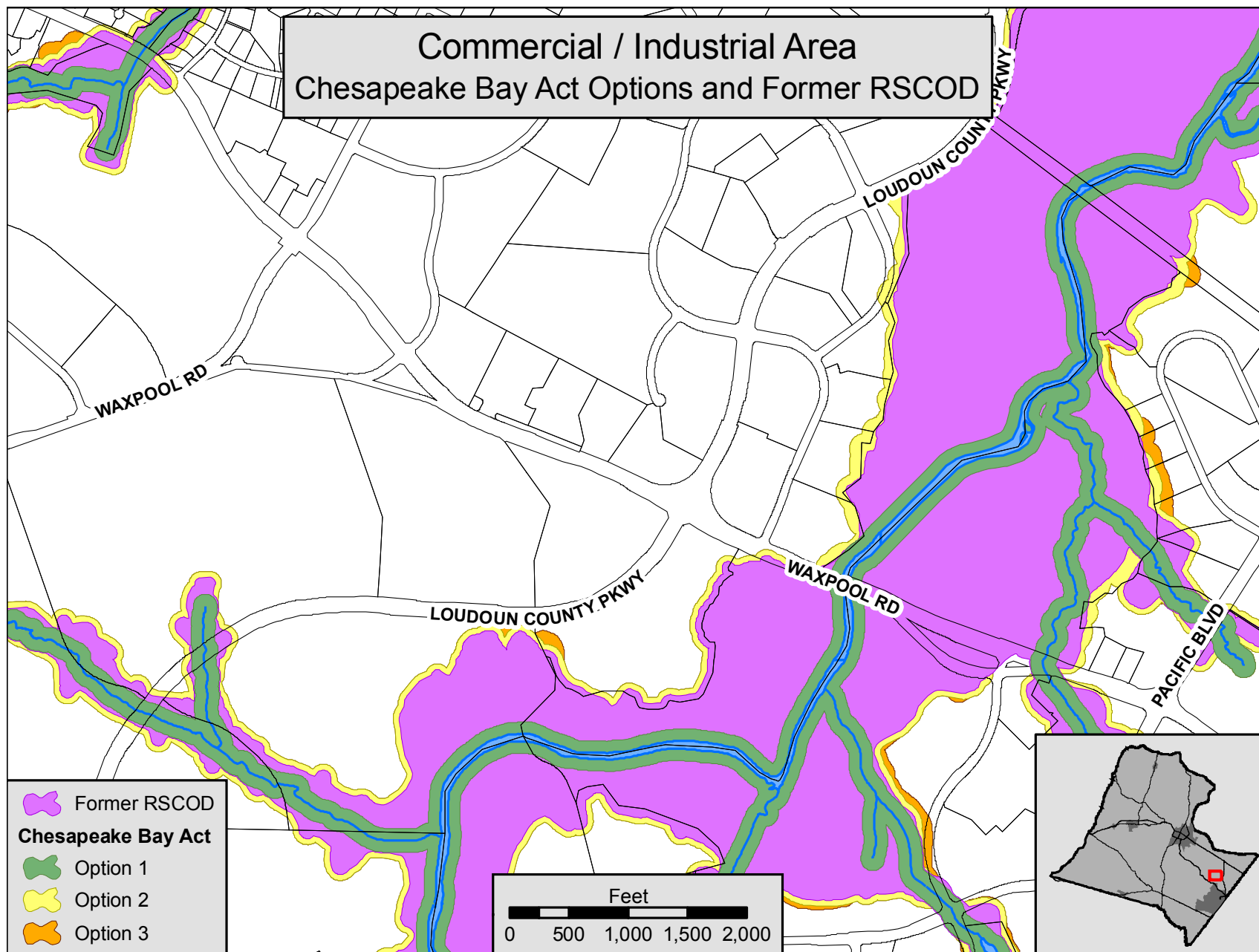
Given this narrowing of focus it does appear that there will be more Chesapeake Bay funding opportunities for us to pursue in the near future rather than in more generalized programs. However, the current programs offered may push us toward stepping out of our comfort zone and taking a more facilitative role in a regional collaborative effort. As an example, the US7917 Local Government Advisory Committee Support and Education and Facilitation Services to Support Local Government Implementation of Nutrient and Sediment Pollution Load Reduction (Chesapeake Bay) - FY 2009 NOFA that was distributed for staff review.

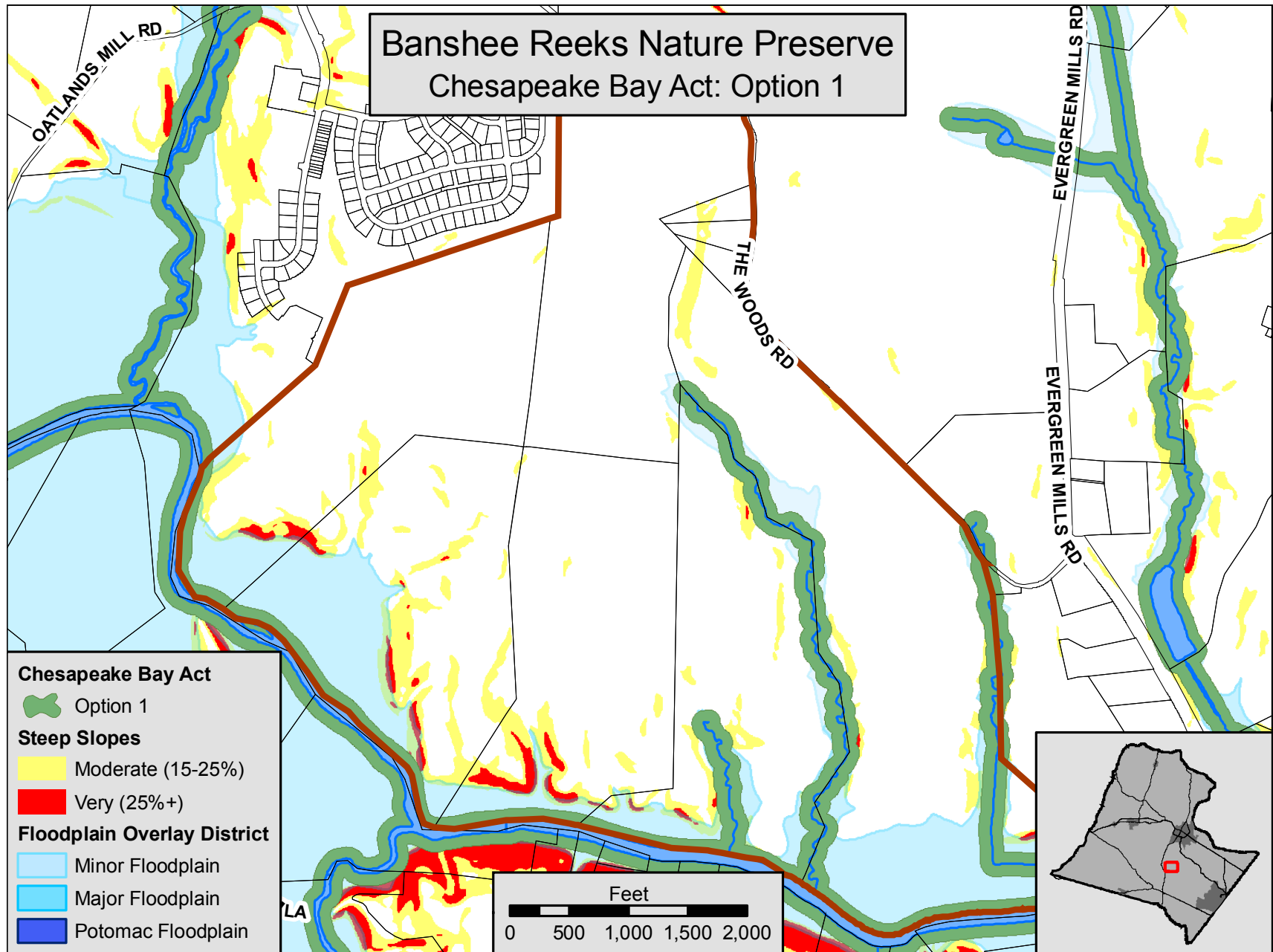
Please let me know if you need more specific information on the current funding opportunities.

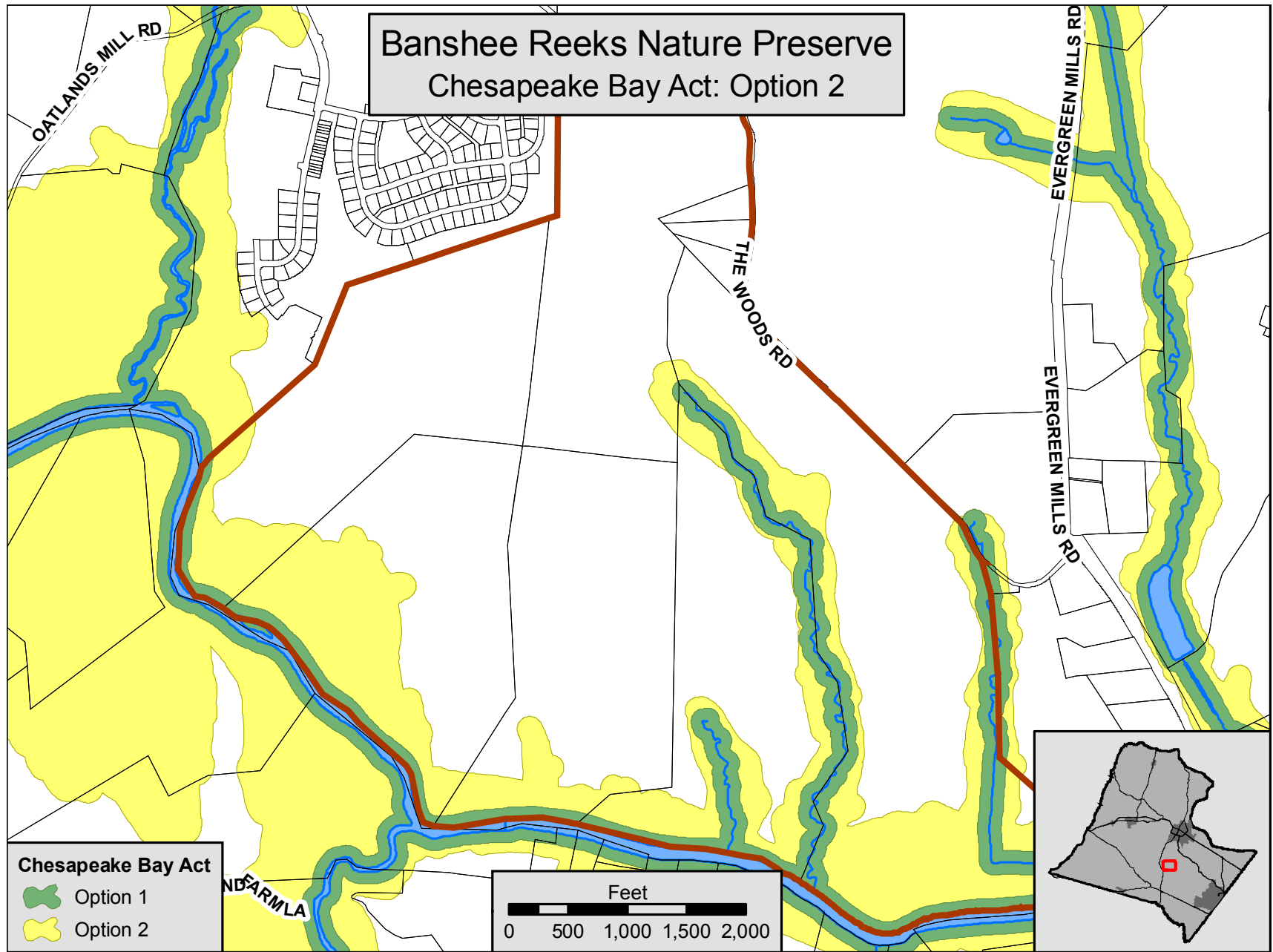


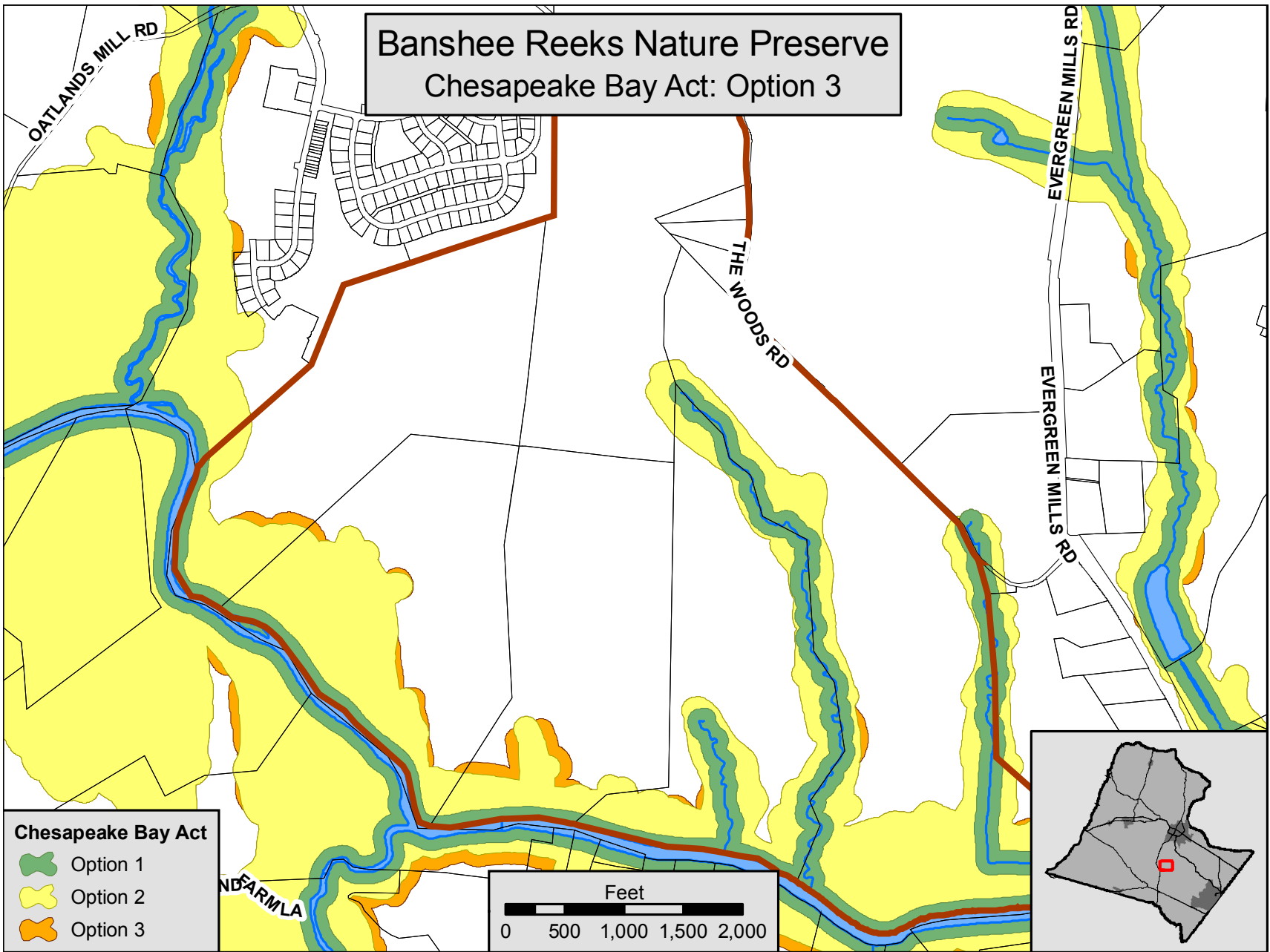


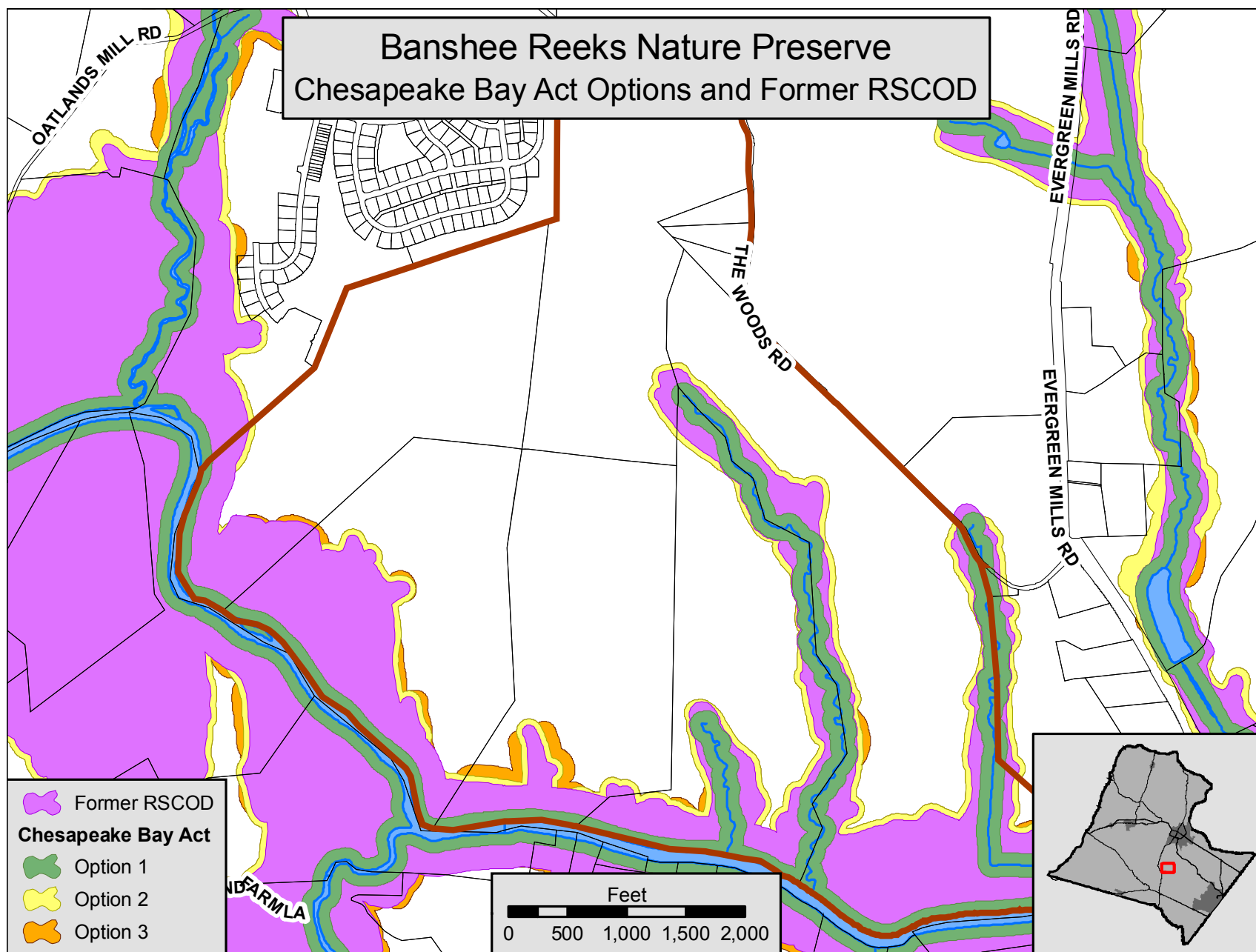


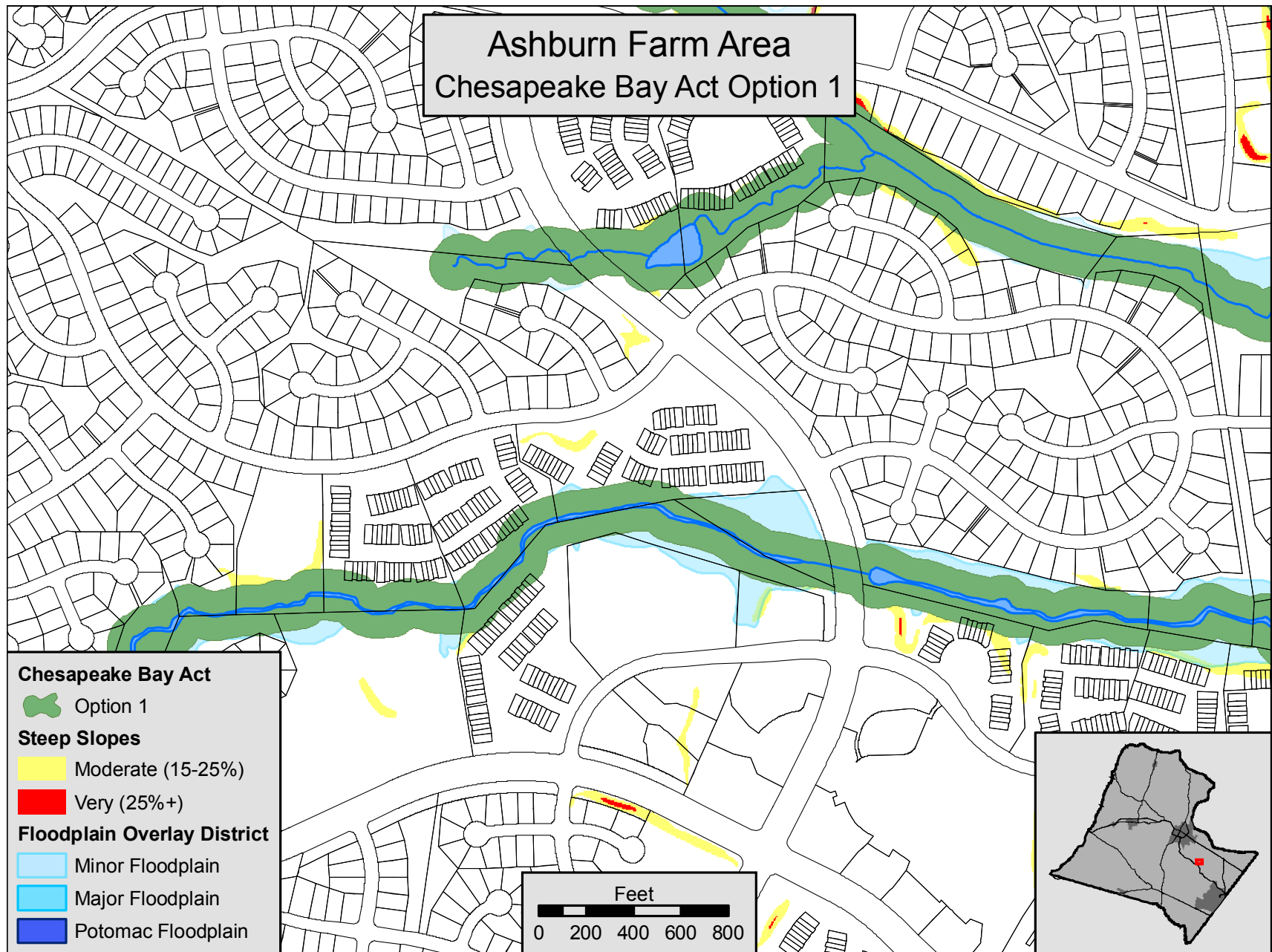


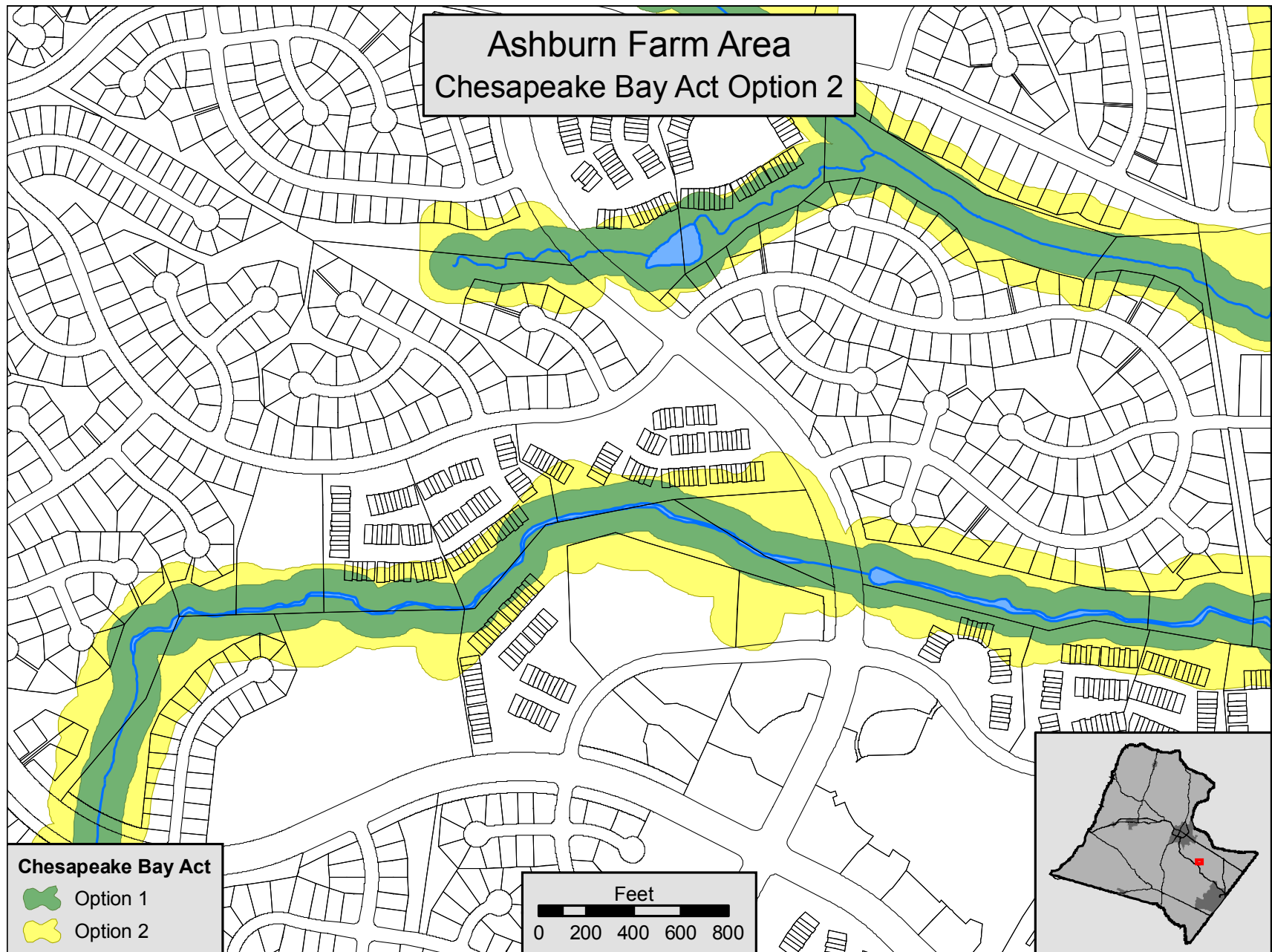


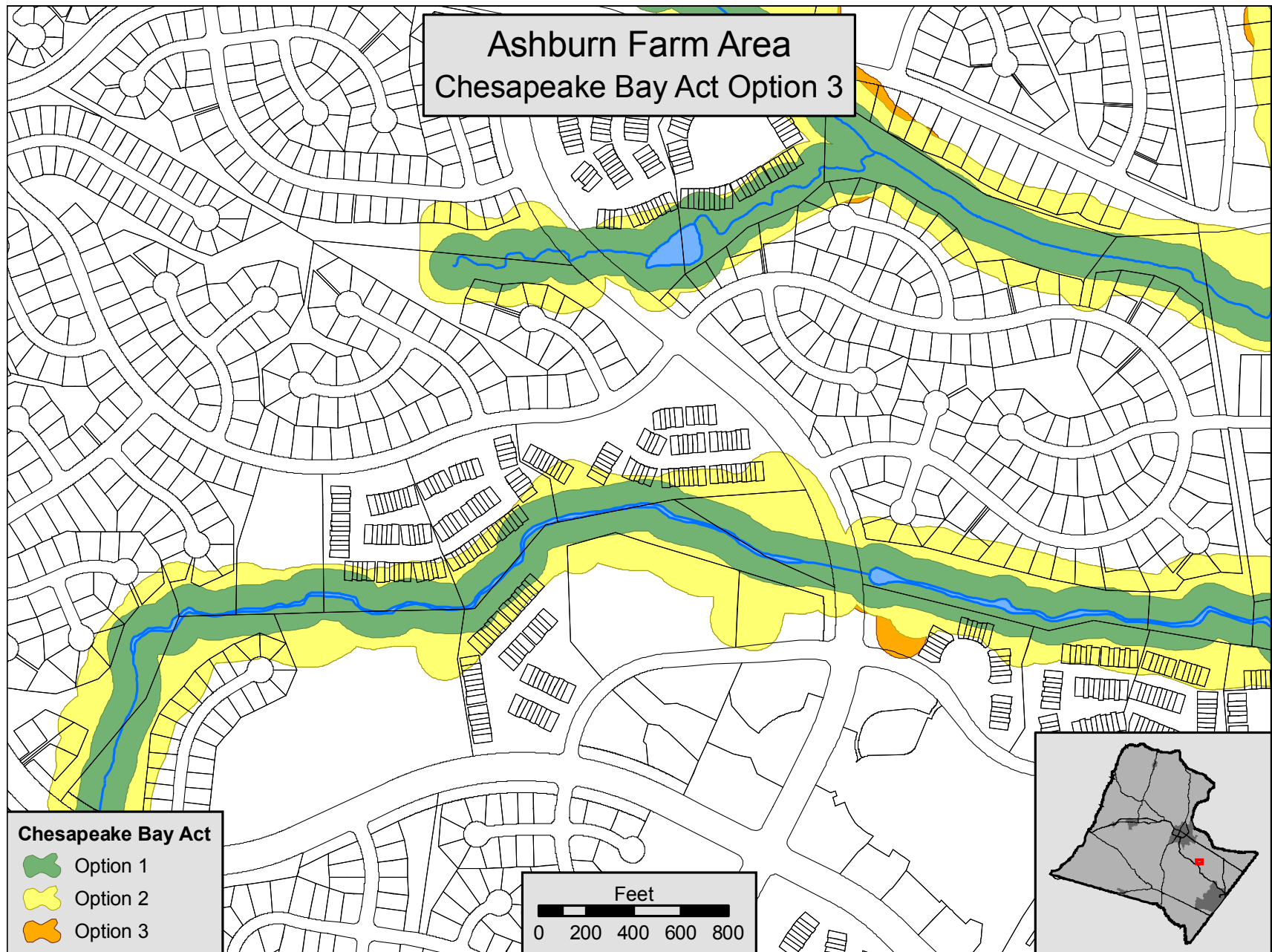


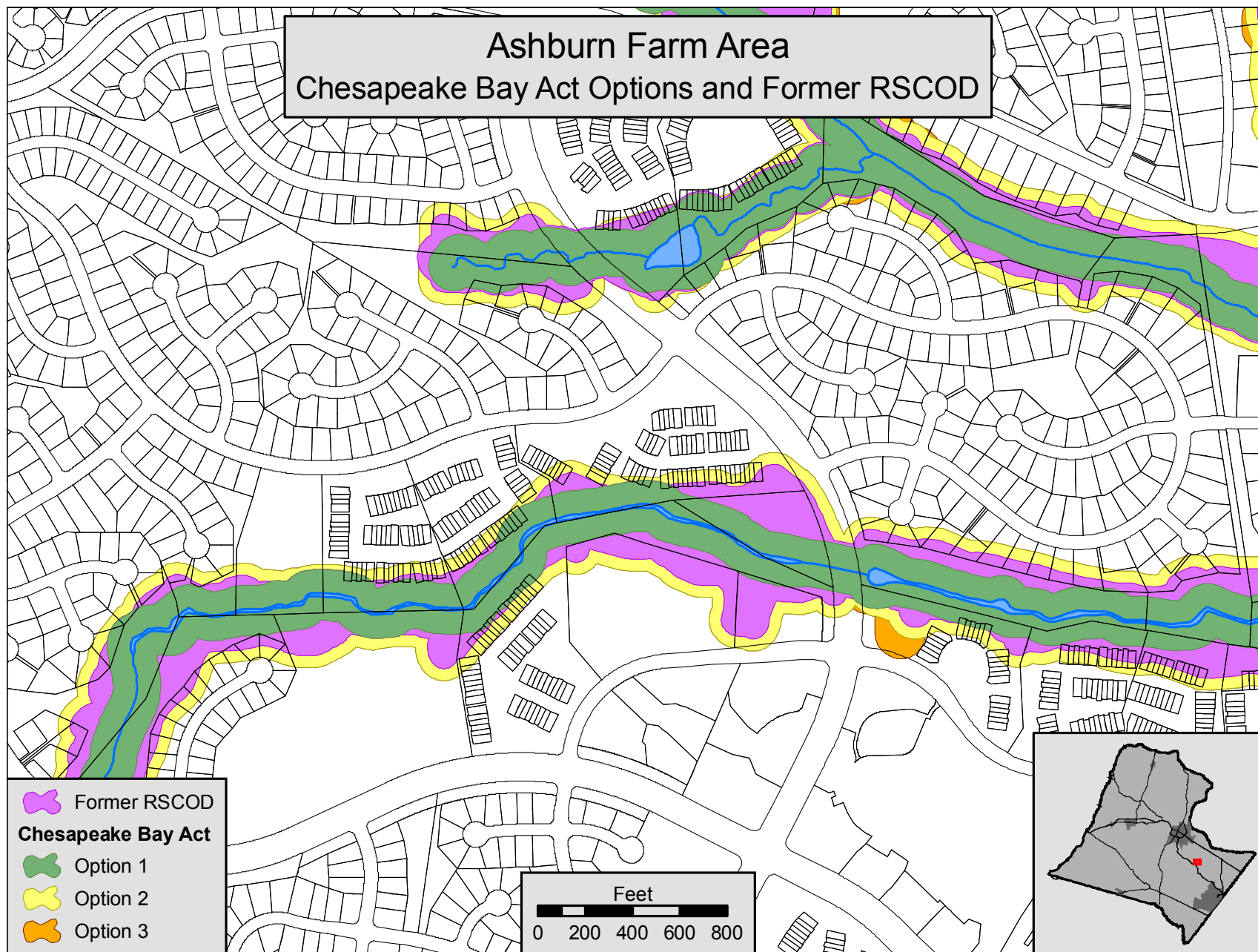


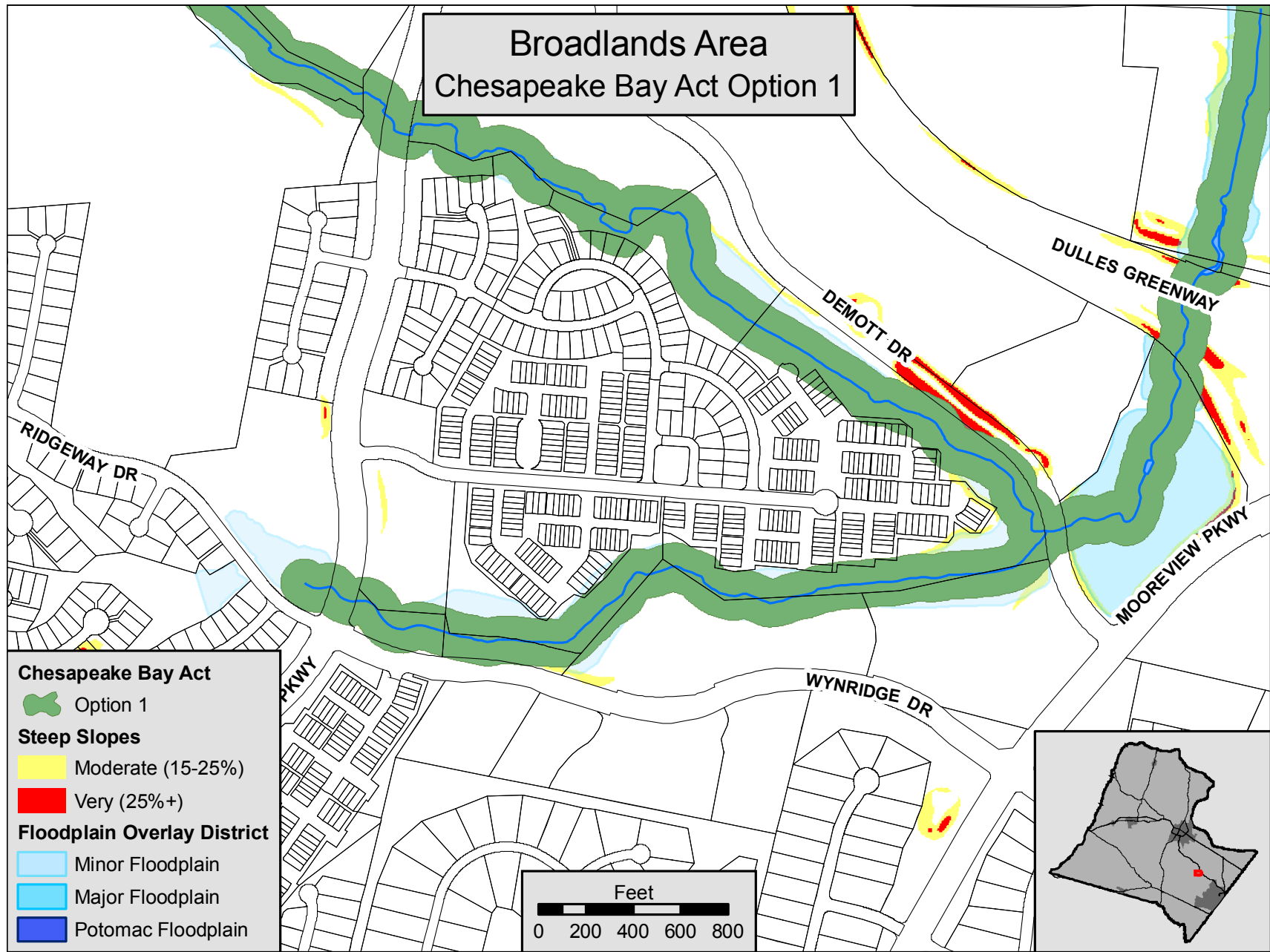


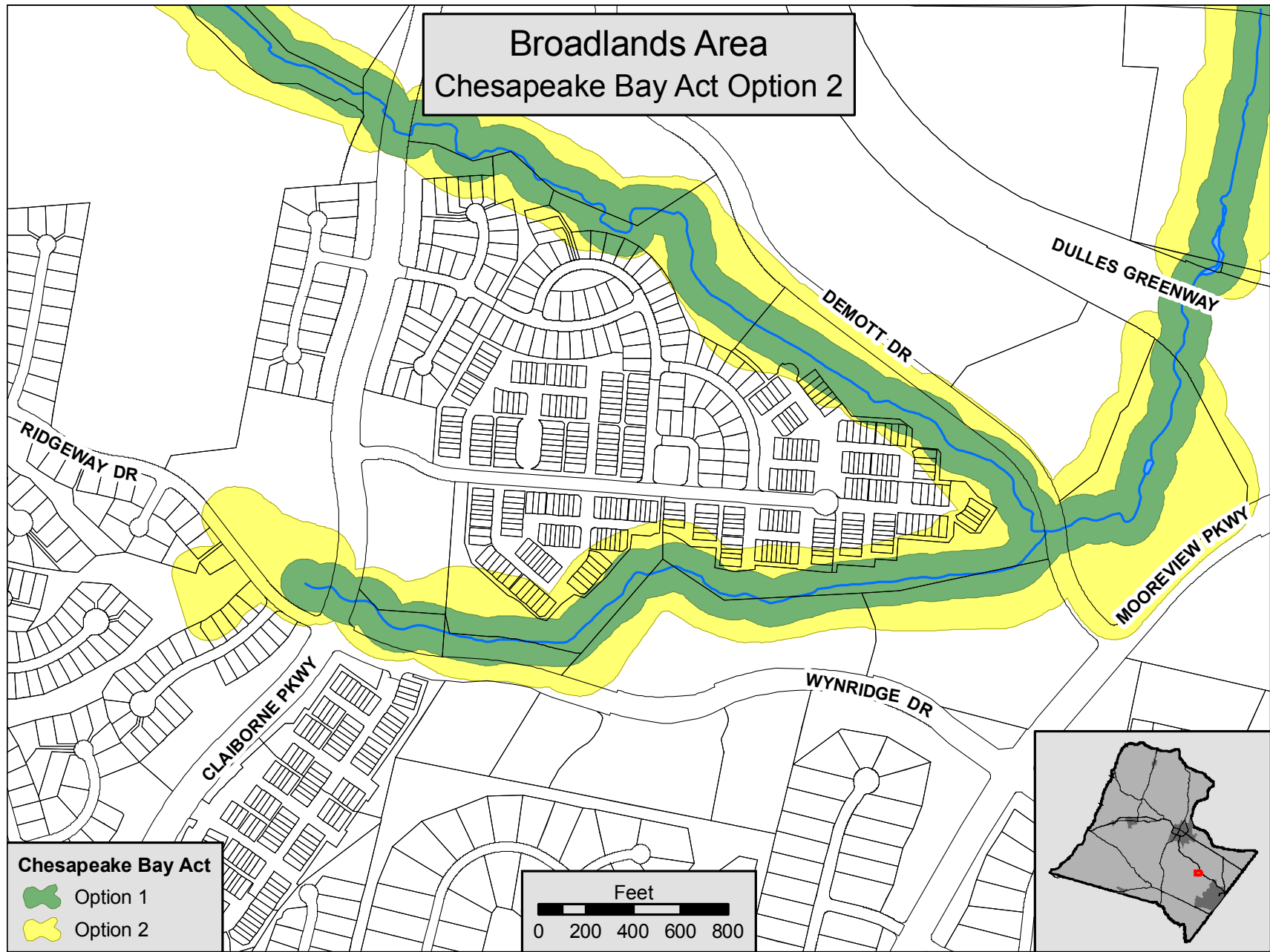


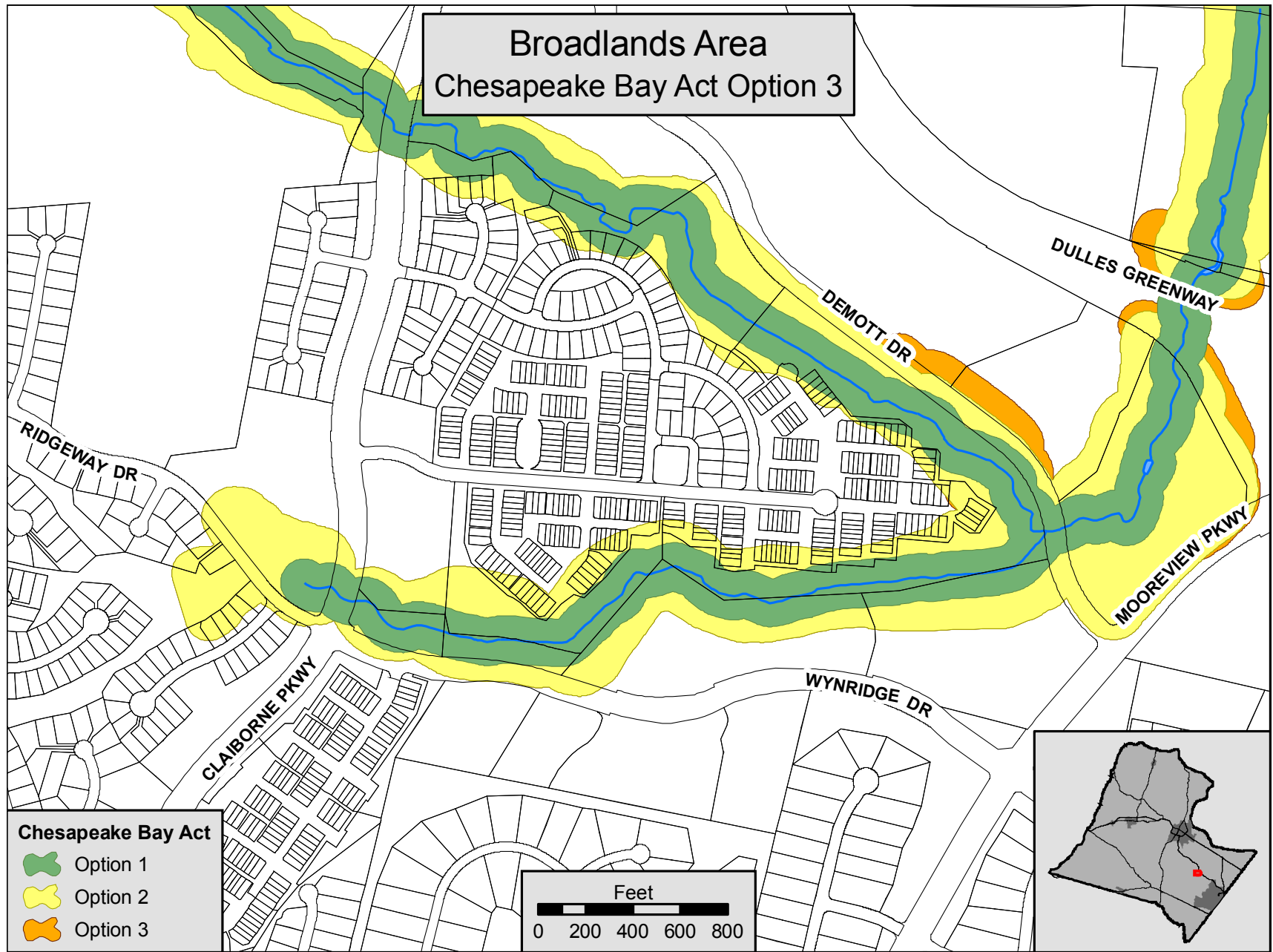


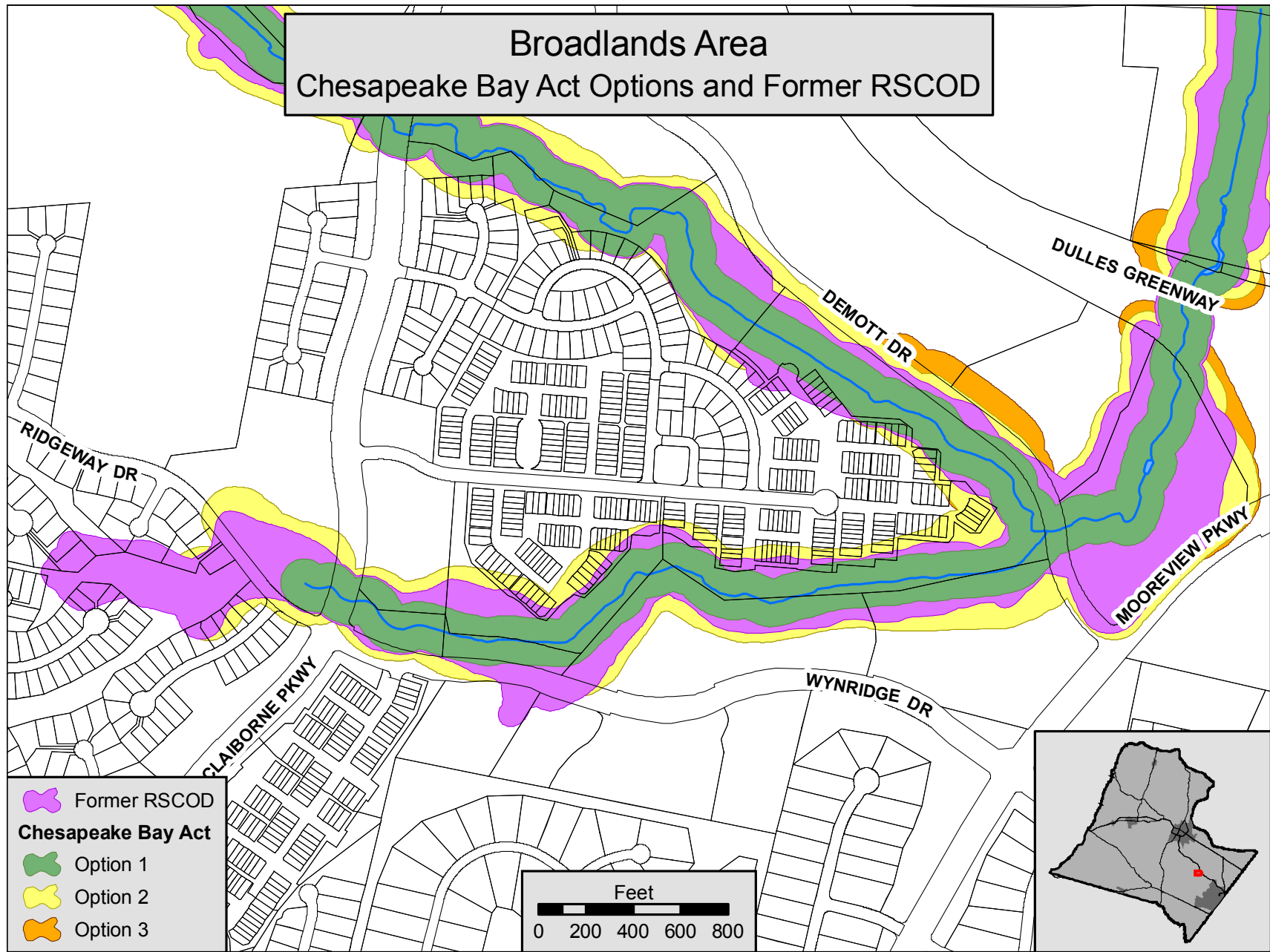












ATTACHMENT 6

Riparian Forest Buffers Linking Land and Water

*The conservation and restoration
of streamside forests in the
Chesapeake Bay watershed*





About the Chesapeake Bay Program

The Chesapeake Bay Program is a unique regional partnership that has been leading and directing the restoration of the Chesapeake Bay since 1983.

The Chesapeake Bay Program partners include the states of Maryland, Pennsylvania, and Virginia; the District of Columbia; the Chesapeake Bay Commission, a tri-state legislative body; the U.S. Environmental Protection Agency (EPA), representing the federal government; and participating citizen advisory groups.

Since its inception, the Chesapeake Bay Program's highest priority has been the restoration of the Bay's living resources – its finfish, shellfish, other aquatic life, Bay grasses, and wildlife. Although much progress has been achieved, restoration goals are continually challenged by the needs of a growing human population. Because of this, the work of the Chesapeake Bay Program includes a growing emphasis on beneficial land use, such as riparian forest buffers.



Publication prepared by the Alliance for the Chesapeake Bay.
Cover photo by Heather Richards, Potomac Conservancy.

July 2004

Riparian Forest Buffers

Linking Land and Water

*The conservation and restoration
of streamside forests in the
Chesapeake Bay watershed*

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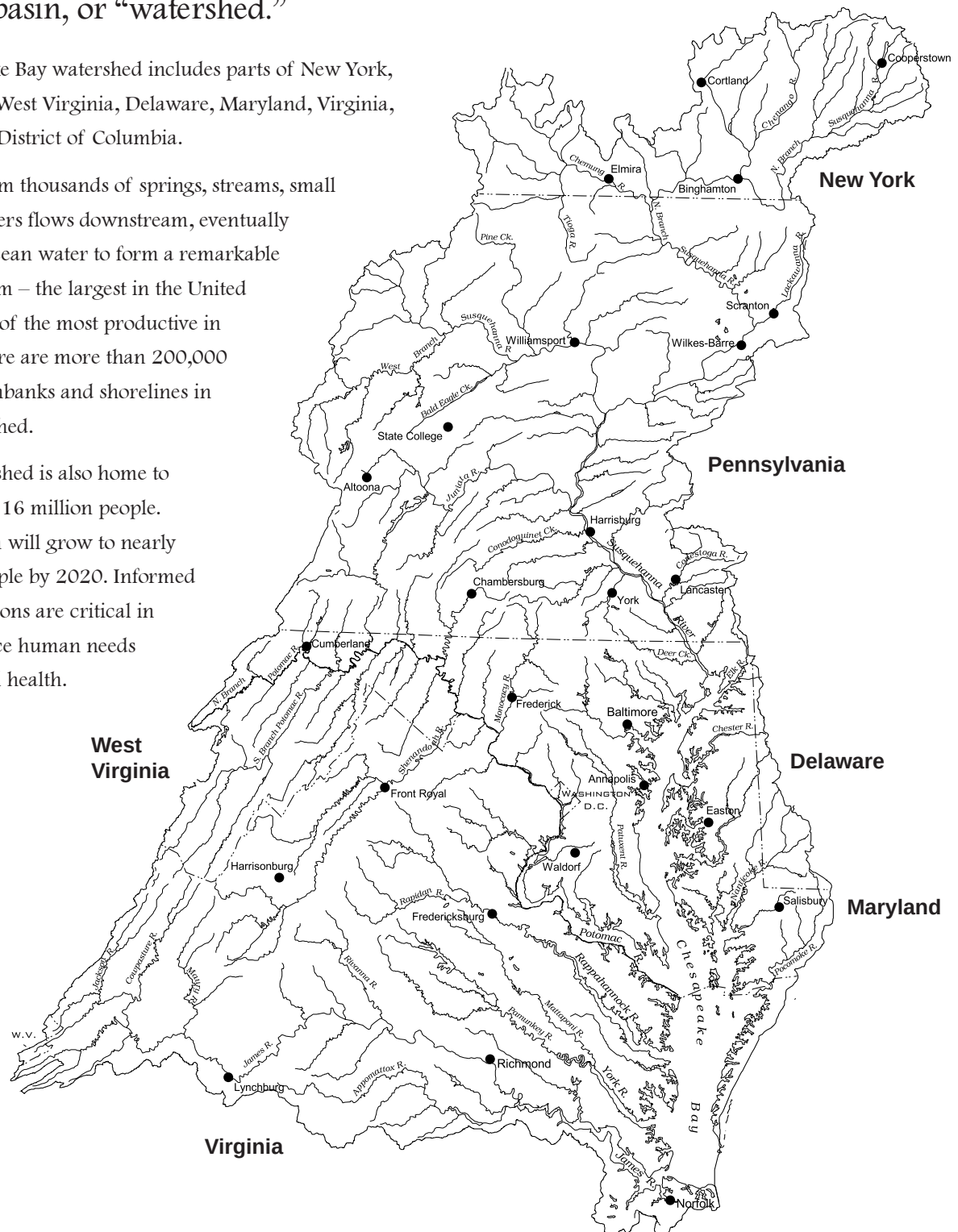
The Chesapeake Bay Watershed

The Chesapeake Bay receives its water from a 64,000 square-mile drainage basin, or “watershed.”

The Chesapeake Bay watershed includes parts of New York, Pennsylvania, West Virginia, Delaware, Maryland, Virginia, and the entire District of Columbia.

Freshwater from thousands of springs, streams, small creeks, and rivers flows downstream, eventually mixing with ocean water to form a remarkable estuarine system – the largest in the United States and one of the most productive in the world. There are more than 200,000 miles of streambanks and shorelines in the Bay watershed.

The Bay watershed is also home to approximately 16 million people. The population will grow to nearly 18 million people by 2020. Informed land-use decisions are critical in order to balance human needs with ecological health.



Everyone in the Chesapeake Bay watershed lives just a few minutes from one of the many streams and rivers that drain into the Bay.

"It is a beautiful and
delightful land with
clear rivers and brooks
running into a
faire Bay ... there is
little grass, but for that
which grows in the
marshes, for this
country is completely
overgrown with trees."

— Captain John Smith
1607



Photo: Sally Claggett, US Forest Service

Introduction

FOUR CENTURIES AGO, Europeans arrived on the shores of the Chesapeake Bay to find a vast forest covering the land. This forest was an important regulator of the Bay's environment—a "living filter." The forest was dense, varied, and filled with wildlife. Trees lined nearly every stream and shoreline from the northern boundary, which would become New York State, to the southern edge, in present-day Virginia. This landscape was destined for dramatic change.

In the centuries following European arrival, agriculture expanded. Towns and cities flourished. The many demands of a growing population strained the Bay's resources and depleted its forests. Today, less than 60 percent of the watershed is forested, and much of the remaining forest is highly fragmented. Meanwhile, the population continues to grow, putting additional development pressure on forestlands.

The decline in forest coverage is related to the decline of water quality in the Bay itself. The most critical connection between the two can be found in "riparian areas"—land that stands at the water's edge.

Riparian lands provide a wealth of ecological benefits. For example, trees along the shoreline help to filter pollutants and sediment from runoff and groundwater before they enter the waterways. Trees also provide important habitat benefits for aquatic creatures. Fallen leaves and branches offer food and

riparian area • the land adjacent to a body of water, such as a stream, river, marsh or shoreline; forms the transition between the aquatic and terrestrial environments

shelter, while shade helps to regulate water temperature and keep oxygen in the water.

When riparian forests help to protect the streams and rivers in the Bay watershed, these benefits are realized downstream in the Chesapeake Bay. With more than 200,000 miles of streambanks and shoreline in the Bay watershed, riparian forests are vital for the success of the Bay restoration effort. Without them, the Bay and its rivers are increasingly susceptible to decline.

Since 1996, the Chesapeake Bay Program has been actively pursuing the restoration and protection of riparian forests in the Bay watershed. Working across state boundaries, this effort has set and achieved numerous restoration goals and developed innovative programs providing landowner incentives, outreach, education and training, and community partnerships. Maintaining this progress is critical. Today, the Chesapeake Bay Program is working toward an expanded set of goals that will further strengthen the quantity and quality of forest buffers and help protect Bay resources for future generations.

Functions & Benefits of Riparian Forest Buffers

IN RECENT YEARS, scientists in the Chesapeake Bay region and elsewhere have documented how riparian forest buffers can help to restore the Bay. Their research also provides a broader understanding of the features that make a forest buffer most effective.

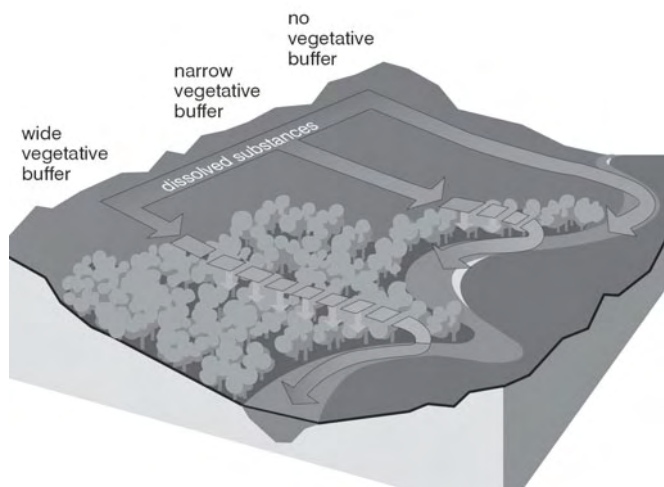
Riparian forest buffers offer enormous benefits to life on the land and in the water. These streamside systems:

- Filter pollution
- Sustain aquatic habitat
- Stabilize floodplains
- Transform and store nutrients
- Provide shade
- Provide wildlife habitat

There are few restoration initiatives that address both water quality and habitat needs so directly.

Filter Pollution

Riparian forest buffers capture and filter rain water and sediment that wash off the land. The roughness of the vegetation and the forest floor slows runoff and allows it to infiltrate into the soil, filtering sediment from the water before it reaches local



Riparian forest buffers filter out pollutants before they reach the stream. The wider the buffer, the more effectively it reduces pollution.



Photo: Mike Land, National Park Service

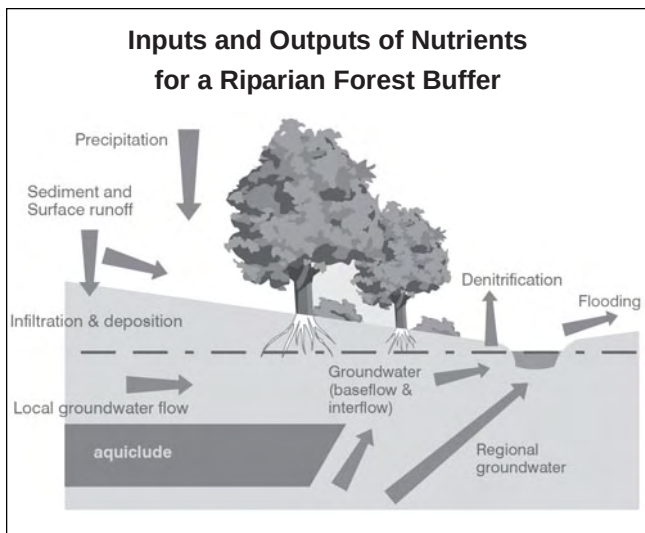
streams and rivers. Serving as a last “line of defense,” buffers remove pollutants such as nitrogen in the water and phosphorus bound to soil particles.

In fact, riparian forests can reduce nutrient and sediment inputs to a water body by 30 to 90 percent. The capacity of forests to absorb and store runoff can be 10 to 15 times higher than grass and four times higher than a plowed field. The wider the buffer, the more effectively it reduces pollution.

Transform & Store Nutrients

Fertilizers and other pollutants travel to a stream through surface and ground water. Riparian forests act like pumps—taking up water and nutrients through their root system, storing them in the biomass of the tree, and releasing moisture into the air.

Streamside forests are also very effective in capturing and transforming nitrogen and other pollutants into less harmful forms, mostly due to the high level of chemical and biological activity in the wet, organic, carbon-rich soil. Through a process called “denitrification,” soil bacteria convert nitrate to a harmless nitrogen gas which is released into the atmosphere instead of polluting local streams.



Riparian forest buffers filter, transform, and store nutrients, while stabilizing floodplains.

Stabilize Floodplains

Healthy, wooded riparian vegetation helps stabilize streambanks and reduce erosion. The root system holds soil together, while both the stems and roots help protect banks by deflecting and reducing streamflow velocity during floods. Floodplain forests can lessen effects of flooding downstream.

Provide Shade

Riparian forests benefit fish and other organisms by improving the quality of nearby waters through shading. In summer, the leaf canopy helps maintain cooler, more even temperatures, especially on small streams. Cooler water reduces stress on fish and other creatures and holds more oxygen, encouraging the

growth of diatoms, beneficial algae, and aquatic insects. A few degrees can have a major effect on water quality and the survival of aquatic organisms.

Sustain Aquatic Habitat

Leaves fall into buffered streams and are trapped by woody debris and rocks. They provide food and habitat for insects, amphibians, crustaceans, and small fish which in turn form the food chain for fresh water streams.



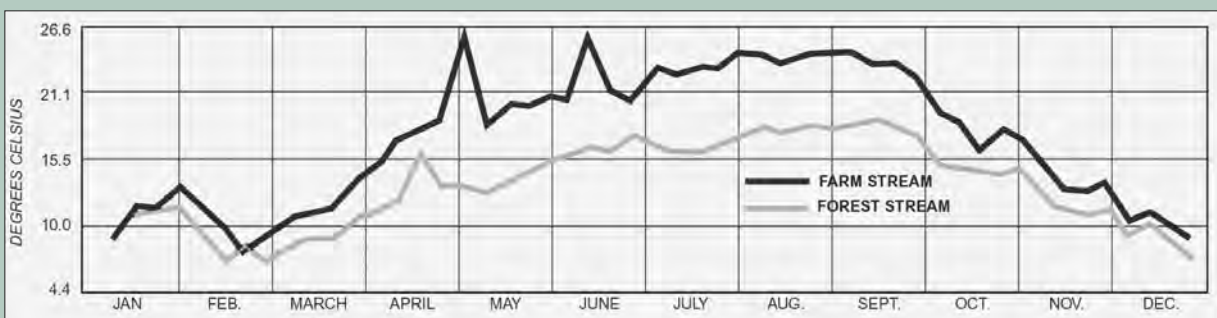
Photo: Chesapeake Bay Program

Leaf detritus supplies up to 75 percent of the organic food base in shaded streams. Woody debris also creates habitat structure and cover for fish and their food supply. When trees are removed from a stream, a wide range of species that depend on them are lost as well. Fish do “grow on trees.”

Provide Wildlife Habitat

More than half of all species on earth rely on the interwoven layers of habitat provided in riparian areas and the availability of food, water, and diversity of shelter all within a small area. The zone of transition from streamside to upland is home to a multitude of important plant and animal species. In addition to permanent habitat, continuous stretches of riparian forest also serve as valuable corridors for migrating wildlife. These multiple benefits are especially enhanced when the forest is composed of native trees with a diversity of age and species.

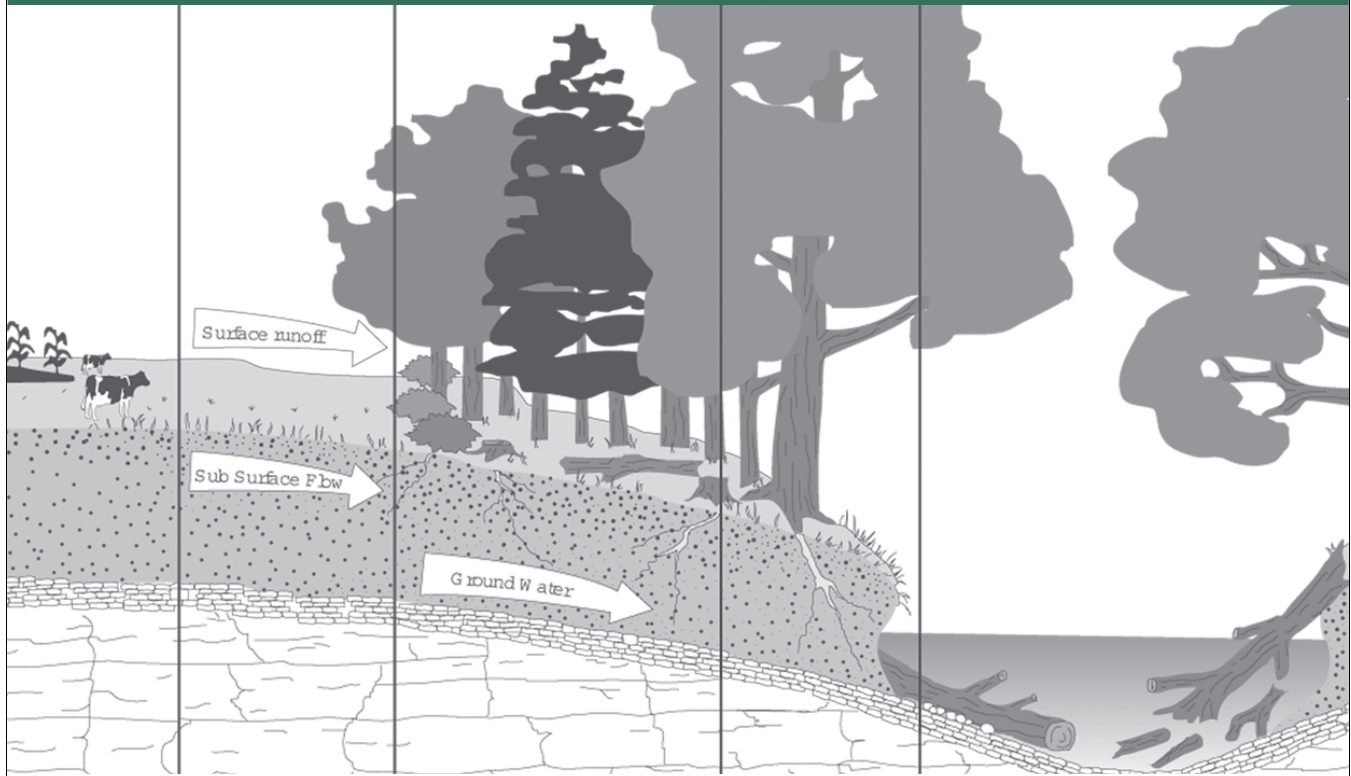
Weekly Maximum Temperature for Farm and Forest Streams



Shade provided by riparian forest buffers reduces stream temperatures and enhances aquatic habitat.

The Three-Zone Riparian Forest Buffer

The three-zone buffer system is a model riparian system designed to achieve better water quality and protect the stream, along with other landowner objectives. A three-zone riparian forest buffer may not be necessary or achievable in every setting, but it provides a useful way to understand the functions and management of a forest buffer system. Riparian buffers will vary in character, size, and effectiveness based on the environmental setting, management, and landowner objectives.



Cropland/ Pastureland/ Developed Areas	Zone 3 GRASS	Zone 2 MANAGED FOREST	Zone 1 UNDISTURBED FOREST	Streambottom/Channel
- For cropland: sediment, fertilizer, and pesticides are carefully managed. - For pastures: fencing, crossings, designed watering facilities, and proper grazing are practiced. - For developed areas: sediment control and stormwater management practices are used.	<i>Supports Zones 1 & 2</i> Functions: - Controls runoff - Disperses flow - Traps sediments - Filters suspended solids - Uses/transforms nutrient runoff Management: - Periodic harvesting may be conducted to control vegetative regrowth and redistribution of sediment build-up	<i>Critical to Nutrient Removal</i> Functions: - Removes sediment and nutrients from runoff and subsurface flows through a number of natural processes including filtration, deposition, plant uptake, and denitrification Management: - Periodic harvesting is acceptable to remove nutrients sequestered in tree stems and branches and to maintain nutrient uptake through vigorous tree growth	<i>Critical to Habitat</i> Functions: - Provides leaf and wood debris to the stream - Helps maintain lower water temperature - Stabilizes streambank Management: - Tree removal generally permitted only for streambank stability	- Woody debris provides fish habitat and channel structure. - The biological community in healthy forested streams processes nutrients and other chemicals within the channel itself, reducing pollution from upstream. - Forested streams are generally wider than meadow streams, providing more active surface area for aquatic life to flourish.

Maximizing the Benefits of a Forest Buffer

LINKING LAND AND WATER, riparian areas serve as a “circulatory system” for the Chesapeake Bay watershed. As the natural riparian vegetation in the Bay region, forests provide a number of benefits to streams in any location. The more forest cover that exists in a watershed, the more effective riparian forests can be. However, the magnitude of benefits delivered by a riparian forest buffer depends on site-specific factors. The location, width, and continuity of buffers set the overall context for effectiveness.

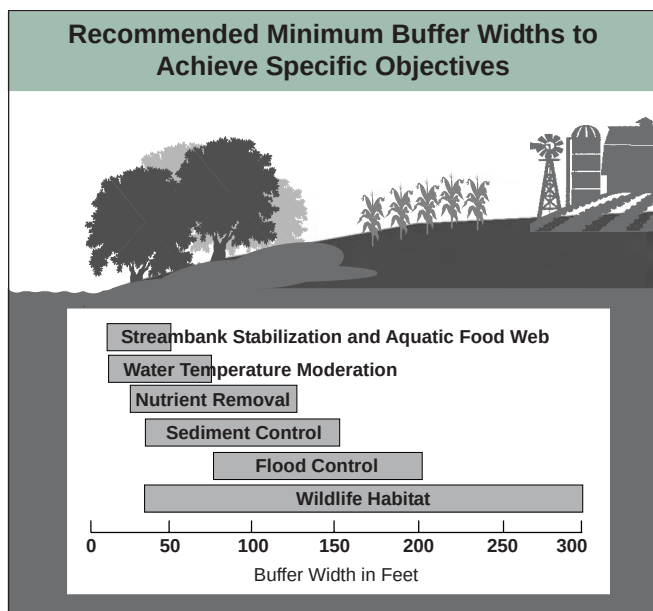
Location of the Buffer

Riparian forest buffers that are planted with clear outcomes in mind are often the most effective because the buffer width and planting plan can be designed in ways that best achieve those objectives. The following benefits are usually considered in the process of selecting a targeted buffer location:

- **Reducing nitrogen.** Nitrogen is one of the most damaging pollutants in the Bay. Restoring riparian forest buffers in areas of high nitrogen runoff can greatly reduce the quantity of nitrogen that travels through the buffer and enters streams and tidal waters.
- **Protecting headwater streams.** Headwater streams are the smaller waterways that feed other streams and rivers. Restoring forest buffers to the headwaters will send cleaner, cooler water downstream.
- **Improving aquatic habitat.** Restoring riparian forest buffers can launch or complement existing efforts involving fish passage, stream health, and other living resource objectives.
- **Creating forest corridors.** Larger, continuous forest buffers provide connected habitat for terrestrial and aquatic wildlife. They also enhance the ability of species to migrate and to sustain their overall population. Sometimes restoring continuity may be as important as expanding width.

Width of the Buffer

The ideal width for a riparian forest, and the factors that bring it to full maturity, vary. In general, wider buffers bring a greater variety of benefits and



are more likely to sustain those benefits over time. The Chesapeake Bay Program recommends minimum widths of 75 to 150 feet wherever possible, in order to achieve the widest range of water quality and habitat objectives. Some site-specific factors that influence ideal buffer width include:

- **Physical characteristics of the site.** These could include soil, slope, stream order, or stream stability. For example, a wider buffer might be needed to offset faster runoff from a steep slope.
- **The value of the stream being protected.** For example, does the stream provide drinking water or a high-quality trout fishery?
- **Intensity of the neighboring land use.** Agricultural land that requires a high level of fertilizer or pesticides may need a wider buffer than land with less polluted runoff, such as a pasture or low-density residential area.
- **Landowners' objectives.** Establishing a suitable buffer width must balance restoration objectives with the needs and interests of the landowner.
- **Limitations of an urban site.** Existing development often limits the width of riparian areas available for restoration in urban areas. In addition, stormwater practices may cause runoff to bypass the buffer. Buffer design should be integrated with stormwater management practices to optimize benefits.

The Chesapeake Bay Riparian Forest Initiative

THROUGHOUT THE CHESAPEAKE BAY watershed, work has been underway to protect and restore riparian forest buffers. The Chesapeake Bay Program launched this initiative in 1994 and celebrated its success in 2003 by advancing a new, expanded set of goals for riparian forest buffers.

When the initiative began in 1996, the Chesapeake Bay Program set out to restore 2,010 miles of forest buffers in the Bay watershed by the year 2010. Facing a formidable challenge at the time, partners in the program responded with vigor. Maryland, Pennsylvania, Virginia, the District of Columbia, and the federal government each pursued this goal by forming partnerships with landowners, local governments, and community organizations, and by building new programs to address the need. Their combined efforts led to resounding success—the goal for 2,010 miles of forest buffers was met and exceeded eight years ahead of schedule, spurred by new incentives for landowners to plant forest buffers.



Photo: Al Todd, US Forest Service

The Chesapeake Bay Program is working to restore 10,000 miles of riparian forest buffers by 2010.

The Chesapeake Bay Program is widely recognized as a national leader in restoring and protecting riparian forest buffers.



In December 2003, the Chesapeake Executive Council built on this success by issuing a directive for *Expanded Riparian Forest Buffer Goals* (Directive No. 03-01). This new directive defines a long-term vision for forest buffers in the Bay watershed, while also setting several short-term goals and recommending policy changes. The new goals include the following:

- Restore at least 10,000 miles of riparian forest buffers by 2010.
- Ensure that at least 70 percent of streambanks and shorelines are buffered in the long term.
- Advance efforts to conserve existing forest buffers.
- Work with at least five jurisdictions per state to promote urban forests and increase tree canopy.

Raising the Bar

THE 2003 DIRECTIVE RAISES the riparian forest restoration goal from 2,010 to 10,000 miles by 2010. This five-fold increase represents a commitment to plant nearly 900 miles of streambanks and shorelines in each of the next seven years.

At present, approximately 60 percent of the Bay's riparian areas are forested. To reach a long-term goal of 70-percent coverage in the entire watershed, the Chesapeake Bay Program and its partners will need to restore at least 30,000 miles of riparian buffers and conserve all riparian areas that are currently forested.

1994

Chesapeake Executive Council calls for the first riparian forest buffer policy for the Bay watershed.

1996

First goal set: 2,010 miles of forest buffers to be restored by 2010.

2002

2010 goal met eight years early.

2003

Chesapeake Executive Council sets new goal: 10,000 miles to be restored by 2010.

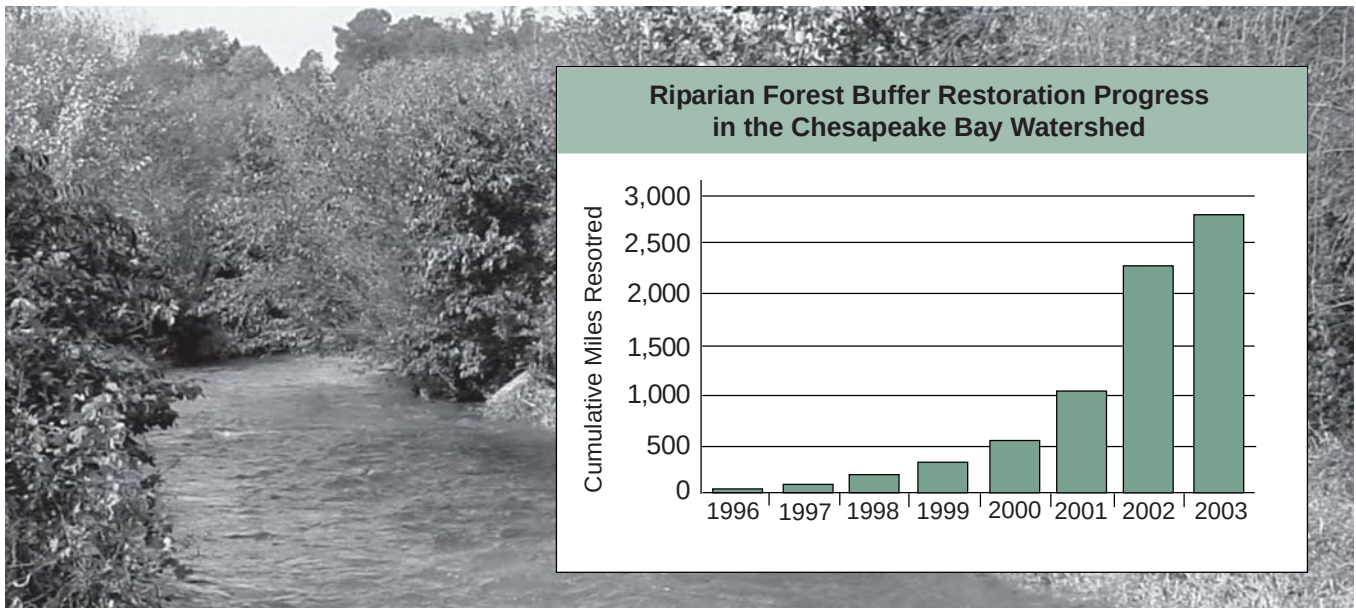


Photo: LandStudies, Inc.

In addition to these goals, the Directive adopts the following policy recommendations:

- Ensure that adequate technical assistance is available to landowners and communities.
- Continue the Conservation Reserve Enhancement Program (CREP), a federal-state partnership that provides financial incentives for restoring forest buffers on agricultural land.
- Promote innovative restoration techniques, wider buffers, maintenance of planted buffers, and buffer restoration on a range of land uses.
- Strategically target high priority areas for buffer restoration.
- Expand scientific knowledge on the benefits of urban tree canopy.

Counting the Miles

Every buffer planting—large or small—will help to restore 10,000 buffer miles in the Chesapeake watershed by 2010. Any group, organization, or local government that conducts a buffer planting should report their work towards this collective goal by using a simple, on-line form to describe the location of the buffer, size of the planting, and contact information.

**[www.chesapeakebay.net/
riparian.htm](http://www.chesapeakebay.net/riparian.htm)**

Increased Conservation & Maintenance

TO PROMOTE THE MATURITY and quality of forest buffers, the 2003 Directive brings new emphasis to conservation and long-term maintenance.

The rate of loss of riparian forests is currently unknown. However, the long-term vision of buffering 70 percent of all streams and shorelines with forests represents a commitment to a net gain and points to a need for stronger protection. Conserving existing mature buffers is one sensible strategy towards achieving this goal.

Maintenance of restored buffers is also critical, especially for those that are newly planted. Newly

planted buffers require at least seven years before they begin to provide the same level of benefits expected from a naturally existing forest. In order to grow and thrive, trees must survive threats from drought, deer, voles, beavers, insect pests, invasive plants, lawn mowers, and people.

Maintenance needs are site specific and may include thinning, mowing, and weeding. Maintenance also requires efforts to prevent surface runoff from forming channels in the buffer area. This ensures that water remains diffused across the buffer, so that the forest can absorb and filter it effectively.

Accelerating Progress

THE SUITE OF GOALS outlined in the 2003 Directive presents exceptional challenges to states, federal agencies, and partners of all kinds.

One of the foremost challenges is to sustain the aggressive rate of recent tree plantings. Financial incentives through the Conservation Reserve Enhancement Program (CREP) have been an effective means for driving buffer restoration to date. However, with an estimated \$87 to \$100 million spent through CREP since 1996, increasing the rate of riparian forest buffer restoration will require strong fiscal commitments by state and federal leaders.

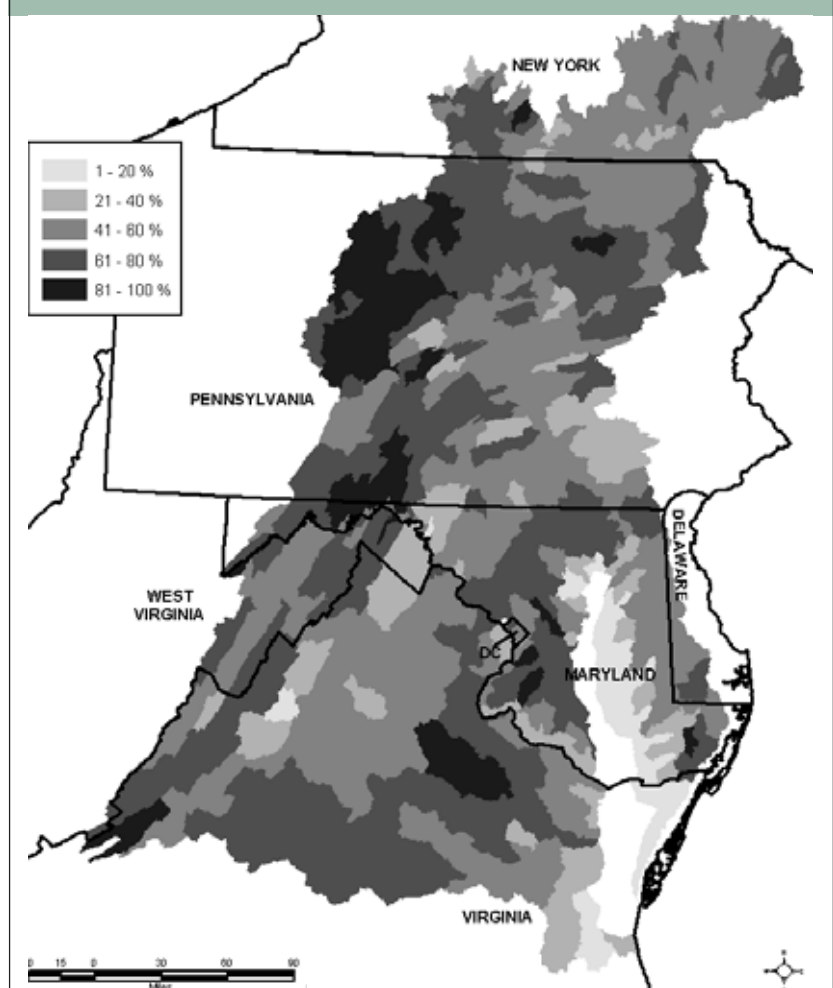
The new emphasis on conserving existing forest buffers poses challenges that will require multiple solutions. Many initiatives are already underway, including conservation easements, purchase of development rights, and watershed land use planning. Losses to development, however, continue to subtract from overall progress. Commitments from local governments will be essential in addressing this situation because local ordinances are often the deciding factor in protecting riparian forests during development or requiring mitigation for their removal.

Other actions that will support the advancement of these goals include the following:

- **Helping landowners and communities.** The greatest barrier to voluntary restoration of riparian forest buffers on private lands is the ability to provide effective outreach and technical guidance to farmers and local groups willing to plant and maintain riparian forests. This service is most often provided by state and federal agencies. Having an adequate number of field foresters and biologists available for assisting landowners in buffer restoration is crucial.

- **Optimizing and targeting financial incentive programs.** A wide variety of incentive programs are available, but many of these do not always effectively

Percent of Streams and Shorelines with Forest Buffers at Least 100-Foot Wide



The map above shows the percentage of streambanks and shorelines that have riparian forest buffers with a width of 100 feet or more. Much work remains to buffer 70-percent of all riparian areas in the entire Bay watershed.

target riparian forest buffers. While programs that serve agricultural landowners must continue and increase, other new and existing programs must be tailored to areas such as urban/suburban and shoreline settings. Voluntary programs should be designed to favor effective practices like forest buffers and directed to landscapes where they will be most effective.

- **Reducing the cost of plantings.** The cost to ensure the survival of planted forests on agricultural and urban sites can be high. Costs could be reduced, and survival increased, by identifying techniques that support and enhance natural forest regeneration. Additional field studies are needed to experiment with a variety of planting and maintenance strategies.

A New Focus on Trees in Urban Areas

MORE THAN 100 ACRES OF FOREST are lost each day to urban development, further compromising streams and watersheds under stress. Studies show that a number of cities have lost more than 15 to 30 percent of their urban forest canopy in the last twenty years alone—increasing stormwater treatment costs and ozone pollution, and diminishing the beauty and livability of our cities. The 2003 Directive ensures that trees in urban areas will receive unprecedented attention from Chesapeake Bay Program partners.

In urban settings, riparian forest buffers are often removed or constricted by development, and riparian functions are compromised by stormwater runoff. Even when buffers are established, the intensity and diversion of stormwater runoff make it much harder to achieve the levels of benefits possible in more rural areas.

Nevertheless, trees remain vital to urban ecology. In urban and suburban areas, ample urban forests can improve a stream's water quality and condition while reinforcing buffer functions. Urban trees help reduce stormwater runoff and encourage infiltration—intercepting falling rain, absorbing and storing water, reducing runoff, protecting soil from erosion, filtering pollutants, and improving air quality. In addition, urban forests help make population centers more desirable, supporting smart growth objectives.



Photo: Edward Gilman, University of Florida

Trees in urban areas, such as these in Pennsylvania, beautify a community and provide environmental benefits.

Promoting Tree Canopy

“Tree canopy” is the area that, when viewed from above, is occupied by the leaves and branches of trees. Tree canopy serves as an indicator of the health and extent of an urban forest and the benefits it provides.

The Chesapeake Bay Program has committed to increasing the amount of tree canopy in urban and suburban areas by working with at least five local communities in each state to set and achieve tree canopy goals for their areas. This new partnership with communities will:

- Assess tree canopy
- Adopt local goals for tree canopy
- Take steps to increase tree canopy coverage



Photo: Roderick Salguero, US Forest Service

Urban Forests...

- ✓ Protect water quality
- ✓ Reduce air temperature
- ✓ Improve air quality
- ✓ Provide wildlife habitat
- ✓ Reduce noise pollution
- ✓ Beautify the landscape
- ✓ Offer a connection with natural resources

Looking Forward

THE CHESAPEAKE BAY PROGRAM has mobilized around the riparian forest buffer restoration effort with extraordinary success. The progress to date is heartening, but many challenges remain. Participants in the Chesapeake Bay Program are committed to using their achievements, partnerships, and evolving knowledge as a foundation for continued success. The 2003 *Expanded Riparian Forest Buffer Goals* (Directive No. 03-01) sets forth a number of aggressive goals and policy recommendations. Riparian forests are also featured prominently in the Tributary Strategies outlined for many of the region's rivers. In fact, the Tributary Strategies indicate that still greater restoration efforts may be needed to avoid federal regulatory actions to protect water quality. Together, these documents reinforce the critical role of the riparian forest buffer initiative and call for the continuation and advancement of this important regional effort.

The partnerships that will achieve these goals are many. Along with the leadership of Maryland, Pennsylvania, Virginia, the District of Columbia, and federal agencies, continued contributions from citizens and nonprofit organizations are critical. Many groups—such as schools, environmental organizations, sports fishing organizations, outdoor education centers, civic groups, and others—will help to achieve the expanded goal of 10,000 buffer miles by 2010.

New and broader partnerships will also play an important role, especially those between public and private organizations. In addition, policy changes must



Photo: Heather Richards, Potomac Conservancy

be explored to further protect and restore the region's riparian forests.

Of course, as efforts are directed at creating new riparian forests, the challenge of conserving and maintaining existing ones remains critical as well. Only the combined efforts of both conservation and restoration will achieve the long-term goal of buffering 70 percent of all streams and shorelines within the entire Bay watershed.

Each step towards this goal—whether large or small, or the product of public or private efforts—represents progress. In combination, these efforts will bring the multiple benefits of riparian forests to bear on countless streams, rivers, and ultimately, the Chesapeake Bay.





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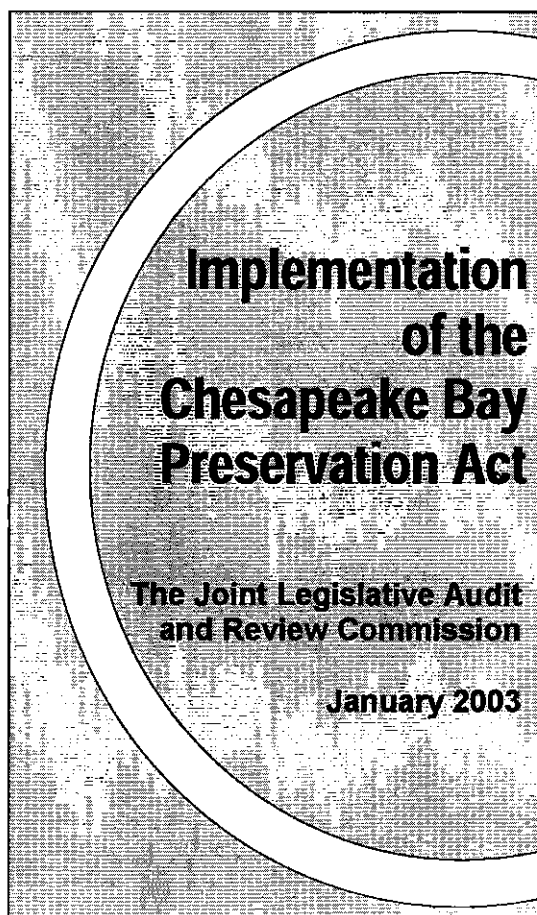
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JLARC Report Summary



The Chesapeake Bay is North America's largest estuary (an area where fresh and salt water mix), and it is the third largest estuary in the world. About half of the Bay's water comes from the Atlantic Ocean, while the other half drains from the streams and rivers of six states that are part of the Bay's watershed: Delaware, Maryland, New York, Pennsylvania, Virginia, and West Virginia (the District of Columbia is also part of the watershed). By some estimates, approximately 60 percent of the land area in Virginia drains into the Chesapeake Bay.

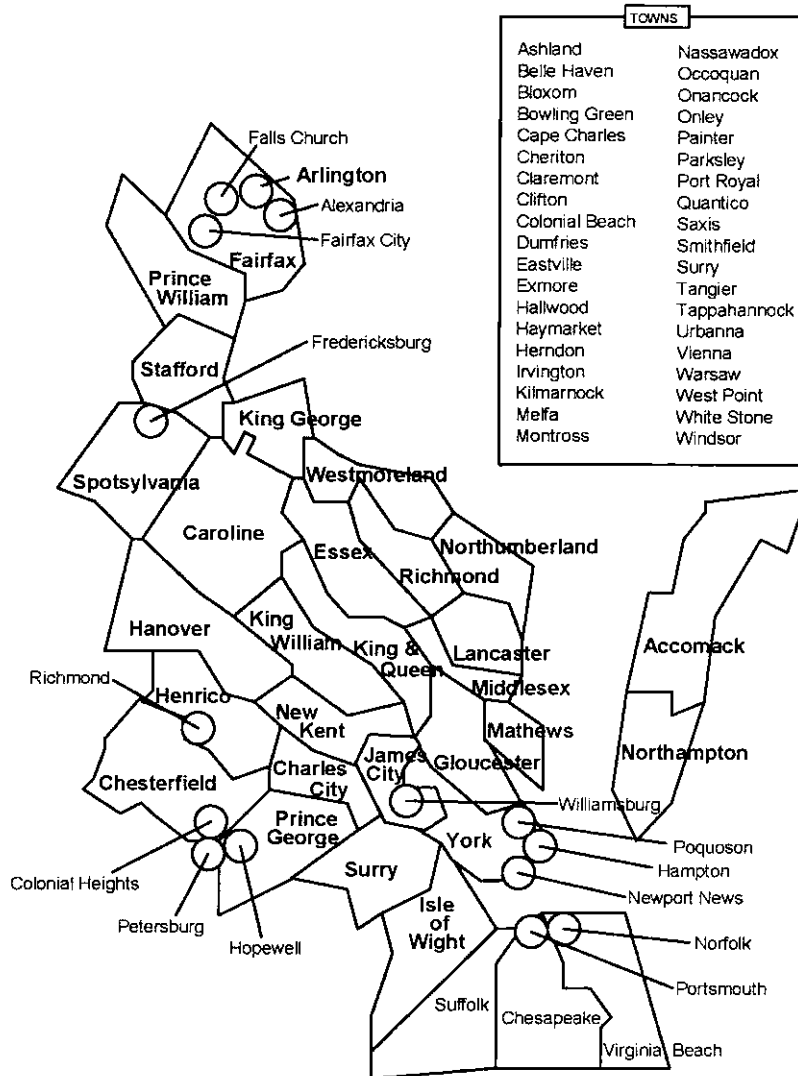
The General Assembly enacted the Chesapeake Bay Preservation Act (Bay Act) in 1988 as a partnership between the State and 84 of Virginia's

eastern-most localities that are located in the Chesapeake Bay watershed (see figure, next page). The primary focus of the Bay Act is to guide local land use decisions in a manner that promotes the water quality of the Bay and its tributaries while not unduly restricting the rights of landowners to develop their property. The *Code of Virginia* vests the localities with the primary responsibility to initiate and implement the Bay Act. The State is responsible for providing financial and technical assistance to the localities and ensuring that the provisions of the Bay Act are appropriately enforced.

The degradation of the Bay, it is believed, has occurred over a few centuries. Human activities from about the mid-1700s initiated a downward trend in the Bay's health. The 1983 Chesapeake Bay Agreement, the first in a series of multi-State agreements to improve the conditions of the Bay, and Virginia's 1988 Bay Act came into existence after the extent of the environmental degradation of the Chesapeake Bay became more fully understood during the 1970s and the 1980s. By that time, summer-time dissolved oxygen levels in the Bay (necessary for the survival of most aquatic plants and animals) were found to be severely depleted. Submerged aquatic vegetation (an indicator of the Bay's health), which had once covered shallow parts of the Bay, had almost disappeared. Both of these trends, it was concluded, stemmed in large part from increased loadings of nutrients due to land uses in the Bay watershed. For numerous reasons that included the impact of pollutant loads on water quality, seafood catches from the Bay also dramatically decreased over the decades. These findings led to public policy commitments to undo these trends and restore the health of the Bay.

Virginia's Bay Act has served as a vehicle for addressing State water quali-

Tidewater Virginia as Defined in the Bay Act



ty goals and the State's commitments under various Chesapeake Bay Agreements with the federal government and other states to clean up the Bay. Through the Bay Act and the Bay Agreements, the State has set forth a policy indicating that the Bay is worth saving. It has also set forth the policy that the State and localities are to be cooperative partners in Virginia's efforts to establish a Bay Act program and help restore the water quality of the Bay.

As the degradation of the Bay occurred over centuries, and given continuing population growth in the watershed, it is widely recognized that a long-term effort will be necessary to bring substantial and lasting improvement to the water quality of the Bay. Virginia's Bay Act program in the Tidewater region is a small but potentially important piece of the multi-State effort to restore the Bay, and it also is potentially important from the standpoint of improving local

water quality. Even at this relatively early stage in the existence of this program, it appears useful to assess the progress that has been made to date in implementing and enforcing the program.

House Joint Resolution 622, approved by the 2001 General Assembly, directs the Joint Legislative Audit and Review Commission (JLARC) to conduct such an assessment. The mandate requires that JLARC assess the Chesapeake Bay Local Assistance Board's (CBLAB) oversight and enforcement practices concerning local compliance with the Act. (The Board is assisted in performing its responsibilities by the staff of the Chesapeake Bay Local Assistance Department, or CBLAD.) The mandate also requires an evaluation of the implementation and enforcement of the local Bay Act programs, focusing especially on the frequency and rationale of permitted encroachments into the vegetated buffer area.

Finally, an assessment of the current resources necessary at the State and local level for implementation and enforcement of the Bay Act is also required. As part of the process for determining the scope of JLARC's review of State spending issues, JLARC members indicated at a July 8, 2002, meeting of the Commission that the issue of CBLAD's potential merger into the Department of Conservation and Recreation (DCR) should also be considered as part of the review.

The JLARC staff assessment of the implementation and enforcement of the Bay Act to date has resulted in six major findings that may be useful to policy-makers in considering the State's future approach to its supportive role under the Act. These findings include the following:

- The process by which localities have achieved consistency with Bay Act requirements has been slow, but gradual progress has been made. In part, slow progress has been due to the complexity of

achieving the required tasks, which included mapping environmentally sensitive areas, adopting the performance criteria required by the Bay Act into local ordinances, and adopting water quality protections into local comprehensive plans as required by the *Code of Virginia*.

- The enforcement record of localities under the Act is mixed. Key problem areas identified in this review included localities permitting development in environmentally sensitive areas, and not adhering to the regulations concerning: (1) the pumping out of septic systems, and (2) the use of Best Management Practices (BMP) agreements when addressing permitted encroachments into sensitive lands.
- The majority of local governments responding to a JLARC staff survey indicated that CBLAD provides appropriate technical assistance concerning their programs. However, CBLAD staff may not be able to continue providing this level of assistance as a result of current and potential budget constraints.
- State oversight and enforcement of the provisions of the Bay Act and the regulations have been weak, and recent efforts by CBLAB and CBLAD to focus more on these issues could be jeopardized by budget cutbacks.
- Four options for consideration are discussed in the report regarding CBLAD's placement and responsibilities. These include consideration of CBLAD's future status as an agency and a potential merger with DCR. It appears that some small cost economies and increased levels of coordination on some technical issues may occur as a result of such a consolidation. However, there are also concerns

about the impact of such a change on the short-term performance of, and long-term priority given to, the Board and the agency. In view of these concerns and the commitments the State has made to protect the water quality of the Chesapeake Bay, it may be more appropriate to allow CBLAD to continue performing its core functions as a separate entity.

- State and local policy-makers will likely need to decide whether to expand the geographic coverage of the Bay Act in the absence of fully conclusive benefit and cost data. In light of the State's budget difficulties, a prudent course may be to pursue limited expansion activity, by achieving consistency in participation among planning district commissions with localities already under the Act, or by working with localities interested in pursuing land use planning without the compulsion of a State mandate.

In sum, local programs that are considered fully consistent (at least on paper) with the Bay Act have only been established during the past decade in Tidewater. The difficult work of enforcing the requirements, ensuring the maintenance of effective water quality protection measures, and measuring long-term results still remains, as does the question of whether the geographic coverage of the Act should be extended. A higher State priority to enforcement of the Bay Act, which CBLAB and CBLAD will implement through a new compliance review process contained in the board regulations, should be helpful in maximizing the impact of the program. A merger of the agency into a larger agency at this time may hamper the achievement of this objective in the short-term and reduce the visibility and priority given to the Bay Act in the long term.

Implementation of Local Bay Act Programs Was Slow

The *Code of Virginia* places the primary responsibility for implementing and enforcing the provisions of the Bay Act on the 84 Tidewater local governments. The Tidewater localities meet this responsibility by developing and implementing their own local programs. A key component of the Bay Act requires localities to designate and protect Chesapeake Bay Preservation Areas (CBPAs) using performance criteria established by CBLAB. In addition, the *Code of Virginia* authorizes local governments to use their police and zoning powers, including civil penalties, to enforce violations of their local programs. The *Code* also allows localities outside the Tidewater region to incorporate elements of the Bay Act program into their comprehensive plans and land use ordinances. However, according to CBLAD staff, Albemarle County is the only non-Tidewater locality to adopt elements of the Bay Act program.

To facilitate local implementation of the Bay Act, CBLAB established a "three-phase implementation process" that localities follow to develop Bay Act programs. In Phase I, localities designate CBPAs and adopt CBLAB performance criteria to protect these areas. In Phase II, localities incorporate water quality protection measures into their comprehensive plans, and in Phase III, localities achieve initial completion of their Bay Act programs by revising all land use ordinances to make certain they are consistent with the Bay Act and board regulations.

Despite adoption of a *Code* requirement to complete Phase I within 12 months of adoption of the initial regulations (which became effective in 1991), it was not until 1997 that all 84 localities had designated Chesapeake Bay Preservation Areas and adopted ordinances to implement the program requirements. Upon review by CBLAB, some of these local programs were found to be provi-

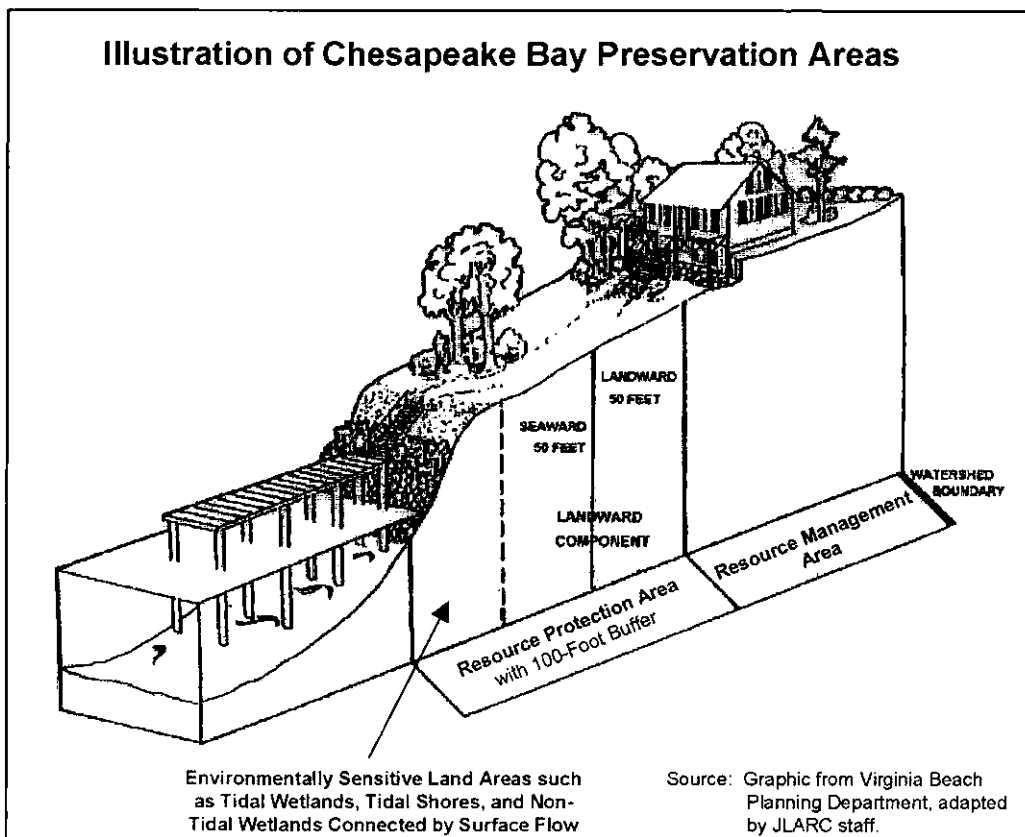
sionally consistent, with some local program language or elements needing further improvement to achieve full consistency. While implementing the ordinances they had adopted, these localities worked with CBLAD staff to accomplish the needed program changes. The last of these localities finally achieved full consistency with Phase I requirements in 2002, according to CBLAD staff.

While virtually all localities have now achieved initial consistency with Phase II requirements, six years passed between when the first locality achieved Phase II consistency and the time that most localities achieved this consistency (in 2001). CBLAB postponed requiring localities to begin the final implementation phase because it adopted revised regulations in December 2001, giving localities until March 2003 to amend their programs to comply with the new requirements. Factors that contributed to the slow progress on Phases I and II are numerous, but appear to include:

the complexity of the task, inadequate resources, limited locality commitment, a limited State priority for CBLAD's activities, and differences in the sophistication of the local comprehensive plans and ordinances. Furthermore, concerns related to the issue of private property rights are frequently encountered by localities when administering the Bay Act provisions.

Local Enforcement of the Bay Act Appears Mixed

One key element of the CBPAs is the Resource Protection Area (RPA). RPAs consist of environmentally sensitive lands along shorelines or perennial streams that serve as "filters" by removing pollutants from runoff before they enter the Bay and its tributaries (see figure below). CBLAB regulations strictly limit development activities from encroaching into the RPAs due to the important function these areas perform in reducing nonpoint source pollution.



JLARC staff conducted a file review at 11 selected Tidewater localities to assess the extent of encroachment activity. It was not feasible as part of this file review to systematically review records and collect data pertaining to denied applications as the localities, for the most part, did not maintain this information. However, a JLARC staff review of the files maintained by these localities for FY 2000 and FY 2001 indicated that these localities approved a substantial amount of encroachments into the RPA during those years (see table below). Furthermore, 30 percent of the files reviewed allowed encroachments for non-exempt applications into the seaward 50-feet of the vegetated buffer.

Localities also enforce their Bay Act programs through application of the CBLAB performance criteria. Results of the JLARC staff survey of the Tidewater localities suggest that local application of two of these performance criteria is not consistent across the localities. Responses by Tidewater localities indicate

that enforcement of the requirements for septic tank pump-out and the use of best management practices agreements when addressing permitted encroachments has been irregular.

Recommendation. *The Tidewater localities should seek to preclude land-disturbing activities in the Resource Protection Areas when possible. In cases where RPA encroachments are appropriate, CBLAD should ensure that Tidewater localities are appropriately applying the regulations to development activity that is permitted in the 100-foot Resource Protection Area buffer. The Tidewater localities should ensure that maintenance agreements are required whenever Best Management Practices (BMP) are used to mitigate land disturbances resulting from RPA encroachments. Local governments should also periodically inspect these BMPs to ensure that property owners maintain them. In addition, Tidewater local governments, CBLAD, and the Virginia Department of Health should work to ensure that residential septic systems are*

Local RPA Encroachment Activity During FY 2000 and FY 2001				
Locality	Total RPA Encroachment Applications Reviewed	Total Encroachment Applications Approved	Seaward 50 Feet of the RPA Approvals Only	
			Non-Exempt Applications Approved	Non-Exempt Applications Approved, as Percent of Total Applications
Alexandria	6	6	4	67 %
Virginia Beach	55	50	37	67 %
Chesapeake	75	75	35	47 %
Gloucester	34	31	7	21 %
Richmond City	12	12	2	17 %
James City	43	43	7	16 %
Henrico	14	14	1	7 %
Lancaster	50	50	2	4 %
Fairfax	24	23	1	4 %
Prince George	4	4	0	0 %
Spotsylvania	6	6	0	0 %
Total	323	314	96	30 %

identified and periodically maintained in accordance with board regulations.

CBLAD's Provision of Technical Assistance Has Been Appropriate, But Overall the Program Has Lacked Resources and Direction

The *Code of Virginia* requires CBLAB and the department to provide financial and technical assistance to the localities, planning district commissions (PDCs), and other governmental entities in the Tidewater designation as they implement the provisions of the Bay Act and regulations. A substantial majority of respondents to the JLARC staff survey of Tidewater localities indicated that CBLAD staff provides appropriate and timely assistance. However, local staff also indicated that CBLAD needs to continue to present Tidewater-wide educational and training opportunities.

Localities indicate that their programs lacked the resources necessary to better address the Bay Act's provisions. More than half of the 49 respondents to the JLARC survey question about staffing adequacy indicated that their programs had too few staff to perform the primary functions required by the Bay Act. Several localities also reported that CBLAB's revised regulations create new requirements that will likely stress their current resources. These include staffing and funding public hearing requirements and on-site delineation of the Resource Protection Areas. Furthermore, a new local implementation review program being developed by CBLAD will require localities to maintain and report information regarding their programs in ways that they were not previously required to do.

Likewise, CBLAD staff also indicated that inadequate resources have made it difficult for them to ensure that the provisions of the Bay Act and regulations are being appropriately implemented and enforced. Within the natural resources functional area, the agency has not received much priority over the years, and it has not received consistent direction in furtherance of its

goals. The agency reports that it has used cost savings from such factors as position vacancies and turnover to fund a historical gap in its non-grant funding level for non-personnel costs. This means that the department is in a poor position to meet budget cuts by not filling vacancies that occur as a result of routine turnover. Further, the department has been meeting its information technology assistance needs by using one of its engineering positions, diverting a substantial amount of time away from the position's assigned engineering responsibilities.

The future viability of certain agency functions may be greatly impacted by these identified funding issues. For example, the agency's Polecat Creek water quality monitoring project, located in Caroline County, may be eliminated as a result of recent budget cuts, according to the agency's acting director. Also, the 2002 General Assembly's substantial funding reduction in the amount CBLAD makes available for local governments, PDCs, and Soil and Water Conservation Districts may make it even more difficult to get locality compliance with the Bay Act and regulations. Finally, language in the *Code of Virginia* may need clarification to better identify State and local responsibilities regarding the provision of financial resources for this program.

Recommendations. *The department should seek to fill its vacant locality liaison position. CBLAD should also prepare a progress report on the Polecat Creek water quality monitoring project outlining its past costs and estimated future costs, analytic results, and advantages and disadvantages of continuing the project. In addition, as the State's fiscal position improves, CBLAD should make budget requests to restore funding for its financial assistance to localities program, in light of the potential cost impact to local governments as they begin their participation in the Local Program Compliance Review process.*

Oversight of Local Programs Should Be Strengthened

Despite being required by the *Code of Virginia* to evaluate and enforce the implementation of the local programs, it does not appear that the board has properly prioritized this responsibility. Prior to 1997, the department had no formal review process for assessing how well a local program addressed the intent of the Bay Act and the regulations. Beginning in that year, the board adopted a complaint-driven procedure that placed too much responsibility outside the agency to identify potential non-compliance at the local level. In fact, the department has identified this program as "essentially impossible to ensure effective local compliance" as a result of its reactive nature.

Several factors may have impacted the provision of oversight and enforcement by CBLAB and the department. Staff have indicated that the availability of resources required them to choose between performing consistency reviews or local program evaluations and, as a result, they prioritized consistency reviews. Board members and staff also told JLARC staff that the Bay Act is a partnership between the State and the local governments, and therefore, it is better to work with the localities rather than threaten them with legal action. They noted that delays in the board's attempts to promulgate regulations also reduced the board's desire to take legal action against non-compliant localities.

Since enactment of the Bay Act, the board has involved the State's Attorney General in two cases of locality non-compliance, both of which were settled prior to the court hearing date. In November 2001, the State's Attorney General issued an opinion clarifying the legal mechanisms available to the board for ensuring compliance among the localities. The opinion stated that CBLAB can (1) bring legal action to stop development based solely on a site plan, (2) file an injunction against a site developer when there is a violation of the Bay

Act or regulations, and (3) seek a court order prohibiting a locality from issuing permits for land disturbance activities until that locality is compliant with the Bay Act. Nonetheless, the board's willingness to use these powers is unclear.

CBLAD is currently in the process of trying to implement a Local Program Compliance Review process. The process would require localities to report on the implementation and enforcement of their Bay Act programs related to the performance criteria and other requirements. Initially, the program is scheduled to focus on site visits by CBLAD and locality staff to assess administration of the local program's provisions. CBLAD staff have stated that the first round of local program reviews is scheduled to take three to four years to complete.

Recommendations. *The Chesapeake Bay Local Assistance Board and Department should continue to pursue their new focus on compliance review. The Department should provide training to the Tidewater localities on the requirements of the new Local Program Compliance Review process. This training should include a description of the potential administrative and legal options available to the Chesapeake Bay Local Assistance Board in dealing with instances of local non-compliance.*

Potential Changes in the Structure of the Chesapeake Bay Local Assistance Department

Currently, consideration is being given to potential structural changes in the way the State administers the Bay Act. During the course of this JLARC review, discussions concerning the organization of CBLAD within the State's water quality control efforts have occurred. Through the Appropriations Act, the 2002 General Assembly required that the Secretary of Natural Resources develop a plan for consolidating CBLAD within the Department of Conservation and Recreation's Division of Soil and Water Conservation. In addition, the General Assembly also reduced the

CBLAD appropriation by one million dollars. At a July 2002 meeting, JLARC members reviewing State spending issues asked that JLARC staff review the issue of CBLAD's placement as part of the HJR 622 review.

CBLAD's mission and functions are an important concern in assessing the agency's placement. In a response to the JLARC report on the Natural Resources Secretariat in 1998, CBLAD provided comments that still appear to accurately reflect the agency's central mission and also address some key activities that are unique:

[CBLAD's] mission and staff workload is directed at assisting local governments in meeting the land management requirements of the Chesapeake Bay Preservation Act. These requirements include RPA buffer management, more sensitive site design, and incorporating water quality protection objectives into local comprehensive plans and zoning and subdivision ordinances.

CBLAD has a central role in fulfilling the State's responsibilities to the cooperative State-local partnership envisioned by the Bay Act. If the State wishes to maintain a proactive involvement with the Bay Act, then it appears that the functions performed by CBLAD will need to continue to exist, irrespective of where those functions are housed. There are some concerns that consolidation of CBLAD with another agency would bring limited benefits that may not justify this major structural change.

While some small cost economies and increased coordination of erosion and sediment activity may occur through consolidation, it does not appear that these benefits will be large. CBLAD is a small agency. Most of the staff have technical skills, the need for which is not anticipated to diminish in the foreseeable future under the responsibilities given to the State by the Bay Act and under the responsibilities given CBLAD

by Bay Act regulations. The technical assistance provided by CBLAD staff is generally rated well by localities. The potential for limited savings from efficiencies in administrative tasks could largely be realized without merging CBLAD with another agency. For example, if local assistance grants are anticipated to be minimal or non-existent over the next few years, then the agency's need for a grants program manager is questionable.

If a merger is pursued at this time, a concern is that CBLAD and CBLAB may lose momentum in the short term, and priority in the long term. For example, as indicated in this report, CBLAB and CBLAD recently revised the Bay regulations. These regulations provide for compliance review work, which appears overdue. If a merger is attempted, much time and effort may be diverted to accomplish the structural change.

There also is a related and longer-term concern -- that the State's commitment to address water quality protections through local land use planning and the use of mandatory requirements may be compromised. DCR has a much broader focus than water quality issues, including the management of State parks. Its water quality efforts have focused on voluntary measures, particularly outside of the area covered by the Bay Act. It is unclear what priority DCR would give to Bay Act land use planning functions over the long term. There is a concern that a reduction in the visibility and priority of the Bay Act functions may result from CBLAD's incorporation into a larger entity. Therefore, the State may wish to give serious consideration to allowing CBLAD to continue performing its core functions as a separate entity.

Regardless of structural considerations, two of CBLAD's core functions should be ensured: (1) providing assistance to local governments with land use planning needs, and (2) enforcement of Bay Act regulations. There also will be a continued need to shift more of the focus to rigorous enforcement, in order to ensure that the desired water

quality protection measures are actually undertaken.

The State May Wish to Pursue a Limited Approach to Expanding Geographic Coverage Under the Act

CBLAD was required by HJR 622 to develop a report on the benefits and costs of a westward expansion of the geographic coverage of the Bay Act in Virginia (beyond the existing Tidewater coverage area). For this review, JLARC staff assessed CBLAD's report.

CBLAD's report appears to represent a legitimate effort directed toward fulfilling a difficult task. However, the report also has some limitations. It does not succeed in overcoming a fundamental obstacle to meeting the study request. This obstacle is a lack of adequate information upon which to draw definitive conclusions about the benefits and costs, and the effects upon local governments that are entailed in a westward expansion.

The report uses an analysis prepared by the Department of Planning and Budget (DPB) to indicate that estimating the costs resulting from an expansion of the Bay Act would be almost impossible. The underlying assumption of the report, that fully and accurately quantifying the costs of an expansion is not feasible at this time, appears to be correct. However, the report could have gone further in providing estimates of the typical costs associated with some of the land use or best management practices that likely would be required, and estimates of the reductions in sediments, nitrogen, and phosphorus that might be achieved. This type of information has been estimated by State agencies in the past in conducting tributary strategy planning work.

The report also makes several references to the proven effectiveness of the Bay Act program in Tidewater in preventing nonpoint source pollution from entering the Bay and its tributaries. The report states that a perspective on the effectiveness, efficiency, and appropriateness of the Bay Act program can

be gained from considering recent data which shows few impaired stream miles in Tidewater (where the Act operates) compared to the proposed expansion area. However, this argument is weak. The report does not demonstrate that the Bay Act is responsible for this difference, and it does not mention that hydrologic and land uses between Tidewater and some areas in the western part of the watershed are likely to account for a major part of the difference.

Still, CBLAD can point to numerous studies showing that certain practices which the Bay Act promotes, such as the use of buffer zones, can be effective in protecting water quality, and have some potential in the expansion area if applied appropriately. Based on the water quality studies that have been done, the CBLAD report could have gone further in identifying the various factors that appear to typically impact the relative successfulness of the types of protection activities used in the Bay program. This kind of information might help localities better gauge whether the factors that tend to promote success are or are not prevalent in their locality.

Ultimately, however, the western expansion of the program is a policy decision that must be decided in the absence of fully conclusive data. There are factors that cannot be fully known prior to implementation, including the extent to which the measures required by the Bay Act will be established as called for and effectively maintained over time.

JLARC staff identified four primary options available to the General Assembly as it considers whether to expand the geographic scope of the Chesapeake Bay Preservation Act. These include: (1) not expanding the Bay Act to include additional localities, (2) adopting CBLAD's proposed expansion scenario to make 104 additional local governments subject to the provisions of the Bay Act, (3) expanding the Bay Act to include the 13 localities in planning district commissions that are already subject to the Bay Act, or (4) allowing

CBLAD staff to work with local governments in the western watershed that are interested in developing land use planning activities similar to those of the Bay Act. Given that there is an absence of fully conclusive cost and benefit data, and given the State's current budget situation, it may be prudent to seek a limited expansion effort as envisioned

under options three and four. Some effort directed toward an expansion appears appropriate to fulfill the State's commitment to use sound land use management to achieve water quality improvement under the Bay Agreement and to help meet local aspirations to achieve local water quality goals.
