

Chesapeake Bay Critical Area Commission
Department of Housing and Community Development
Crownsville, Maryland 21401
Conference Room 1100A
October 6, 1999

AGENDA

1:00 p.m. - 1:05 p.m. Approval of Minutes of September 1, 1999 John C. North, II, Chair

PROGRAM AMENDMENTS and REFINEMENTS

1:05 p.m. - 1:15 p.m. REFINEMENT: Town of Easton Annexation of parts of Glenwood/Ratcliffe Properties Lisa Hoerger, Planner

1:15 p.m. - 1:25 p.m. REFINEMENT: Leonardtown Growth Allocation for Tudor Hall Village Tracy Batchelder, Planner

1:25 p.m. - 1:40 p.m. REFINEMENT: Chesapeake City Growth Allocation Susan Zankel, Planner

PROJECT EVALUATION

1:40 p.m. - 2:00 p.m. VOTE: St. Mary's College Athletic Fields and Parking Lot Tracy Batchelder, Plnr.

2:00 p.m. - 2:15 p.m. VOTE: DNR St. Clements Island, Shore Erosion Control Tracy Batchelder, Plnr.

2:15 p.m. - 2:30 p.m. INFO: Poplar Island Spoil Placement Lisa Hoerger, Planner Frank Hammons, Md. Port Authority

2:30 p.m. - 2:45 p.m. INFO: Conservation Reserve Enhancement Program Update Meredith Lathbury, Plnr

2:45 p.m. - 3:00 p.m. INFO: Forest Interior Dwelling Birds Guidance Claudia Jones, Scientific Advisor Susan Zankel, Planner

3:00p.m. - 3:15 p.m. Old Business John C. North, II, Chairman
New Business

Next Commission Meeting November 3, 1999 Anne Arundel County, Crownsville

Chesapeake Bay Critical Area Commission
Department of Housing and Community Development
Crownsville, Maryland 21401
Conference Room 1100A
October 6, 1999

SUBCOMMITTEES

9:00 a.m. Panel -Anne Arundel County
Comprehensive Review

Mary Owens, Pgm. Implem.
Lisa Hoerger, Planner

Members: Duket, Foor, Samorajczyk, Goodman, Bourdon

9:30a.m. - 10:30 a.m. Project Evaluation

Members: Cain, Witten, Bourdon, Giese, Goodman, Corkran, Cooksey, Hearn, Graves, Wilde, Olszewski, Jackson, McClean

St. Mary's College
Athletic Field and Parking Lot

Tracy Batchelder, Planner

DNR/St. Clement's Island
Shore Erosion Control

Tracy Batchelder, Planner

INFO.-MES/MPA CSX/Cox Creek DMCF
INFO.-DRAFT-Forest Mitigation/Guidance Paper

Lisa Hoerger, Planner
Tracy Batchelder, Planner

11:00 a.m. - 12:00 p.m. Program Implementation

Members: Myers, Barker, Williams, Wynkoop, Foor, Johnson, Lawrence, Taylor-Rogers, Duket, Samorajczyk

Talbot County/Town of Easton - Refinement
Annexation of Glenwood/Ratcliffe Properties

Lisa Hoerger, Planner

Leonardtwn/Refinement
Growth Allocation for Tudor Hall Village

Tracy Batchelder, Planner

Cecil County/ Chesapeake City - Refinement
Growth Allocation

Susan Zankel, Planner

12:00 p.m. - 1:00 p.m. - LUNCH

*Corrected & approved
on 2nd page*

Chesapeake Bay Critical Area Commission
Department of Housing and Community Development
People's Resource Center
Crownsville, Maryland 21401

September 1, 1999

The Chesapeake Bay Critical Area Commission met at the Department of Housing and Community Development, Crownsville, Maryland. The meeting was called to order by Dr. James C. Foor, Vice-Chair, with the following Members in attendance:

Bourdon, Dave, Calvert County	Setzer, Gary for Hearn, J.L. Dept. Environ.
Barker, Philip J., Harford County	Dintamin, Ray for Rogers, Dr. Taylor, DNR
Cooksey, David, Charles County	Graves, Charles, Baltimore City
Corkran, Bill, Talbot County	Cain, Deborah Boyd, Cecil County
Wynkoop, Samuel, P.G. Co.	Wilde, Jinhee, Western Shore MAL
Johnson, Samuel Q., Wicomico Co.	Jackson, Joseph A., Worchester County
Giese, William, Jr., Dorchester Co.	McClellan, James H., DBED
Duket, Larry F., Office of Planning	VanLuven, Heidi, Md. Dept. Transportation
Myers, Andrew, Caroline County	Olzewski, John Anthony, Baltimore County

The Minutes of August 4, 1999 were approved as read.

Claudia Jones, Scientific Advisor, CBCAC introduced Mitch Tarnowski, DNR Shellfish Program in Fisheries, who gave a presentation on the restoration status of Bay scallops in the State. Mr. Tarnowski said that the Bay scallop restoration effort is primarily in the Chincoteague Bay, the largest of Maryland's coastal inlets that was once noted for its prized oysters and hard clams. Scallops shells have been found throughout the coastal bay system revealing historical evidence of expansive populations of the Bay scallop. Chincoteague, Virginia was the center of a modest but lucrative bay scallop fishery in the 1920's but in the early 1930's a blight, or wasting disease, wiped out about 90% of the eel grass and the scallops lost their preferred habitat, critical to part of their life cycle. Recovery of the grasses has been slow, taking decades, but now 65 years later, sea grasses have come back and are thriving. The Chincoteague Bay presently has over 5,000 acres and conditions seemed ideal for the reappearance of the Bay scallops. The creation of the Ocean City inlet in 1933 gave the Bay a second outlet to the Atlantic, raising the salinity throughout the entire Bay system to a regime suitable for Bay scallops. Chincoteague Bay is the least impacted by development of Maryland's coastal bays with comparatively little nutrient impact. Assateague Island noted for its unique wildlife, forms the eastern boundary of the Chincoteague Bay contributing to the optimal survival conditions for the Bay scallop. Despite these ideal conditions, by the mid 1990's the scallops still had not returned. A competitive fishing award was granted by NOAA for brood stock and spawners for scallop plantings to give nature a jump start for scallop restoration. A total of 1.2 million scallops were planted over 3 years. Mr. Tarnowski reported that survivorship of the Bay scallop is considered successful, however, growth rates are disappointing. Even so, the goal was to maximize scallop survivorship until they spawn, then nature would take over. He said that the reappearance of natural populations of the scallop has been a humbling experience as nature stole the accomplishment in effortless fashion even though all the planning and effort since the first proposal was written five years ago, has been professionally rewarding.

Correction Queen Anne's

Roby Hurley, Circuit Rider, CBCAC presented for VOTE the 4- year Comprehensive review for Queenstown in Kent County. The review included the Town's Critical Area Program - which was unsalvageable. A model program was used for the calculation of the acreage within the three land use categories and evaluation of the growth allocation status was conducted. Zoning ordinance - required the addition and correction of definitions to be consistent with those in the State criteria. Subdivision Regulations were modified and updated. Mapping - for new land use, land cover and habitat maps were produced by the Queen Anne's County Planning Department and included correction of land use categories and zoning boundaries and updating of the resource maps. No Buffer Exemption Areas (BEAs) currently exist and none are proposed. Andrew Myers, on panel recommendation, moved to approve the Queenstown Comprehensive Review. The motion was seconded by James McLean and carried unanimously.

Mr. Hurley presented for VOTE the 4-year Comprehensive review for Denton in Caroline County. He said the details of the significant changes to the Program document include - review of acreages in the three land use categories, RCA, IDA, LDA with a review of the growth allocation; duplicate content was removed and language was added to incorporate missing and updated information and some sections were condensed and revised to reflect corrections. The Zoning Ordinance was revised to add several significant definitions from the Critical Area Criteria and to modify others for clarity and consistency. Select sections required corrections to reflect the Criteria and current policy. Some language was revised to clarify Section 14-10 regarding growth allocation. Changes to the maps were necessary for the designation of Buffer Exemption Areas and because the original mapping did not include land cover or resource inventory maps. Andrew Myers moved to approve the Comprehensive Review for Denton with the condition that the language in Section 14-11 GA Growth allocation Floating Zone be adopted by the Town. The motion was seconded by Bill Giese and carried unanimously.

Mr. Hurley presented for VOTE the mapping change amendment and growth allocation for Hyatt Chesapeake Resort in Cambridge, Dorchester County. He said that an amendment to change the Critical Area line on the site of the proposed Hyatt Chesapeake Resort in the City of Cambridge is proposed. The Maryland Department of the Environment relocated the head of tidal waters shifting the 1000' Critical Area line upland. The developer had asked the MDE to review the 1972 wetland delineation line relative to actual field location. A public hearing was held with the Critical Area Commission and the City of Cambridge Commissioners on this request.

The City also seeks growth allocation for 174.86 acres to be designated Intense Development Area for the Hyatt Chesapeake Resort. The Planning Commission found that the request satisfied the requirements set forth in the City's Critical Area Program and placed conditions on approval, as appears in the attached staff report which are made a part of these Minutes. Commission staff recommends as a condition that the approval be contingent on transfer of ownership to Chesapeake Resorts, LLC or assigns. This request was heard as part of a joint public hearing with the Critical Area Commission and the City of Cambridge Commissioners. Bill Giese moved to approve the mapping amendment to adjust the Critical Area line as presented. The motion was seconded by Joe Jackson and carried unanimously. Bill Giese moved to approve the growth allocation to designate 174.86 acres as IDA for Chesapeake Resort contingent on the transfer of ownership to Chesapeake Resorts, LLC and their assigns. The motion was seconded by James McLean and carried unanimously.

Lisa Hoerger, Planner, CBCAC presented for Concurrence with the Chairman's determination of Refinement Talbot County's request to change 5.31 acres of RCA to LDA. This proposal meets the Commission's policy concerning growth allocation. The proposed lots to be LDA are contiguous to other LDA lands in the Critical Area and do not have any Habitat Protection Areas. The Commission supported the

Chairman's determination of Refinement.

OLD BUSINESS

There was no old business reported.

NEW BUSINESS

Ren Serey, Executive Director, CBCAC asked the Commission for their comments on the recent E-mail mailings and said that the Commission doesn't have the ability to send maps without a scanner and further, if the members don't have the proper equipment they cannot print them anyway. Most of the Commission members reported that they had received their Commission E-mailings. Some members asked to be notified by E-mail of upcoming projects and events and requested that staff take slides of large projects to present to the Commission. Also, it was requested that the Commission outings coincide with controversial project locations. Members were advised to let the staff know when they are interested in a particular project site visit.

Mr. Serey announced a series of workshops to be held and encouraged members to attend. The first is scheduled for October 12th at Adkins Arboretum and information will be forthcoming. Mr. Serey said that the Critical Area Web page is still up and working and he hopes that it will be updated frequently in the near future with information such as upcoming trips, meetings, etc. In response to Commission members request for more opportunities to brainstorm Commission issues, Mr. Serey said that he would research the possibility of a staff retreat. He reminded them that the September 16th Boat trip to Baltimore has been planned just for such a purpose and that there have been only five Commission members respond in the affirmative.

Marianne Mason, Esquire, Assistant Attorney General, DNR and Commission Counsel updated the Commission on legal affairs. She said that she argued two cases at the Court of Appeals in June. One case has been decided and one has not. Both cases involved variances granted by the Anne Arundel Board of Appeals for development activities in the Buffer. The Belvoir Farms case involved boat slips and the other case, the White case, involved a pool. In the Belvoir Farms vs North case by the Court of Appeals, four legal issues were decided and all in Critical Area Commission's favor: 1) Anne Arundel Board of Appeals used the wrong legal standard in determining the variance issue for the boat slips. The Board decided that practical difficulties would be enough to grant a variance for these boat slips. The Court of Appeals said that the Board had to use the unwarranted hardship standard in the Commission's Criteria. 2) The Court of Appeals said that the case needed to be sent back to the Anne Arundel Board of Appeals for the Board to consider the evidence under the unwarranted hardship standard because they had used the incorrect and easier legal standard. 3) the Court made two really important holdings for the future of the Commission: the Court said that the Critical Area Commission was empowered by the General Assembly to impose certain requirements on local jurisdictions as part of the Critical Area Program. One of those requirements is that the variance standard has to be "unwarranted hardship". Belvoir argued that AA County had the authority to adopt a lesser standard and the Commission could not make them adopt unwarranted hardship. The Court said that the Commission has that power and the Commission exercised it lawfully. 4) the Court has defined "unwarranted hardship" as indistinguishable from an unnecessary hardship or undue hardship. Both terms have been defined many times by many appellate courts. Basically, those terms mean that it is a denial of reasonable and significant use of a property, a major deprivation in order to rise to the level of an unwarranted hardship to get a variance. She said that this lengthy Opinion will be published.

At the Appellate level, the case in Talbot County involving the brick walkway, the Circuit Court decided in June to reverse the variance. The Court had some personal issues with the Commission's position but held that the

variance had been wrongly granted. The homeowners have appealed to the Court of Special Appeals.

A new case involving a pool in the Buffer in Queen Annes County is in Circuit Court and the Commission has appealed the granting of the pool variance and it will be argued next month.

Dr. Foor appointed a panel for the Anne Arundel County Comprehensive Review: Larry Duket, Dr. Foor, Barbara Samorajczyk, Bob Goodman and Dave Bourdon.

There being no further business, the meeting adjourned.

Minutes submitted by Peggy Mickler, Commission Secretary.

CHESAPEAKE BAY CRITICAL AREA COMMISSION

**STAFF REPORT
October 6, 1999**

Approved

APPLICANT: St. Mary's College
PROPOSAL: Athletic Fields and Parking Lot
JURISDICTION: St. Mary's County
COMMISSION ACTION: Vote
STAFF RECOMMENDATION: Approval
STAFF: Tracy Batchelder
**APPLICABLE LAW/
REGULATIONS:** COMAR 27.02.05 State Agency Actions Resulting in
Development on State-Owned Lands

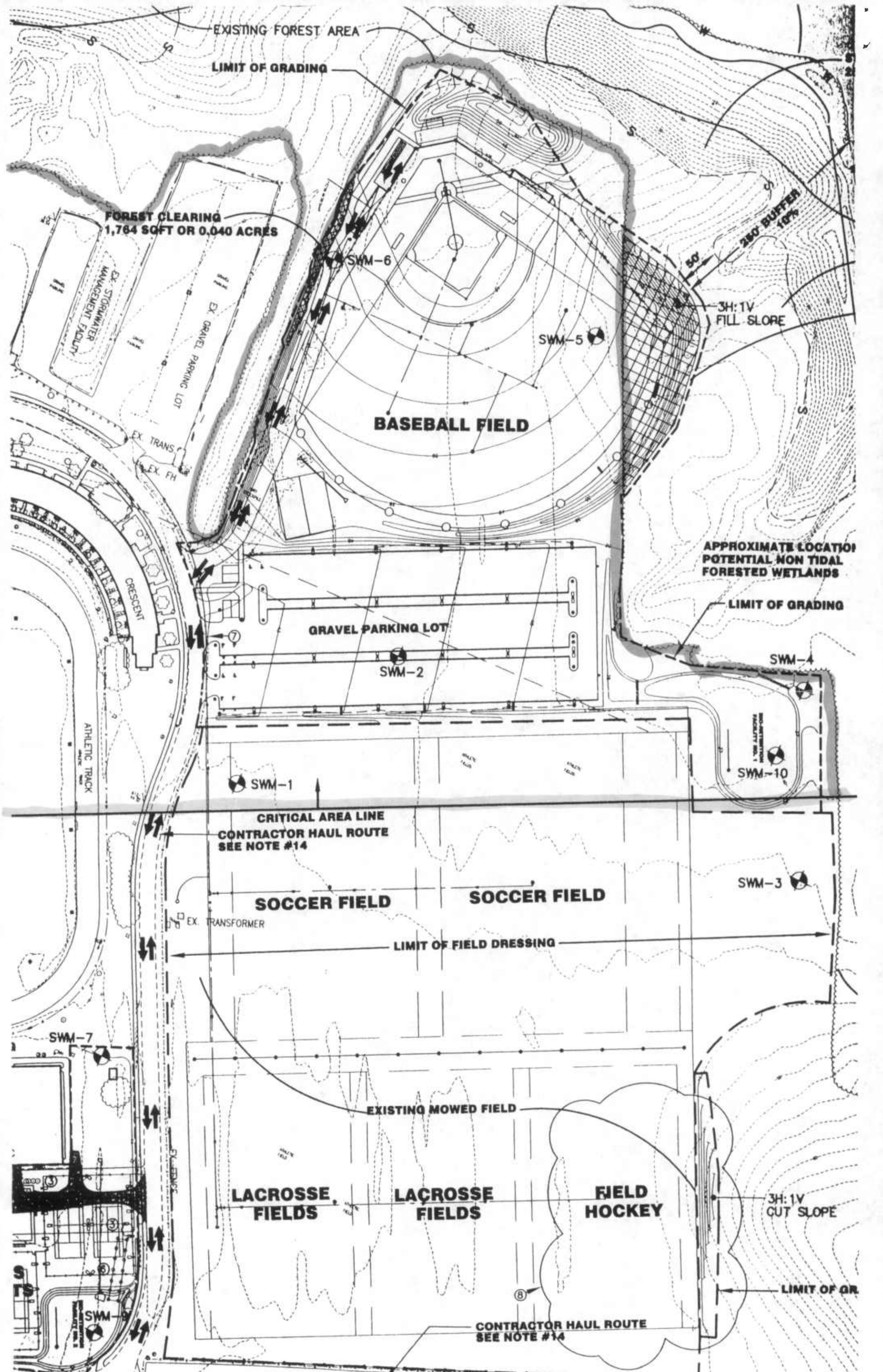
DISCUSSION:

St. Mary's College proposes to construct a outdoor recreational facility, partially located within the Critical Area. As part of this development, the College proposes to develop a league baseball field, a parking lot, and a portion of practice athletic fields in the Critical Area. The area currently is primarily open, maintained grassed fields with surrounding forest, parking lots and athletic facilities. The amount of land in the Critical Area is 10.10 acres. The project will result in 2.84 acres of impervious surface and .528 acres of forest clearing. St. Mary's College property is considered an area of intense development and will, therefore, have to comply with the 10% pollution reduction rule.

The new league standard baseball field will be located within the gently sloping field and partly within an existing forested area. Development of the field will involve the clearing of .528 acres. The College is currently planning to provide .518 acres of reforestation outside the Critical Area, but is looking for opportunities to reforest within the Critical Area. In addition, plantings will be provided within and adjacent to the new parking lot. Since it is an area of intense development, there are no specific reforestation provisions within the Critical Area.

New impervious surfaces include the new parking lot, warning track, service drive, bleachers, dugouts, and future press box for the baseball field. Stormwater runoff will be controlled and treated by vegetated swales, check dams, and a bioretention facility adjacent to the proposed parking lot. The proposed stormwater management BMPs meet the 10% Rule requirements for BMPs in a series. At this time, MDE has completed its technical review and has worked out any stormwater issues with the consultants. St. Mary's College is awaiting administrative approval of the project which they expect to have by the October Commission meeting. The College has also received permits from MDE for sediment and erosion control.

DNR's Wildlife and Heritage Division have indicated that there is a record of Tobaccoweed (*Elephantopus tomentosus*), a species with endangered extirpated state status, in the vicinity of the project site. There are no other known historic sites, rare, threatened or endangered species present on the site in the Critical Area.



EXISTING FOREST AREA

LIMIT OF GRADING

FOREST CLEARING
1,764 SQ FT OR 0.040 ACRES

EX. STORAGE
MANAGEMENT
FACILITY

EX. GRAVEL PARKING LOT

SWM-6

SWM-5

3H:1V
FILL SLOPE

250' BUFFER
10%

BASEBALL FIELD

APPROXIMATE LOCATION
POTENTIAL NON TIDAL
FORESTED WETLANDS

LIMIT OF GRADING

GRAVEL PARKING LOT

SWM-2

SWM-4

SWM-10

SWM-1

CRITICAL AREA LINE
CONTRACTOR HAUL ROUTE
SEE NOTE #14

SWM-3

SOCCER FIELD

SOCCER FIELD

EX. TRANSFORMER

LIMIT OF FIELD DRESSING

SWM-7

EXISTING MOWED FIELD

LACROSSE
FIELDS

LACROSSE
FIELDS

FIELD
HOCKEY

3H:1V
CUT SLOPE

LIMIT OF GR.

CONTRACTOR HAUL ROUTE
SEE NOTE #14

CHESAPEAKE BAY CRITICAL AREA COMMISSION

**STAFF REPORT
October 6, 1999**

APPLICANT: Maryland Department of Natural Resources
PROPOSAL: Shore Erosion Control at St. Clement's Island
JURISDICTION: St. Mary's County
COMMISSION ACTION: Vote
STAFF RECOMMENDATION: Approval
STAFF: Tracy Batchelder
**APPLICABLE LAW/
REGULATIONS:** COMAR 27.02.05 State Agency Actions Resulting in
Development on State-Owned Lands

DISCUSSION:

Maryland's Department of Natural Resources (DNR) proposes to construct an offshore stone breakwater to prevent the continuing erosion of the westerly portion of the island. The proposed breakwater will be approximately 130-feet long and four feet above mean low water. Construction of the breakwater will take place entirely from the water.

Material excavated for placement of the breakwater's foundation (approximately 85 cubic yards of material) will be placed between the eroded bank and the Mean High Water Line, enhancing the existing shoreline and adding further protection of the eroded area. Grading of the bank is not proposed. DNR originally considered construction of a stone revetment instead of a breakwater. However, due to concerns expressed by the Maryland Historical Trust over archaeological resources alternatives to protect the eroding shoreline were considered. In addition, there is a tidal pond adjacent to the shoreline in question that would be cut off from the Bay if a revetment were constructed. Construction of the breakwater is anticipated to occur between December 1999 and June 2000.

The project will disturb less than 5,000 sq.ft. DNR has obtained approval from the State of Maryland Board of Public Works Wetlands Administration and the U.S. Army Corps of Engineers. No adverse comments were received from MDE during the public notice comment period. There are no known rare, threatened or endangered species present on the site.

Contractor shall spread excavated material from breakwater construction along beachline at a 5:1 slope over hatched area. Contractor to begin spreading of excavated material at MHW (1.8') and continue landward.

Contractor shall remove fallen tree and dispose of off-site.

I.P. #2
IRON PIPE
N 4,673.48
E 5,000.00



PI 3+10
2+60
3+10
Length:

Approximate toe of exist. revetment based upon previous design plans

CONTRACTOR SHALL BLEND THE PROPOSED EXISTING REVELTMENT CONTRACTOR SHALL STONES FROM THE EXISTING REVELTMENT A TO MAKE THE CONNECTION TO THE EXISTI FILTER FABRIC SHALL BE INSTALLED AS R REMOVED STONES, MEETING THE SPECIFICA THE PROPOSED BREAKWATER CONSTRUCTI CONNECTION WITH THE EXISTING REVELTMENT

PROPOSED STONE BREAK SEE "TYPICAL BREAKWATER"

PROPOSED PILE WITH WA SIGN AT STA 1+30 & 2

EXISTING TIDAL POND

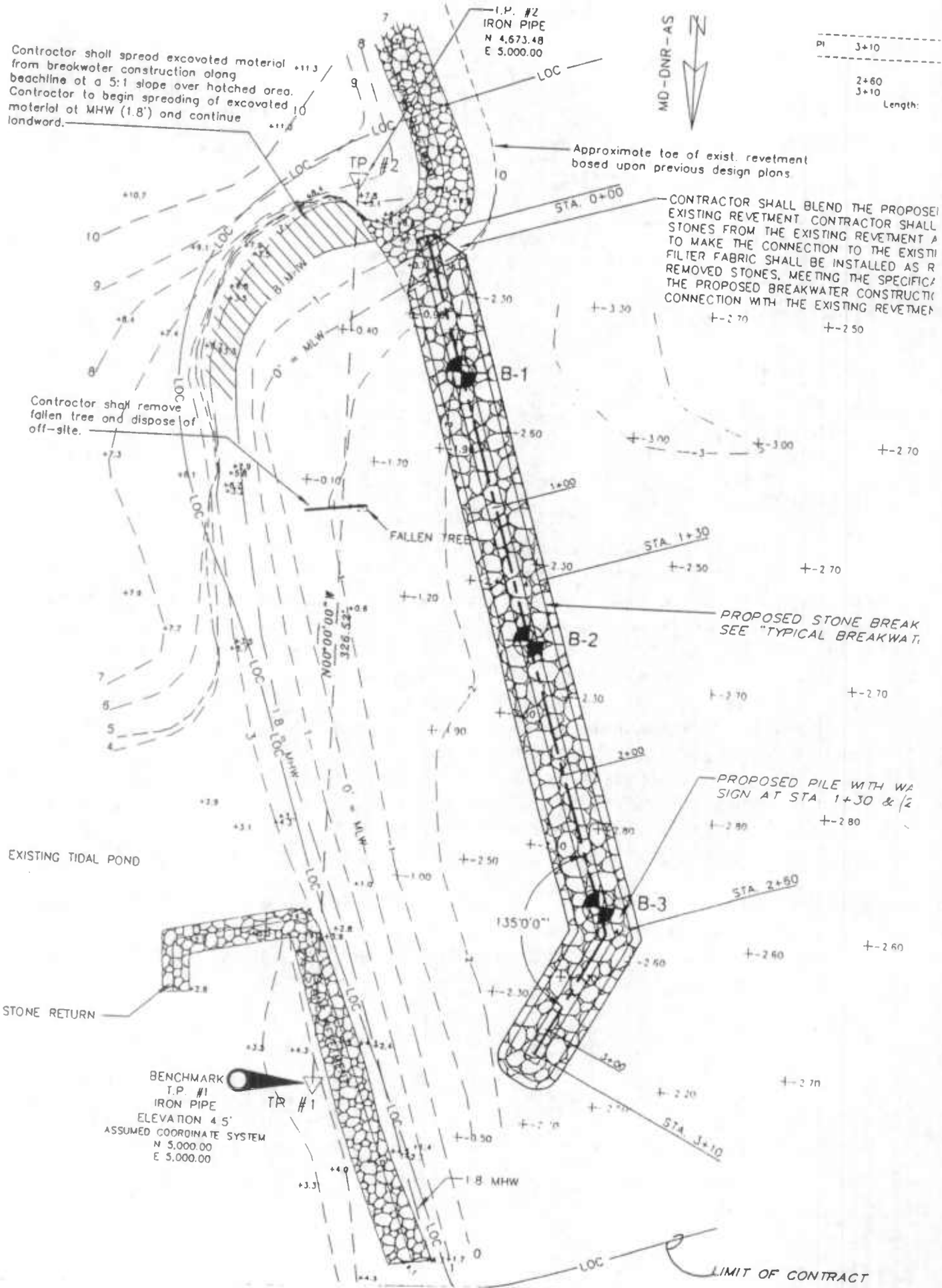
STONE RETURN

BENCHMARK
I.P. #1
IRON PIPE
ELEVATION 4.5'
ASSUMED COORDINATE SYSTEM
N 5,000.00
E 5,000.00

TR #1

1.8 MHW

LIMIT OF CONTRACT



Chesapeake Bay Critical Area Commission

STAFF REPORT

October 6, 1999

APPLICANT: Town of Easton

PROPOSAL: Refinement -Annexation of parts of Glenwood Farm/Ratcliffe Manor Properties

COMMISSION ACTION: Concurrence

STAFF RECOMMENDATION: Concur with Chairman's Determination

STAFF: Lisa Hoerger

**APPLICABLE LAW/
REGULATIONS:** Natural Resources Article §8-1809(p)

DISCUSSION:

The Town of Easton has annexed 386.44 acres of land, of which 312 acres are located in the Critical Area. The land is contiguous to the existing boundaries of the Town of Easton, generally located on the west side of Easton, south of Maryland Route 33. The property has a Critical Area designation of Resource Conservation Area (RCA). Upon annexation, the Town recommended the land use category to be a Planned Unit Development with mixed use and a park element. No change in the Critical Area designation is proposed at this time. Future development of the parcels may be served by public water and sewer, however at this time proposed development will be served by private wells and private septic.

Since the time Chairman North received notice of the annexation, staff received notice of subdivision for a portion of this site. A site visit was conducted on Monday, September 20th. Accompanying staff on the site visit were Commission member Bill Corkran, town staff, the property owner and his consultant.

Site Visit

The property is currently in active agricultural production with approximately 85%, or 300 acres in crop rotations of corn, soybeans, and wheat. A private lane leads to existing developed residential lots at the end of the peninsula. These existing residential lots are not part of the land annexed into the Town of Easton.

The proposed subdivision requests fifteen dwelling units on approximately 60 acres in the RCA. The remaining land on approximately 240 acres (proposed lot 16) will be left undisturbed until a time that a growth allocation is requested. When growth allocation is requested to develop lot 16, the entire Critical Area acreage of the parcel, including lots 1-15 will be deducted.

The Buffer is a mix of forest and agricultural land. Forested Buffer width varies from approximately 30 feet to 280 feet. The forested areas consist of predominately mature, mixed hardwoods. The Buffer on this property borders Dixon Creek on the western boundary and the Tred Avon River on the eastern boundary.

Two streams appear on the topographical map. One was observed in the field. The applicant will be in contact with the Town to determine if this feature is a stream that requires a 100-foot Buffer. A review by the Department of Natural Resources, Heritage and Biodiversity Division reported that two endangered plant species could potentially occur on the project site if the appropriate habitat exists. In addition, open waters adjacent to this site are known as historic waterfowl concentration areas. Both Dixon Creek and the Tred Avon River contained species of submerged aquatic vegetation. Individual piers are proposed for these lots.

Issue for Consideration

The parcel is identified in the Town of Easton's 1998 Comprehensive Plan as a growth area. The annexation, Resolution No.5642, became effective on June 25, 1999 following a public hearing and approval by the Town Council. While there was no opposition to this specific annexation request, there was some opposition in general to the growth of the town.

Chairman North seeks your concurrence with his determination that this annexation request is a refinement to the Town of Easton's Critical Area Program.

EASTON → ↑

NORTH ↑

GLENWOOD

TOTAL AREA 300 44 AC ±

PART OF RATCLIFFS MANOR

TRED AVON RIVER

DIXON CREEK



ST. MICHAELS ROAD/HIGHWAY NO. 33

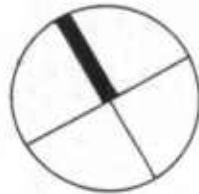
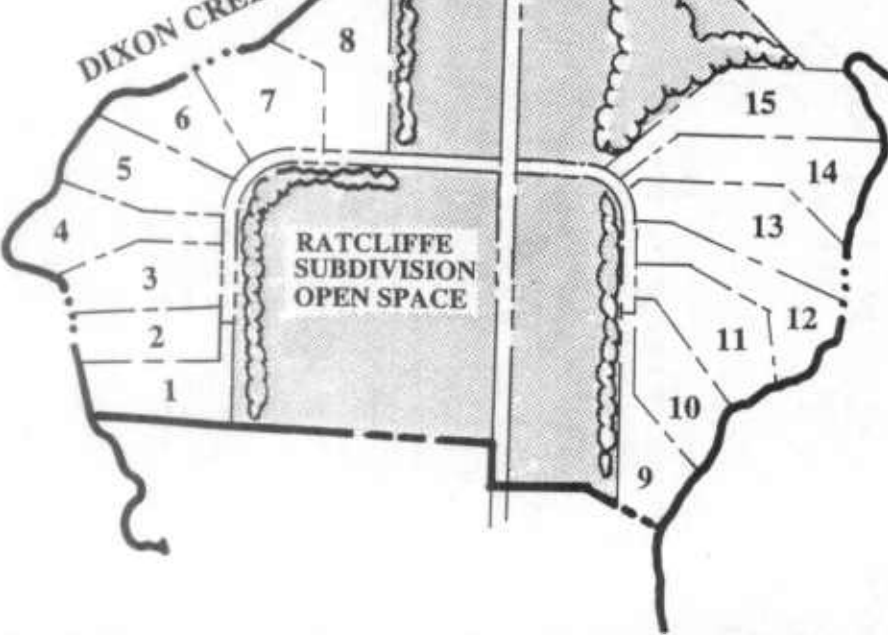
RATCLIFFE MANOR LANE

LOT 16

DIXON CREEK

TRED AVON RIVER

RATCLIFFE
SUBDIVISION
OPEN SPACE



500 1000 FEET

CHESAPEAKE BAY CRITICAL AREA COMMISSION

STAFF REPORT

October 6, 1999

APPLICANT: St. Mary's County

PROPOSAL: Tudor Hall Village Growth Allocation

JURISDICTION: Leonardtown

COMMISSION ACTION: Concurrence with Chairman's Determination

STAFF RECOMMENDATION: Approval with Conditions

STAFF: Tracy Batchelder and Mary Owens

**APPLICABLE LAW/
REGULATIONS:** COMAR 27.01.02.06, Location and Extent of Future Intensely Developed Areas

Annotated Code of Maryland, §8-1808.1 Growth Allocation in Resource Conservation Areas

DISCUSSION:

St. Mary's County is requesting 31.64 acres of growth allocation in order to change the Critical Area overlay designation of a portion of the Tudor Hall Village project site from Limited Development Area (LDA) and Resource Conservation Area (RCA) to Intensely Developed Area (IDA). The growth allocation is associated with the development of a hotel and conference center which is part of a Planned Unit Development project. The Planned Unit Development project involves a 390 acre parcel with 195.8 acres within the Critical Area. In addition to the hotel and conference center, the project will include 593 dwelling units, an 18-hole golf course, a restaurant, and an office park.

The growth allocation is needed to provide flexibility for the hotel and conference center portion of the project with regard to forest clearing, impervious surfaces, and construction on slopes greater than 15 percent. The proposed five story hotel will have 255 rooms, conference facilities, a restaurant and lounge, a fitness and salon center, and a pool.

The project site was formerly used for agriculture. Part of the site is an open field and approximately 50 percent of the site is forested. There are no known threatened or endangered species located on

the site. The project is located close to the 100-foot Buffer which was expanded for contiguous steep slopes and non-tidal wetlands. Most of the site is currently designated LDA. The southern portion of the property within the 100-foot Buffer is designated RCA. The property is located west of the main commercial area of Leonardtown which is designated IDA.

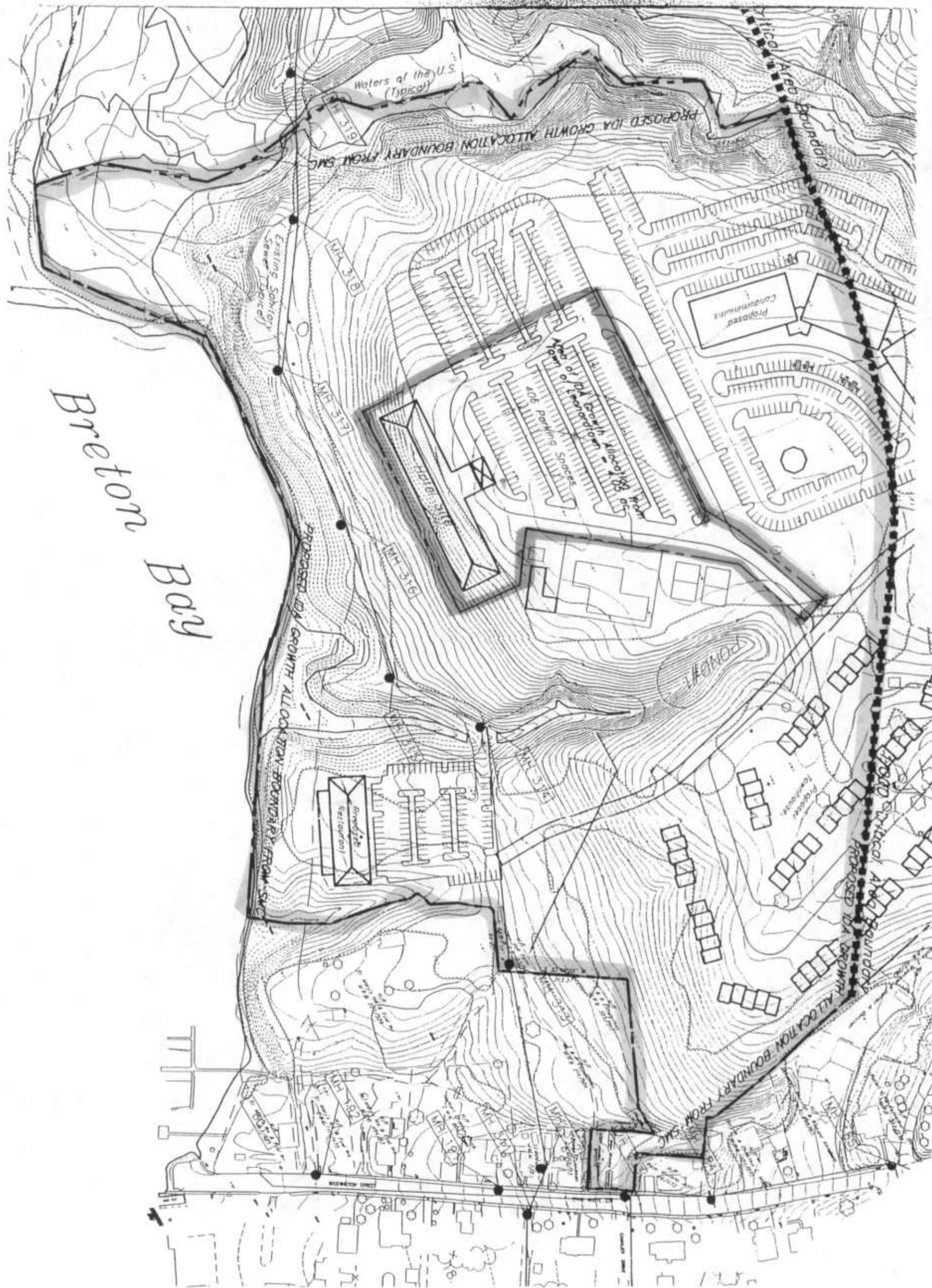
The Town and Commission staff are currently working with the applicant's engineer on stormwater management, and the 10% Rule calculations will be submitted as the design is refined. The engineer is currently evaluating possible location and types of best management practices for use on the site.

In November, 1998, the Commission approved a request by the Town of Leonardtown to use 4.05 acres of growth allocation for this project. This growth allocation, which was generated by the RCA acreage within the Town's corporate limits, was given to the Town at the time of adoption of their Critical Area Program. Because the 4.05 acres of growth allocation will not accommodate all of the development associated with the hotel and conference center, the Town applied to the County for 31.64 acres of growth allocation. In March, 1999, the County approved the Town's request and forwarded an amendment request to the Critical Area Commission. The County's approval included several conditions regarding financing of the project and the distribution of revenues between the Town and the County. The approval also included the stipulation that the County's approval of the growth allocation request would be null and void if the Commission's approval did not contain the same conditions.

When Commission staff received the County's request, staff asked that the County provide documentation that the County's conditions on the use of growth allocation were acceptable to the Town. This documentation was not received, and conversations between staff and the Town indicated that there were several issues with the conditions that needed to be resolved. The Town recently sent a letter to the Commission expressing their desire to move forward with approval of the project. Based on recent conversations with the Town Administrator, the Town no longer has any objection to the Commission's approval of the County's growth allocation request with the conditions. Although there may still be issues that need to be resolved, the County and the Town will be solely responsible for addressing these and ensuring compliance with the conditions of the County's resolution and the Commission's approval.

RECOMMENDED CONDITIONS:

The Commission's approval of this refinement recognizes the conditions contained in St. Mary's County Ordinance Z-99-01. The satisfaction and enforcement of the conditions in that Ordinance are the sole responsibility of the Town and the County.



I.D.A. Growth Allocation Plan
TUDOR HALL VILLAGE PUD
 Third Election District
 Leonardtown, Maryland
 St. Mary's County

Contract # 95-010	Drawing # 95010DA	Chkd: MWE	Drwn: DHJ
Date: 7/31/98	Scale: 1" = 100'	Page 1	of 1

GROWTH ALLOCATION SUMMARY	
TOTAL AREA OF IDA GROWTH ALLOCATION =	35.69 Ac.
IDA Growth Allocation from Town of Leonardtown =	4.05 Ac.
PROPOSED IDA GROWTH ALLOCATION FROM ST. MARY'S COUNTY =	31.64 Ac.

Chesapeake Bay Critical Area Commission

STAFF REPORT

October 6, 1999

APPLICANT: Town of Chesapeake City

PROPOSAL: Growth allocation to change 20.4 acres from LDA to IDA - Lands of H.G. Young, et al.

JURISDICTION: Town of Chesapeake City

COMMISSION ACTION: Concurrence

STAFF RECOMMENDATION: Approval

STAFF: Mary Ann Skilling and Susan M. Zankel

**APPLICABLE LAW/
REGULATIONS:** COMAR §8- 1808.1. Growth Allocation

DISCUSSION

Growth Allocation Request

At its May 10, 1999 public Town Meeting, the Town Council for Chesapeake City approved a request for 20.4 acres of growth allocation to change the Critical Area designation from LDA to IDA on the Young, et al property. Subsequently, the Board of County Commissioners of Cecil County, at its public meeting on June 1, 1999, granted the use of the requested 20.4 acres of growth allocation to the Town of Chesapeake City for the project. Both the Town and Cecil County have provided supporting documentation verifying that the land is zoned as a Traditional Neighborhood District and that the proposed residential development is consistent with the Chesapeake City Comprehensive Plan and Critical Area program.

Site and Project Description

The land is within the corporate limits of Chesapeake City and is zoned Traditional Neighborhood District under the Town's Comprehensive Plan adopted in February 1998. The growth allocation is proposed to be located on a portion of the property between St. Augustine Road and Second Street in South Chesapeake City. In support of this request, the Town Council considered the following information.

1. The entire tract is located within the corporate limits of Chesapeake City.
2. There is availability of public water and sewer adjacent to the tract.

3. The tract is zoned Traditional Neighborhood District (TND).
4. The granting of this request would make the tract more compatible with the comprehensive Plan, Zoning Regulations, and Subdivision Regulations as recently adopted by the Town of Chesapeake City.
5. The land is contiguous with a designated Intensely Developed Area in the town.

The purpose of the change is to allow residential development that will be consistent with the existing development in the town and the comprehensive plan. The applicant intends to develop the property with housing for residential use. No site plan has been submitted at this time.

Habitat Protection Areas

If growth allocation is awarded, the applicant is not relieved of the Habitat Protection Area requirements in the Town 's Critical Area Program and the State Criteria. The following natural resource and sensitive areas appear to be present in the Critical Area portion of the parcel and must be identified and their protection addressed as a part of the site plan review process.

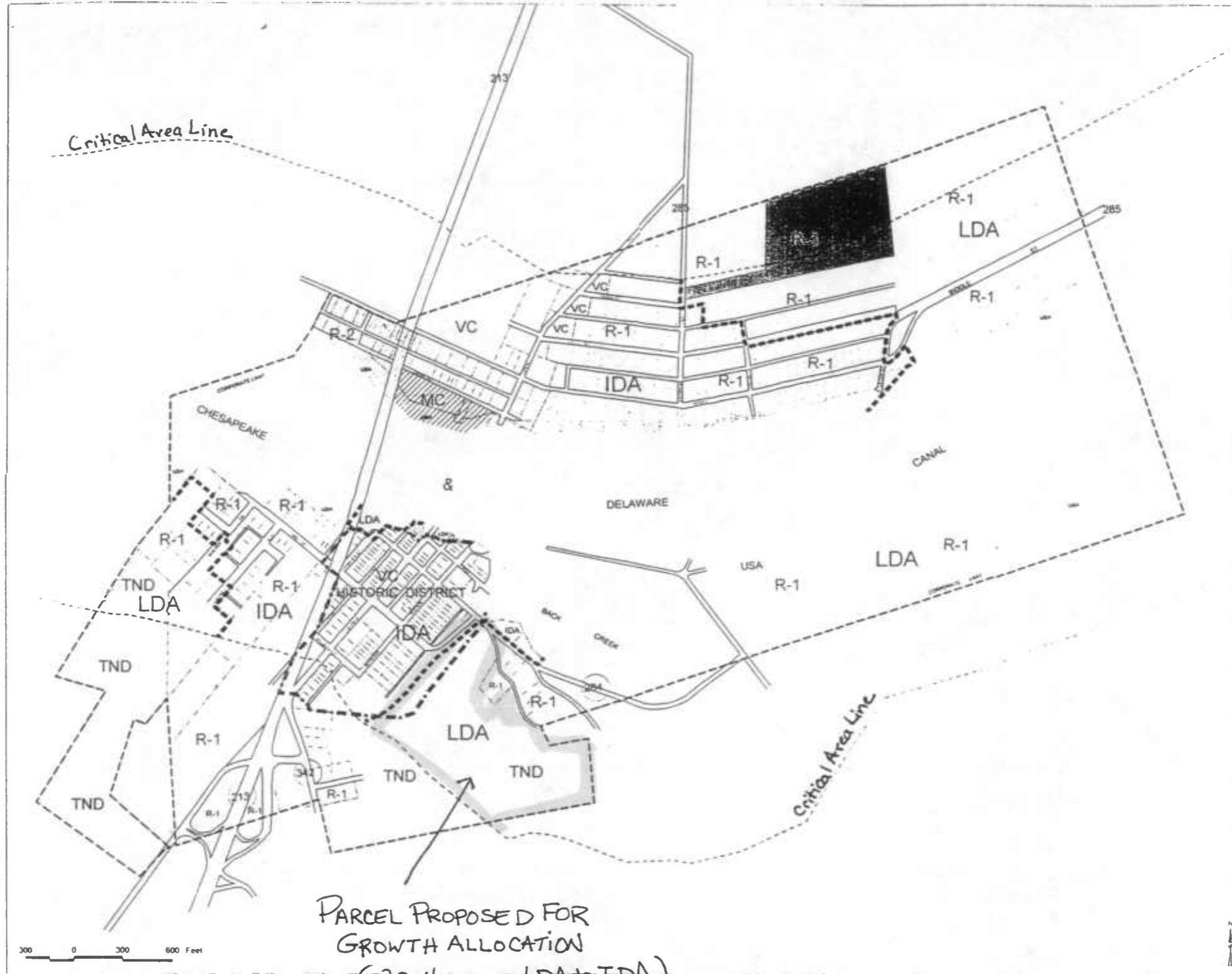
- forested land
- non-tidal wetlands
- Critical Area Buffer
- stream(s)

In addition, a 10% reduction in phosphorus pollutant loading will be required to be met as a condition of development in the IDA.

Recommendation

Commission staff recommend that the growth allocation is approved as proposed. The Chairman has determined this growth allocation request to be a refinement to the Town of Chesapeake City's Critical Area program and is seeking Commission concurrence.

Draft Official Zoning Map of Chesapeake City, Maryland



DISTRICTS:

- R-1 Residential
- R-2 Residential
- R-3 Residential
- TND Residential
- VC Village Center
- MC Marine Commercial
- GC General Commercial

CRITICAL AREA DISTRICTS:

- IDA Intensely Development Area
- LDA Limited Development Areas
- RCA Resource Conservation Areas NA

Critical Area Line

Critical Area District Line

Historic District

This is to certify that this is the Official Zoning Map referred to in Section 100 of the Chesapeake City Zoning Ordinance.

Mayor _____	Councilman _____
Councilman _____	Councilman _____
Councilman _____	Councilman _____

ATTEST: _____



Tape #2 - Side A
Beginning

The Conservation Reserve Enhancement Program (CREP) Easement

A CONSERVATION EASEMENT is a legal agreement made by a landowner that restricts use and management of property in order to protect certain resources. This agreement, known as a perpetual easement, binds the current owner and all subsequent owners of the land. The landowner retains private ownership while providing stewardship and management of the natural resources on the land.

Once a landowner has signed up for a CREP contract, he or she is eligible to participate in a special element of the CREP that allows that landowner to permanently protect the CREP eligible land under a conservation easement. The conservation easement provides long term protection for the restoration practices landowners have worked hard to install and maintain. Landowners choosing to participate in the conservation easement element will receive a lump sum bonus payment above and beyond the rental payments received under the contract.

How can landowners participate in this program?

Landowners will work with a local partner, such as the local Soil Conservation District Office, county government, or local land trust, to execute the CREP easement and receive a bonus payment. Contact information about local partners will be made available through the local Soil Conservation District office.

What does an easement mean and how does it work?

The CREP easement places certain restrictions and management requirements on land that is also eligible for the CREP contract (generally, riparian forest or vegetated buffer, wetland restoration, or retirement of highly erodible lands).

Forested Easement Areas: Forested buffers may not be burned, mowed, removed, grazed, plowed, tilled, or timbered, except under certain exceptions such as removing invasive species or removing diseased or insect infected vegetation. Limited harvesting is permitted provided the landowner comply with a current Forest Management Plan prepared by a licensed forester and provided that no harvesting take place closer than 15 feet from the waters edge. At least 60 square feet per acre of minimal basal area of acceptable growing stock of evenly distributed trees at least 6 inches in diameter must remain.

Vegetative Easement Areas: Vegetative areas should consist of perennial or permanent grasses, legumes, forbs and shrubs with a life span of ten years or more. Generally, vegetative easement areas may not be burned, cut, hayed, mowed, used for grazing or livestock access, used for seed harvesting, plowed or tilled. However, removal of invasive species or dead or diseased vegetation is permitted. Burning may be permitted upon consultation with the Maryland Department of Natural Resources. One vehicular or livestock crossing to access the property is permitted, as provided for in a Soil and Water Quality Plan. Mowing or haying is allowed twice per year as long as it does not take place between April 15 and August 15, or as determined by Maryland Department of Natural Resources, in compliance with an Operation and Maintenance Plan (prepared by the Soil Conservation District), and leaves a height of at least 6 inches of grass. Grazing would be permitted in the event of a Declaration of Drought Disaster upon consultation with the Maryland

Department of Agriculture.

Wetland Easement Area: Generally, wetland vegetation may not be burned, cut, removed, grazed, hayed, mowed, plowed, tilled, or destroyed. Invasive species and dead or insect infested vegetation may be removed. No diking, draining, dredging, channeling, filling, leveling, pumping, impounding or related activities are permitted in the wetland easement area.

Other Restrictions: Industrial, commercial, and agricultural uses are prohibited, including plowing, tilling, storing and disposing waste, grazing of livestock, and logging, except for those uses specified above. No building, facility, means of access, or other structure is permitted in the easement area, except for one vehicular or livestock crossing. No materials may be dumped, placed, applied or stored on the Easement area such as ashes, sawdust, bark, trash, garbage, rubbish, dredge spoil, chemicals, pesticides, fertilizers, abandoned vehicles, appliances, or machinery. Pesticides may be applied to control weeds, insects, or other destructive species that may harm the purpose of the conservation easement. Soil erosion and flood control through vegetation or other earth materials (soil, rock, compost), is permitted. Excavation is not permitted except to accommodate erosion or flooding control, or for creation of a wetland. Water diversion is not permitted except to protect the integrity of a residence, accessory structure, or agricultural structure outside of the easement area.

Who will hold and monitor the easements?

Local partners, such as Soil Conservation Districts, county governments, and local land trusts, will be working with DNR to co-hold the easements. This means that DNR and the local partner will be responsible for making sure that the conservation purpose of the easement is carried forth. Long term monitoring will entail periodic site visits by the local partner (or in some cases DNR), to make sure that the purposes of the conservation easement are being upheld and to provide technical assistance to landowners. Local partners and DNR will work with landowners to resolve any conflicts or concerns.

How is the easement valued and will landowners be eligible for any tax benefits?

The bonus rate for the CREP easement is based on the greater of a capitalized value of average soil rental rates for the county or a discounted average fair market value based on historical Maryland Agricultural Land Preservation Foundation transactions. Bonus rates for properties that have already sold or donated development rights will be reduced to reflect only the forgone agricultural productivity.

CREP Bonus Rate Schedule for 1999-2000:

<i>County</i>	<i>\$/Acre</i>	<i>County</i>	<i>\$/Acre</i>	<i>County</i>	<i>\$/Acre</i>
Allegany	702	Dorchester	924	Queen Annes	1,040
Anne Arundel	2,452	Frederick	835	St. Mary's	888
Baltimore	2,716	Garrett	715	Somerset	783
Calvert	693	Harford	1,482	Talbot	1,027

<i>County</i>	<i>\$/Acre</i>	<i>County</i>	<i>\$/Acre</i>	<i>County</i>	<i>\$/Acre</i>
Caroline	924	Howard	2,127	Washington	783
Carroll	1,058	Kent	1,027	Wicomoco	719
Cecil	873	Montgomery	2,705	Worcester	912
Charles	693	Prince Georges	2,307		

The Federal, State, and local tax laws can provide various benefits to those who protect their land with donated conservation easements. It is also possible that some landowners who agree to sell easements under CREP may be eligible for tax benefits. It is strongly recommended that landowners seek professional assistance through a tax attorney or professional accountant regarding any tax issues that might arise. The State of Maryland Department of Natural Resources cannot be held responsible for justifying or guaranteeing the value of individual properties for the purpose of property tax assessments, and income and estate tax determinations.

What areas will be included in the easement and what effect will the CREP easement have on the rest of the property?

The management requirements and restrictive provisions of the easement only apply to the riparian buffer areas covered by the CREP contract. This area will be designated by a map and a written description in the easement. Generally, agricultural land (crop or pasture) adjacent to perennial or intermittent waterways, certain highly erodible lands within 1000 feet of a waterway, and prior converted wetlands quality. Riparian buffers can be as little as 35 feet or as much as 150 feet wide on each side of a waterway. DNR is currently working on obtaining GPS technology that will be used to identify the exact boundaries of the easement. In some situations, it may make sense to include in the easement some adjacent lands that are not covered by the contract, but are important to the conservation purposes of the easement. In most cases, these adjacent lands lie between an existing stream or wetland and the lands eligible for annual rental payments under CREP. These adjacent lands could be eligible for the one time bonus payment but will not be eligible for the annual rental payment under CREP. Regional foresters and Program Open Space staff will work with landowners and local partners to identify situations where easements need to be expanded to include important natural resources. The bonus payment may be adjusted to accommodate areas identified as essential to the conservation purposes of the easement.

How do CREP easements fit in with other conservation programs such as Rural Legacy and donated easements with local land trusts?

Landowners participating in the Rural Legacy Program will be eligible for CREP contract payments provided that they enroll in the contract prior to restricting their property under the Rural Legacy easement. Easement bonuses will be rolled into existing conservation premiums or assessed values under the local sponsor's formula.

CREP easements can be coordinated with donated easements in several ways. A landowner could

place the CREP contract eligible areas in a CREP easement first, then donate a conservation easement on the remainder of the property to a local land trust. A landowner could also incorporate the CREP easement restrictions into a donated easement to Maryland Environmental Trust or a local land trust and forego the bonus payment. This scenario may be appropriate for landowners intending to seek tax benefits for the donation of a conservation easement. Landowners should carefully consider a variety of options and consult with a tax or accounting professional to determine the most advantageous course.

For more information contact:

Jeff Horan, Deputy Director
Forest, Wildlife & heritage Service
Department of Natural Resources
(410) 260-8520

USDA FARM SERVICE AGENCY
MARYLAND CREP REPORT
09/10/99

COUNTY	CP-21 GRASS BUFFER		CP-22 - RIPARIAN FOREST BUFFER		CP-23 - WETLAND RESTORATION		HIGHLY ERODIBLE E1>15		TOTAL		FY 99 APPLICATIONS IN PROGRESS	
	CONTRACTS	ACRES	CONTRACTS	ACRES	CONTRACTS	ACRES	CONTRACTS	ACRES	CONTRACTS	ACRES	CONTRACTS	ACRES
ALLEGANY	0	0	0	0	0	0	0	0	0	0	0	32.4
ANNE ARUNDEL	0	0	0	0	0	0	0	0	0	0	7	54.3
BALTIMORE	3	25.0	6	45.6	0	0	1	15.4	10	86.0	20	76.5
CALVERT	0	0	0	0	0	0	0	0	0	0	0	0
CAROLINE	62	465.1	0	0	0	0	0	0	62	465.1	9	192.7
CARROLL	2	12.0	15	136.1	0	0	18	419.8	35	568.8	24	151.0
CECIL	9	123.7	5	45.4	0	0	7	248.6	21	417.7	10	278.4
CHARLES	4	39.4	8	52.6	1	2.0	0	0	13	94.0	0	0
DOCHESTER	148	1998.9	10	46.2	4	13.5	0	0	162	2058.6	18	145.6
FREDERICK	1	6.6	37	404.4	0	0	31	566.3	64	977.3	22	532.9
GARRETT	0	0	1	22.0	0	0	5	81.5	6	103.5	1	14.5
HARFORD	6	28.3	20	132.9	0	0	13	129.7	39	290.9	8	76.2
HOWARD	4	51.2	10	103.8	1	15.3	8	256.1	23	428.4	3	43.8
KENT	56	347.8	10	181.6	0	0	20	184.9	86	714.3	5	27.2
MONTGOMERY	0	0	9	81.2	0	0	14	349.1	23	430.3	0	0
PRINCE GEORGE'S	0	0	0	0	0	0	0	0	0	0	7	118.1
QUEEN ANNE'S	148	1464.0	14	85.4	8	82.2	17	139.8	187	1771.4	8	77.0
ST MARY'S	0	0	4	3.7	1	5.0	0	0	5	8.7	0	0
SOMERSET	18	248.3	25	406.0	9	42.7	0	0	52	697.0	6	34.8
TALBOT	131	1535.5	14	117.1	2	33.7	0	0	147	1686.3	10	91.2
WASHINGTON	1	6.5	16	189.0	0	0	8	157.5	25	353.0	16	157.7
WICOMICO	20	106.0	12	118.0	8	47.4	0	0	40	271.4	0	0
WORCESTER	36	445.8	18	197.1	9	71.6	0	0	63	714.5	14	170.2
TOTAL	649	6905.0	234	2368.1	43	313.4	142	2548.7	1063	12,137.2	197	2274.5

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Chesapeake Bay Critical Area Commission

STAFF REPORT

October 6, 1999

SUBJECT: Revision of Critical Area FID Guidance

STAFF: Claudia Jones, Susan Zankel

**APPLICABLE LAW/
REGULATIONS:** COMAR 27.01.09.04 (Habitat Protection Areas - Plant and
Wildlife Habitat)

DISCUSSION:

The original guidance document for Forest Interior Dwelling Birds (FID) in the Critical Area was approved in 1986. The original document focused on how to avoid and minimize impacts to FID. Since that time we have seen a need to:

- - reflect new knowledge about these birds, six additional species are being proposed as additions to the existing list of 19 FID found in the Critical Area based on their status in the region;
- - refine what it means to "protect and conserve" FID habitat in the Critical Area and provide a worksheet to help determine when that directive has been met;
- - respond to requests from Critical Area jurisdictions for guidance on mitigation of unavoidable losses;
- - provide clear direction to determine when FID habitat is present on a site and when it is not;
- - update the methods for how a survey should be done when it is necessary

This document was developed by staff with the assistance of DNR's Wildlife and Heritage Division and local government Critical Area Planners.

There is an existing Critical Area Commission FID Workgroup that any Commissioner is welcome to be a part of. We plan to meet in November either before or after the regular Commission meeting. In the meantime, we will send the document for review to local Critical Area jurisdictions, scientific and technical individuals involved with the original guidance, and, other parties that have expressed an interest in the document.

DRAFT GUIDANCE
October 6, 1999

**A GUIDE TO THE CONSERVATION OF
FOREST INTERIOR DWELLING BIRDS
IN THE
CHESAPEAKE BAY CRITICAL AREA**

DRAFT

A GUIDE TO THE CONSERVATION OF FOREST INTERIOR DWELLING BIRDS IN THE CHESAPEAKE BAY CRITICAL AREA

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INTRODUCTION

Forest interior dwelling birds (FID) require large forest areas to successfully breed and maintain viable populations. This diverse group includes colorful songbirds - tanagers, warblers, vireos - that breed in North America and winter in the Caribbean, Central and South America, as well as some residents and short-distance migrants - woodpeckers, hawks, and owls. FID are an integral part of Maryland's landscape and natural heritage. They have depended on large forested tracts, including streamside and Bayside forests, for thousands of years. These birds are valued for their diverse beauty, distinct songs and behavioral characteristics, and for some, the wonder of their seasonal migrations. Over 63 million Americans consider themselves to be birdwatchers. FID are also an important component of a natural forest system. During the approximately 13 days that it takes a Red-eyed Vireo, to raise a nest of young, the adults remove insects from over a half million leaves and twigs. Together with other forest birds, FID can drastically reduce the number of caterpillars on a tree. Without healthy populations of birds like FID, insects would be free to consume much greater quantities of the world's greenery. If a given forest sustains a healthy population of FID species, it is an excellent indication that other animal species associated with that habitat type are going to be present, including invertebrates, amphibians, reptiles and mammals. The abundance of bird species in a region is a good indication of the health of the forest ecosystems and the biodiversity they can encompass.

Past and Present Trends

Unfortunately, many of these forest birds have been declining for the last 30-40 years. According to the Breeding Bird Survey (BBS), a volunteer bird count conducted each June since 1966, there was a 63% decline in neotropical migrants in Maryland between 1980 - 1989. A census of neotropical migrants in Rock Creek Park near Washington, D.C. from 1948-1988 revealed a drastic decline in these birds including the total loss of some species within the park. While the park itself did not change much over that 31 year period, the surrounding landscape became much more urbanized and fragmented (Briggs, and Criswell, 1978). Although the reasons for the decline may include more than one factor, the loss of forest and fragmentation of forests appear to play a large role on the breeding grounds in North America including Maryland. While some birds such as cardinals and robins thrive in and around fragmented forests, many birds such as the warblers and vireos require relatively large unbroken forests. Other possible contributing factors to the decline of the neotropical migrants include loss of habitat on wintering grounds and loss of migratory stopover areas.

Prior to European settlement it is estimated that old-growth forest covered approximately 95% of the Chesapeake watershed (Kraft and Brush, 1981). Forest coverage in Maryland today is about 44% (USDA Forest Service, 1966). While there may be as much or more forest cover today than at the turn of the century, the forests of the late 1800's and early 1900's were generally large unfragmented expanses of fairly pristine older forests. Today, though some regions are heavily forested, they are often permanently fragmented by housing developments, roads, industry, and agriculture. (See Figure 1.) About 40% of the deciduous forest in the East consists of small, isolated woodlots of relatively immature trees in agricultural and suburban areas. When the first

Figure 1.



Figure 1. Drawing of actual landscape change between 1952 (top) and the early 1980's (bottom) near Columbia, Maryland. (Based on photograph, Robbins et al. 1989.) Adapted with permission from the Wildlife Society.

settlers arrived in this area in the 1600's, the average height of a hardwood tree was 100 feet or more. The average height of trees in the Bay area is 60 - 80 feet (USDA Forest Service, 1996). These younger, less structurally diverse, and highly fragmented forests cannot support the same variety of plant and animal species that older, more pristine forests can.

Factors of Decline

Factors influencing the number and kind of bird species breeding in a forest include size, degree of isolation, and ratio of edge to interior. (See Figure 2.) Numerous studies have provided evidence of reduced numbers and species in smaller and more isolated forests. The presence of streams and other aquatic features, and the vegetative structure (amount of canopy and lower and mid-story vegetation), amount of leaf litter, and vegetative composition may also be important forest components for a specific bird species. These components may be missing or inadequate in smaller forests.

Forest Fragmentation

Forest fragmentation reduces the overall amount and size of forests as well as increasing the distance between individual forests tracts. Forest fragmentation also increases the ratio of forest edge to forest interior. Forest interior refers to the area in the center of a forest. It is surrounded by "edge". In the Critical Area 'interior habitat' is usually defined as the forest area found greater than 300 feet from the forest edge. Interior forest contains the highest quality habitat for FID and is critical for successful breeding. The forest area within 300 feet of a forest opening or edge is considered 'edge habitat' from an ecological perspective and is a critical area that serves as a buffer to protect interior habitat. The area of interior is adversely affected when forest is fragmented and the forest edge is increased.

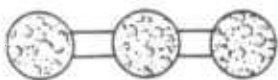
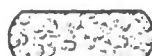
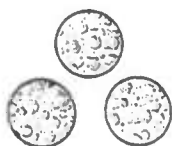
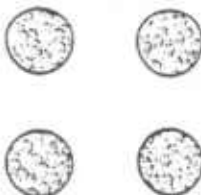
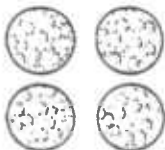
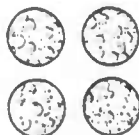
Forest fragmentation both reduces the size of forest patches, reducing total habitat available to birds, and increases isolation of the habitat that remains. Numerous studies have looked at the relationship between forest size and bird species found. A study by Robbins et. al. (1989) found that the probability of finding a specific species in a forest varied consistently based on forest size. For those species considered to be forest birds, probability of detecting the bird in any given forest generally increased as the size of the forest increased, whereas the probability of detecting many of the species associated with more altered habitat often decreased as forest size increased. (See Figure 3.)

A small forest may not be adequate to accommodate a bird's territory or to provide an ample supply of food. For example, a breeding pair of Red-shouldered Hawk require from 250-625 acres to sustain them. A black and white warbler may require as much as 750 acres. Neotropical migrants in general feed almost exclusively on insects while on their Maryland breeding grounds. Fragmented and small forests tend to be drier and to have less leaf litter. Leaf litter is an important component for maintaining arthropod (i.e., insects, spiders) populations for hungry birds. In addition to area requirements, many forest interior birds have other specific habitat requirements for nesting. For example, pileated woodpeckers require large snags (standing dead trees) from 100-180 year old trees. The Louisiana waterthrush requires nesting habitat near

Figure 2. A schematic of preserve design principles as they apply to forest interior dwelling bird (FID) conservation; from Diamond (1975).

BETTER

WORSE



A. Maximize forest tract size - a large forest is better than a smaller one.

B. Avoid fragmentation of existing contiguous forests - a single large forest is better than several smaller ones of the same total area.

C. Minimize forest isolation - forests in close proximity to each other are better than forests located far apart.

D. Maximize the juxtaposition of individual forest tracts.

E. Minimize the forest edge:area ratio - forests that approach a circle or square will provide a greater proportion "interior" habitat than thin, narrow forests of the same total area.

F. Maximize connectivity between forests and the width of the connective corridors - forests that are effectively linked are better than disjunct forests.

streams and forested swamps in order to build its nests along the banks.

Nest Predation and Parasitism

Forest edges provide access to the interior for avian predators such as Blue Jays, Crows, and grackles and mammalian predators that include fox, raccoon, squirrel, dogs and cats. These predators attack nests, and eat eggs, and young birds. These predators tend to increase in numbers near areas of human habitation and can be detrimental to the successful nesting of birds. For example, domestic house cats are estimated to kill 3-4 million birds each day in the United States.

Another major cause of nest failure, exacerbated by forest fragmentation, is parasitism by Brown-headed Cowbirds. Cowbirds lay eggs in the nests of a variety of forest birds, however, they require grassy areas in which to feed. Pasture land, agricultural fields, and suburban lawns are prime feeding habitat for these birds. When these areas create fragmented forests, cowbirds can be abundant and have dramatic impacts on breeding success of FID. Cowbird eggs usually hatch ahead of the host's eggs and the young cowbirds develop rapidly. Young cowbirds are usually larger and more aggressive than the host's young, taking more than their share of food. Young cowbirds will also kick unhatched eggs of the host species out of the nest.

Neotropical migrants are particularly susceptible to parasitism by cowbirds. These migratory birds did not evolve with cowbirds and thus have not developed defensive mechanisms. It is thought that before the 1900's the cowbird was largely absent from the forests of the East, occurring primarily in the grasslands west of the Mississippi. Long-distance migrants are more vulnerable to predation and parasitism because their breeding season is restricted by the time they require for migration. They often only have time to produce one brood once they arrive on the breeding grounds and before the fall migration to the south.

Development

Changes in land use, particularly new development, have contributed greatly to the decline of FID in Maryland. Development in general causes permanent fragmentation and loss of forest. (See Figure 1.) Development often encourages the spread of invasive plants which results in a reduction in vegetative diversity and structure, creates easy access for predators, and often reduces or alters micro habitats in forests by redirecting or otherwise altering existing hydrology.

The decline in Neotropical migrant species may be due in part to the loss of forest in their winter habitat and along migratory routes. These small birds may travel a distance of one thousand miles or more over several days to a week. Providing for the needs of these birds, in addition to keeping adequate areas for breeding, also means conserving the native vegetation that provides both the food needed for refueling and that provides cover from predators during migration.

Value of Forest and Forest Interior Dwelling Birds

The eastern deciduous forest is more than a group of trees. It is an ecosystem of plants and animals that has evolved over thousands of years. In addition to providing habitat for numerous

species of wildlife, forests help to protect our watersheds from pollution and have a major effect on the stability of the world climate by absorbing carbon dioxide and releasing oxygen. Forest birds play a role in the complex food web. Warblers and other insectivores eat untold numbers of insects such as spruce budworms and caterpillars, helping to keep these defoliators in check (Yahner, 1995). In fact, it is because of the abundance of these insects in the spring that migratory birds make the journey north from points far south to breed.

Forest breeding birds act as an "umbrella species" to help in the preservation of the entire range of forest benefits. Diversity in bird species is a good indicator of the diversity of a habitat overall. The habitat needs of FID overlap those of many other plant and animal species including large mammals, many wildflower species, wood frogs, and wild turkey. When sufficient habitat is provided to sustain the entire suite of forest birds, there is evidence to suggest that we have done a good job of protecting other important components and micro habitats of the forest - from small streams and headwaters that are important for fish, to vernal pools that are necessary for the survival of amphibians. The guidance that follows provides a way for land owners, developers, and local governments to conserve this suite of birds and the forests that they depend on.

CRITICAL AREA PROVISION FOR FID HABITAT PROTECTION

The Chesapeake Bay Critical Area Program was established in 1984 with the passage of the Critical Area Act. The law mandated the development of regulations (Critical Area Criteria) by the Governor-appointed Critical Area Commission. Based on goals set forth by the Act, minimum requirements were developed to protect water quality, conserve plant and wildlife habitat, and direct growth. These requirements are implemented through 61 county and municipal Critical Area Programs.

One of the requirements of the Criteria is the protection and conservation of breeding habitat for forest interior dwelling birds. Specifically, the Criteria instruct local jurisdictions to develop Critical Area Programs to:

Protect and conserve those forested areas required to support wildlife species identified above in §C(2)(a)(iii) and (iv) [these regulations refer to riparian forests and large forest tracts, respectively; see below "What is FID habitat"], by developing management programs which have as their objective, conserving the wildlife that inhabit or use the areas. The programs should assure that development activities, or the clearing or cutting of trees which might occur in the areas, is conducted so as to conserve riparian habitat, forest interior wildlife species, and their habitat. Management measures may include incorporating appropriate wildlife protection elements into forest management plans, and cluster zoning or other site design criteria which provide for the conservation of wildlife habitat. Measures may also include soil conservation plans that have wildlife protection provisions appropriate to the area defined above, and incentive programs

which use the acquisition of easements and other similar techniques (COMAR 27.01.09.04C(2) (b)(iv)).

The Criteria also identify two FID habitat types for which conservation is mandated:

- (1) *Existing riparian forests (for example, those relatively mature forests of at least 300 feet in width which occur adjacent to streams, wetlands, or the Bay shoreline, which are documented breeding areas) (COMAR 27.01.09.04C(2)(a)(iii));*
- (2) *Forest areas utilized as breeding areas by forest interior dwelling birds and other wildlife species (for example, relatively mature forested areas within the Critical Area of 100 acres or more, or forest connected with these areas) (COMAR 27.01.09.04C(2)(a)(iv)).*

Both definitions give examples of habitat sizes (riparian forests 300 feet or wider, forest tracts 100 acres or larger). Smaller forested areas may support FID depending on the characteristics of the forest tract (e.g., forest age, shape, forest edge:area ratio, vegetative structure and composition, topography, degree of human disturbance, etc.) and surrounding landscape (e.g., proximity to large forest tracts, percent of contiguous forest in surrounding area, habitat quality of nearby forest tracts, predominant surrounding land use) and are therefore not necessarily excluded from protection. Likewise, suitable FID habitat may be absent in forests larger than 100 acres, particularly if the forest is heavily fragmented, distant from other large forest tracts and lacks mature forest growth and structural diversity.

FID OCCURRING IN THE CRITICAL AREA

Twenty-five species of Forest Interior Dwelling Birds potentially breed in the Critical Area (Table 1; Stewart and Robbins 1958, Iliff et al. 1996, Robbins and Blom 1996). The majority of these species are small songbirds such as warblers, vireos and flycatchers. Others include the Barred Owl, Whip-poor-will and several hawk and woodpecker species. Twenty species are Neotropical migrants, species which nest in temperate North America and winter in Central and South America.

Although each species is associated with a particular set of forest conditions, all require relatively large, unfragmented forest blocks located within heavily forested landscapes or regions to successfully breed and maintain viable populations. Thirteen of the twenty-five species listed are highly area-sensitive; that is, they seldom occur in small, heavily disturbed or fragmented forests. These species are most vulnerable to forest loss, fragmentation and overall habitat degradation. Most are rare or uncommon on the Maryland Coastal Plain and many have highly specialized breeding habitat requirements. Their presence during the nesting season is usually an indicator of high-quality FID habitat. A forest that supports viable populations of the majority of these 13 species is considered exceptional habitat. Few such forests remain in eastern Maryland. The other 12 species tend to exhibit less area-sensitivity but still require relatively large contiguous forests to maintain stable populations. When less than four of these species are found to be present in a forest, it is usually an indication of severe forest fragmentation and thus, marginal or low quality FID habitat.

This edition of the guidance paper includes some revisions to the species list. Five species (Broad-winged Hawk, Brown Creeper, Veery, Black-throated Green Warbler, Cerulean Warbler), all widely recognized as FID, have been added to the original 19 species because of recent documentation that these species breed on the Maryland Coastal Plain (Robbins and Blom 1996). At the time of publication of the first guidance paper, no such information existed or recent breeding records were lacking. All five species are rare breeders on the Maryland Coastal Plain and, with the exception of Veery, are highly area-sensitive. Their presence indicates very high quality habitat.

A sixth addition to the species list involves the Wood Thrush. Although it breeds statewide, the Wood Thrush is experiencing significant population declines in Maryland and throughout much of its breeding range in eastern North America. Recent studies indicate that this species is negatively impacted by forest fragmentation and that viable populations require large contiguous blocks of mature deciduous or mixed deciduous-conifer forest. One additional revision involves a change in the area-sensitivity designation for Black-and-white Warbler to "highly area-sensitive".

Table 1. List of Forest Interior Dwelling Bird species (FID) that potentially breed in the Critical Area^a.

Common Name	Scientific Name	Safe Date ^b	Migratory Class ^c
Red-shouldered Hawk	<i>Buteo lineatus</i>	May 1 - Aug 31	Temperate
Broad-winged Hawk ^d	<i>Buteo platypterus</i>	June 5 - Aug 10	Neotropical
Barred Owl ^d	<i>Strix varia</i>	Jan 15 - Aug 31	Nonmigratory
Whip-poor-will	<i>Caprimulgus vociferus</i>	May 10 - July 15	Neotropical
Hairy Woodpecker	<i>Picoides villosus</i>	Mar 15 - Aug 31	Nonmigratory
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Mar 15 - Aug 31	Nonmigratory
Acadian Flycatcher	<i>Empidonax virescens</i>	May 25 - Aug 5	Neotropical
Brown Creeper ^d	<i>Certhia americana</i>	May 15 - Aug 31	Temperate
Veery	<i>Catharus fuscescens</i>	June 10 - Aug 31	Neotropical
Wood Thrush	<i>Hylocichla mustelina</i>	May 25 - Aug 20	Neotropical
Yellow-throated Vireo	<i>Vireo flavifrons</i>	May 25 - Aug 15	Neotropical
Red-eyed Vireo	<i>Vireo olivaceus</i>	June 1 - July 31	Neotropical
Northern Parula	<i>Parula americana</i>	June 1 - Aug 15	Neotropical
Black-throated Green Warbler ^d	<i>Dendroica virens waynei</i>	June 10 - Aug 5	Neotropical
Cerulean Warbler ^d	<i>Dendroica cerulea</i>	May 25 - Aug 5	Neotropical
Black-and-white Warbler ^d	<i>Mniotilta varia</i>	May 15 - July 25	Neotropical
American Redstart ^d	<i>Setophaga ruticilla</i>	June 10 - July 20	Neotropical
Prothonotary Warbler	<i>Protonotaria citrea</i>	May 10 - July 20	Neotropical
Worm-eating Warbler ^d	<i>Helmitheros vermivorus</i>	May 20 - July 20	Neotropical
Swainson's Warbler ^{d, e}	<i>Limnothlypis swainsonii</i>	April 20 - Aug 31	Neotropical
Ovenbird	<i>Seiurus aurocapillus</i>	May 20 - Aug 5	Neotropical
Louisiana Waterthrush ^d	<i>Seiurus motacilla</i>	May 1 - July 10	Neotropical
Kentucky Warbler ^d	<i>Oporornis formosus</i>	May 25 - July 15	Neotropical
Hooded Warbler ^d	<i>Wilsonia citrina</i>	May 25 - July 25	Neotropical
Scarlet Tanager	<i>Piranga olivacea</i>	May 25-Aug 10	Neotropical

^a Documentation of breeding evidence based on Stewart and Robbins (1958), Iliff et al. (1996), and Robbins and Blom (1996).

^b Safe dates, as listed in Robbins and Blom (1996), indicate the time of year when a species can be assumed to occupy a breeding territory.

^c Migratory classes: "Neotropical" migrant - breeds in temperate North America and winters primarily in Central and South America; "temperate" migrant - breeds and winters primarily in temperate North America; "nonmigratory" - year-round resident with no migratory movements.

^d These species are highly area-sensitive and most vulnerable to forest loss, fragmentation and overall habitat degradation.

^e State-listed as Endangered.

HOW TO DETERMINE IF FID HABITAT IS PRESENT

The Critical Area Commission has determined that the presence of FID habitat, as used in the Criteria, should be based on the overall quality of FID habitat in a forested area. Two practical approaches to estimating habitat quality involve 1) measuring certain forest characteristics such as the size, approximate age and forest edge:area ratio, and 2) conducting a bird survey to determine which species are breeding in a particular forest, using appropriate bird survey methods and a qualified observer (see "Bird Survey Methods," page ____, for a description of survey techniques and observer qualification procedures). One or both approaches can be used, both of which are described below.

Habitat Determinations Based on Forest Characteristics

Studies show that the presence and relative abundance or density of many forest nesting bird species is closely related to such features as forest area, age, shape and the proportion of edge habitat present (e.g., Whitcomb et al., 1981, Ambuel and Temple 1983, Lynch and Whigham 1984, Robbins et al., 1986, Askins et al. 1987, Keller et al. 1993). The Criteria provide two examples of forest areas that are considered potential FID habitat and are to be protected in the Critical Area: 1) forest with 100 or more contiguous acres and 2) riparian forest areas with a width of at least 300 feet (COMAR 27.01.09.04C(2)(a)). In reality, forests that support FID in the Critical Area have a wider range of characteristics. The following provide a more accurate guide for identifying FID habitat. When these conditions exist, habitat is assumed to be present and protection measures should be employed unless it is determined that the forest does not function as FID habitat.

- A. Forests at least 50 acres in size with 10 or more acres of "forest interior" habitat (i.e., forest greater than 300 feet from the nearest forest edge). The majority of the forest tract should be dominated by pole-sized or larger trees (5 inches or more in diameter at breast height), or have a closed canopy. or
- B. Riparian forests at least 50 acres in size with an average total width of at least 300 feet. The stream within the riparian forest should be perennial, based on field surveys or as indicated on the most recent 7.5 minute USGS topographic maps. The majority of the forest tract should be dominated by pole-sized or larger trees, or have a closed canopy.

In both cases, the size of the forest tract is based on the entire forest area, regardless of Critical Area boundaries or property lines. Two forest tracts may be considered unconnected or disjunct if they are separated by nonforested habitat which results in a permanent 30-foot break in the forest canopy (e.g., road, right-of-way). The above forest characteristics are intended to be a guide. On occasion, FID may be present in smaller forests or absent in larger ones.

Habitat Determinations Based on Bird Surveys

A bird survey can be used in lieu of forest characteristics to determine if FID habitat is present.

However, a survey is necessary only if an applicant (e.g., for a proposed development or timber harvest) questions or refutes a habitat determination based on forest characteristics and, as a result, seeks a confirmation of the bird species present. A confirmation is the responsibility of the applicant and must be based on current data obtained by a qualified observer using appropriate survey methods (see "Bird Survey Methods and Data Interpretation"). If the survey yields either of the following results, FID habitat is present:

- A. At least four of the species listed in Table 1 are present with a "probable" or "confirmed" breeding status, as defined by Robbins and Blom (1996). or
- B. At least one highly area-sensitive species, as listed in Table 1, is present with a "probable" or "confirmed" breeding status.

Bird Survey Methods

The primary purpose of a bird survey (herein referred to as a "FID survey") is to determine the breeding status and approximate location of all potentially-occurring bird species in a forest. This information is used to determine if FID habitat is present, as defined in the preceding section, and help develop appropriate conservation measures.

The Critical Area Commission requires the use of standard biological methods to conduct FID surveys. The following combination of methods is recommended as a practical, reasonably accurate means of conducting a survey: 1) point counts, 2) general searching or canvassing during early to mid-morning hours, and 3) canvassing during evening hours for nocturnal FID (e.g., Whip-poor-will, Barred Owl). The point count is a widely used quantitative bird survey method (Ralph et al., 1995). Detailed descriptions and evaluations of point count methodology are provided in such publications as Ralph and Scott (1981), Verner (1985) and Ralph et al. (1995). Generally, this method consists of an observer standing at a point or station for a standardized length of time (e.g., 10 minutes) and recording by species the number of all individual birds seen or heard. The count is then repeated at other stations (usually spaced at least 450-600 feet apart) until, in the case of a Critical Area FID survey, a reasonably accurate list can be made of all the bird species present in a forest and their breeding status is known. Used in conjunction with point counts, canvassing helps to ensure that species which may be present are not overlooked and that sufficient observations have been made to accurately determine each species' breeding status. The minimum amount of field effort required to conduct a survey is about three mornings (point counts and canvassing during daylight hours) and two evenings (canvassing for nocturnal species).

Guidelines for conducting FID surveys are as follows:

1. Conduct point counts during May 25-June 30, between one-half hour before sunrise to four hours after sunrise. The ability to detect most FID, especially songbirds, is greatest during early morning hours within this five-week period. Other survey efforts should be made during the same five-week period or within "safe dates" as listed in Table 1.

2. Conduct point counts only during appropriate weather conditions. Avoid days with precipitation, heavy fog and strong winds.
3. Conduct at least three counts per station, with each count occurring on a different morning and separated by at least five days.
4. During each count per station, record the species (including non-FID), breeding code (e.g., 'X' for a species seen or heard in breeding habitat within safe dates; see Appendix A), and sex and age, if possible, of each individual bird or breeding pair of birds seen or heard. Also, on each day of observations, record the date, start and finish time, general weather conditions and observer name. Record similar information during canvassing efforts.
5. The number of point count stations in a forest should reflect the total acreage of forest present; i.e., the larger the forest, the greater the number of stations. Below is a suggested guide for determining the minimum number of stations in a forest, with stations spaced at least 450 feet apart.

<u>Forest Area</u>	<u>No. Point Count Stations</u>
< 200 acres	1 station per 15 acres
200-500 acres	1 station per 25 acres
> 500 acres	1 station per 50 acres

6. Point count stations should be distributed throughout potential FID habitat and located in a manner that attempts to maximize the number of forest interior dwelling bird species detected. Habitat associations of each species should be taken into consideration so that relatively species-rich habitats (e.g., mature or old forest, structurally diverse stands, riparian forest, coves and ravines), species with specialized habitat requirements (e.g., Louisiana Waterthrush) and highly area-sensitive species are not overlooked or under surveyed. If possible, stratify the number of stations by major forest type and age class (e.g., mature upland deciduous forest, mature deciduous floodplain forest, pole-stage mixed pine-hardwood forest).
7. Point count stations should be spaced at least 450-600 feet apart and, where possible, located 150 feet or more from the nearest forest edge.
8. A species shall be considered breeding at a given site if survey data support a "probable" or "confirmed" breeding status determination (see Appendix A for definitions of these criteria).
9. All surveys on a given forest tract, especially point counts, should be conducted by the same observer.
10. The observer must be qualified; i.e., capable of identifying all potentially occurring birds by sight and sound. A current list of qualified observers can be obtained by contacting

the Maryland Department of Natural Resources (DNR) or the Critical Area Commission. A person is deemed qualified by DNR if he or she successfully completes a DNR administered field test on bird identification, or is recommended to DNR as qualified by at least two references experienced in forest bird identification. The references should be familiar with the candidate's skills and experience in bird identification and survey methods, particularly in forested habitats. For additional information, please contact the Critical Area Commission or DNR.

11. Canvassing should be conducted during early to mid-morning (about one-half hour before sunrise to four hours after sunrise). These surveys can be done on the same mornings as point counts. Canvassing can be used to upgrade the breeding status (e.g., from "possible" to "probable" or "confirmed") of select species or to search areas where no point count stations are located. Canvassing can be particularly useful to upgrade the breeding status of relatively inconspicuous species with large breeding territories (Hairy Woodpecker, Pileated Woodpecker and Red-shouldered Hawk). Point counts alone may fail to detect these species frequently enough to accurately determine their breeding status.
12. Canvassing for nocturnal species should be conducted on at least two evenings, separated by at least five days. Broadcasting taped recordings of Barred Owl and Whip-poor-will calls may increase the probability of detecting these species. However, tape recordings must be used judiciously since birds may abandon breeding territories if the tapes are played too often. Once a target species is detected, stop using the recording that evening.
13. The minimum data reporting requirements to DNR and the Critical Area Commission are as follows:
 - a. Same information as described under '3'.
 - b. A table listing the proposed breeding status (observed, possible, probable or confirmed) of each species observed in the survey area and, if appropriate, nearby or adjacent areas.
 - c. A map showing the location of each point count station and other survey efforts.

Interpretation of Bird Survey Data

The Critical Area Commission and DNR provide final interpretation of survey data using the breeding status criteria listed in Appendix A as a guide. The entire forest tract is considered when determining the number and breeding status of forest interior dwelling bird species present.

CONSERVATION GUIDELINES

This section discusses planning tools that can be used to achieve long-term, wide-scale FID habitat conservation as well as FID conservation at the site specific level.

A . LAND USE PLANNING AT A REGIONAL OR LOCAL GOVERNMENT LEVEL

The land use planning process, whether at the regional or local level, provides an opportunity to pro-actively address protection and conservation of FID habitat within and outside of the Critical Area. Land use planning efforts should be used to identify and protect the largest contiguous tracts of forest in a region. When possible, the quality of and threats to these habitat areas should be assessed in order to prioritize habitat areas for protection and conservation.

Land use planning tools, like mapping habitat areas or regional growth management, enable local jurisdictions to use local authority to minimize impacts to FID habitat at the site level and to protect the highest quality and most valuable forest and FID habitat in the region and over time. In addition, FID habitat conservation can encompass many other conservation goals that have been identified within a region. For example, by virtue of the size and composition of forest that is needed to protect FID, thousands more species will benefit from the protection of priority forest areas.

Land use planning tools such as, low density zoning, smart growth, and flexibility in zoning and subdivision ordinances can make conservation of important forest habitat before it gets to the site planning stage.

- **Growth Management/Smart Growth:**
 - direct growth away from forested and other sensitive resource areas
 - encourage development in areas with existing infrastructure
 - provide funding for infrastructure only in designated growth areas

- **Increase Flexibility in Zoning Ordinances, Subdivision Regulations**

Certain ordinances, regulations, and development standards actually cause unintended forest fragmentation. In some cases, the goals of these ordinances may not allow for a great deal of flexibility, (e.g., public safety), however wherever possible, these standards should be written to better achieve habitat and natural resources protection goals. Local governments should evaluate the effect of existing standards so that these standards do not result in an unnecessary increase in the size of lots and the distance between lots, which in turn increases forest clearing. Options to consider:

 - provide flexibility in required road widths and frontage widths to eliminate/reduce gaps in the forest canopy

 - reduce minimum lot size requirements to reduce the amount of land that is gobbled up by single family development

the Maryland Department of Natural Resources (DNR) or the Critical Area Commission. A person is deemed qualified by DNR if he or she successfully completes a DNR administered field test on bird identification, or is recommended to DNR as qualified by at least two references experienced in forest bird identification. The references should be familiar with the candidate's skills and experience in bird identification and survey methods, particularly in forested habitats. For additional information, please contact the Critical Area Commission or DNR.

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 - provide flexibility in required road widths and frontage widths to eliminate/reduce gaps in the forest canopy
 - reduce minimum lot size requirements to reduce the amount of land that is gobbled up by single family development

- encourage transfer of development rights from large forested regions to areas with existing infrastructure and fewer natural resources
- provide flexibility in area requirements for septic reserve areas where practicable
- require clustering to reduce forest fragmentation
- encourage shared driveways, septic systems to reduce openings in the forest

(See Appendix E for additional information on flexible ordinance language and development standards.)

C. SITE DESIGN GUIDELINES FOR FID

In addition to land use planning, site design is an important approach to FID habitat conservation. In general, the greatest loss of FID habitat occurs when development fragments or intrudes into the forest interior or increases the area of forest edge. The site design guidelines provide guidance to landowners and plan reviewers on how to achieve the greatest possible protection and conservation of FID habitat when development is proposed. A key to using the *Site Design Guidelines* is to determine and assess the amount of interior habitat that would be impacted under a proposed development scenario. When the guidelines are followed, the impacts to interior forest habitat are minimized.

Site Design Guidelines

1. Restrict development to non-forested areas.
2. If forest loss or disturbance is unavoidable, concentrate or restrict development to:
 - a. the perimeter of the forest (i.e., within 300 feet of the existing forest edge)
 - b. thin strips of upland forest less than 300 feet wide
 - c. small, isolated forests less than 50 acres in size
 - d. portions of the forest with low quality FID habitat; e.g., areas that are already heavily fragmented, relatively young, exhibit low structural diversity, etc.
3. Maximize the amount of forest "interior" (forest area > 300 feet from the forest edge) within each forest tract (i.e., minimize the forest edge:area ratio). Circular forest tracts are ideal and square tracts are better than rectangular or long, linear forests.
4. Minimize forest isolation. Generally, forests that are adjacent, close to, or connected to other forests provide higher quality FID habitat than more isolated forests.
5. Limit forest removal to the "footprint" of houses and to that which is necessary for the placement of roads and driveways.
6. Minimize the number and length of driveways and roads.
7. Roads and driveways should be as narrow and short as possible; preferably less than 15 feet and 25 feet, respectively.
8. Maintain forest canopy closure over roads and driveways.
9. Maintain forest habitat up to the edges of roads and driveways; do not create or maintain mowed grassy berms.
10. Maintain or create wildlife corridors.
11. Do not remove or disturb forest habitat during April-August, the breeding season for most FID. This seasonal restriction may be expanded to February-August if certain early nesting FID (e.g., Barred Owl) are present.
12. Landscape homes with native trees, shrubs and other plants and/or encourage homeowners to do so.
13. Encourage homeowners to keep pet cats indoors or, if taken outside, kept on a leash or inside a fenced area.
14. In forested areas reserved from development, promote the development of a diverse forest understory by removing livestock from forested areas and controlling white-tailed deer

populations. Do not mow the forest understory or remove woody debris and snags.

15. Afforestation efforts should target a) riparian or streamside areas that lack woody vegetative buffers, b) forested riparian areas less than 300 feet wide, and c) gaps or peninsulas of non-forested habitat within or adjacent to existing FID habitat

See Figures 4A, 4B, and 4C for illustrations of several of the *Site Design Guidelines*.

Figures 4A. and 4B.

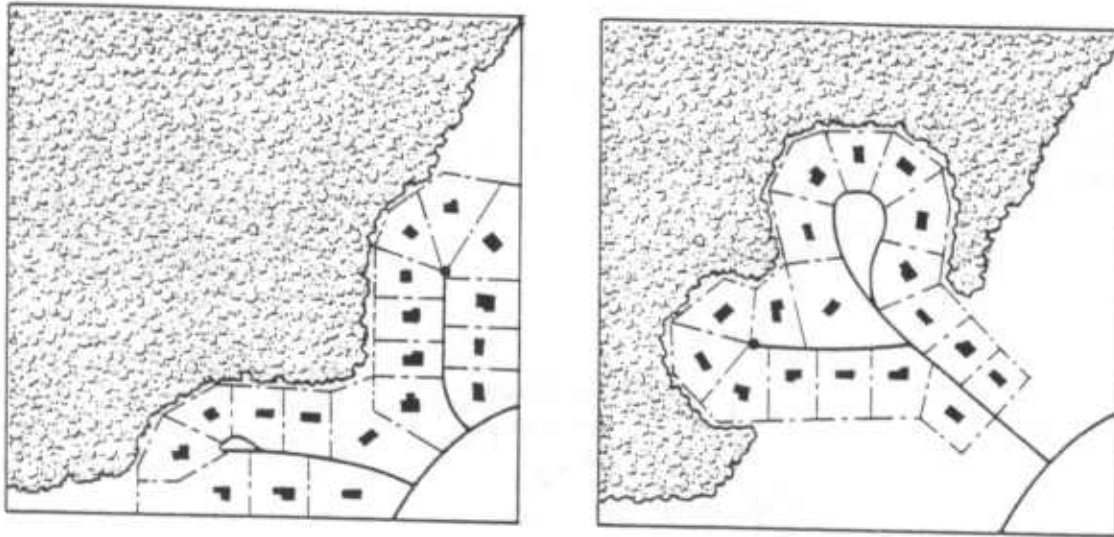


Figure 4A. Restrict development to non-forested areas when possible or limit development to forest edge to maximize forest interior.

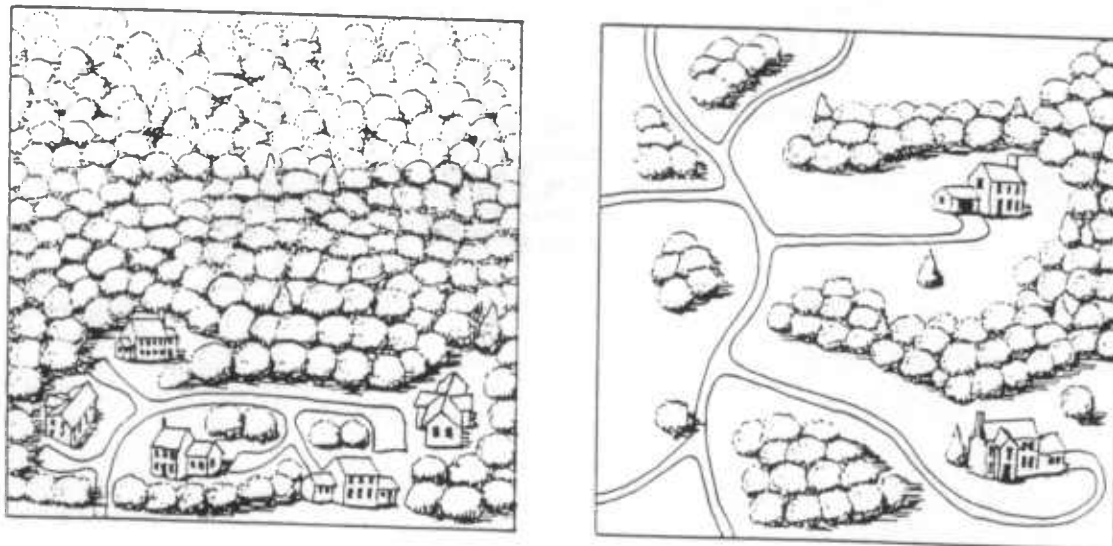


Figure 4B. Limit the amount of forest clearing, reduce length of driveways and other roads, and cluster development to minimize impacts to forest.

Figure 4C.

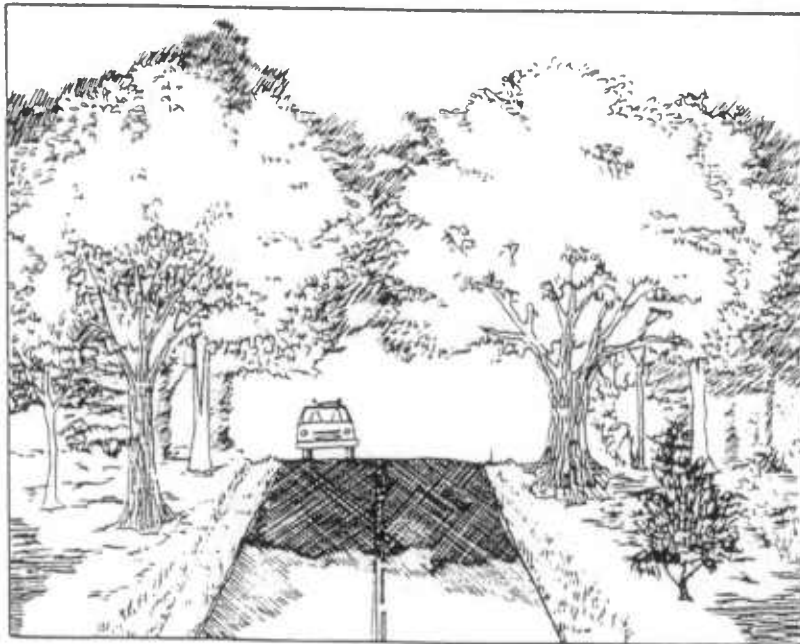
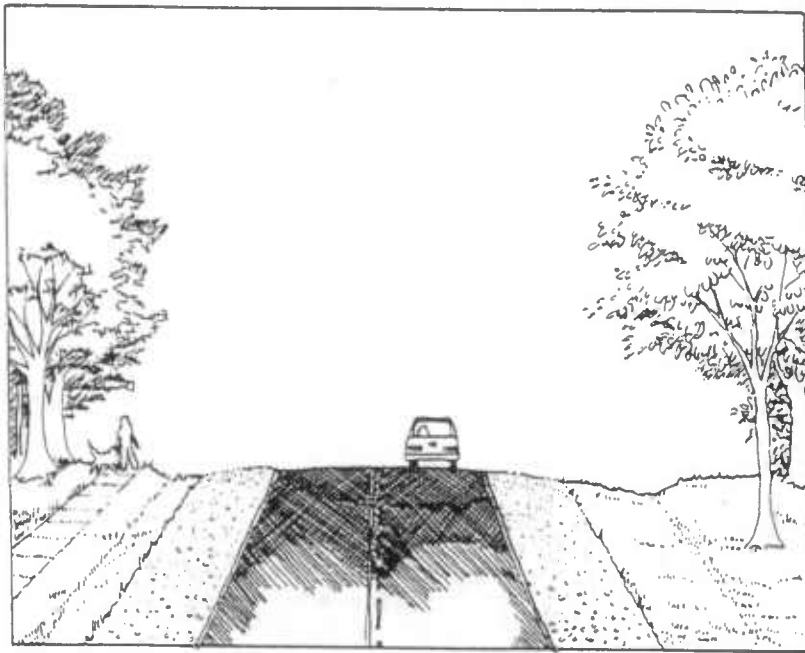
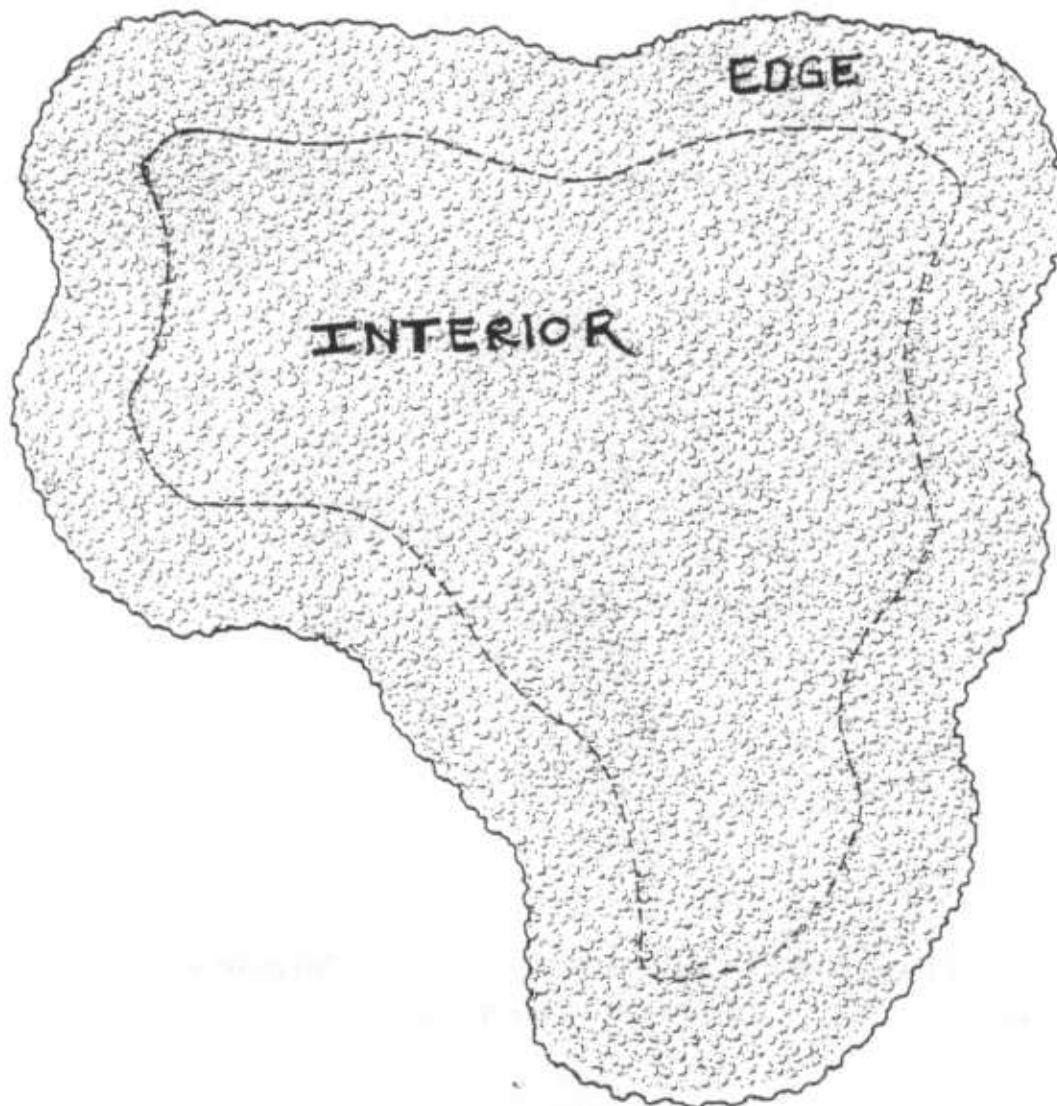


Figure 4C. Maintain forest habitat to edge of roads and driveways and canopy closure over road.

(The following paragraph may be included as a SIDEBAR) or just a separation in the text.
HOW TO DETERMINE INTERIOR HABITAT LOSS

Direct habitat loss refers to the actual acreage of forest area that is cut or cleared. Interior habitat loss on a parcel refers to acres of forest interior that are cut or converted to edge. To determine the interior habitat of a parcel, the forested "edge" of 300 feet is subtracted from the total contiguous forest. The area left is forest interior provided it is at least ten acres in size. When the FID *Guidelines* (outlined above) are followed the amount of interior habitat loss will be minimized. When evaluating site design options for a particular property, we are comparing potential impacts to interior habitat after development. The site plan that results in the least amount of interior habitat impacts is generally the better one. Figure 5 shows a schematic of a contiguous forest tract with edge habitat and interior habitat identified.

Figure 5. Edge vs. Interior



MITIGATION

The Criteria direct local jurisdictions to protect and conserve those forested areas necessary to support forest interior dwelling birds by developing a *management program* which has as its objective, conserving the wildlife that inhabit or use the forested areas. (COMAR 27.01.09.04) This provision requires the conservation and protection of all FID habitat, even that located on grandfathered lots. The primary objective of FID habitat conservation and protection is to preserve or retain the maximum amount of contiguous, undisturbed forest habitat, particularly the portion of forest that is "interior habitat". This protection strategy requires that most existing FID habitat be preserved on-site. This can best be achieved by following the *Site Design Guidelines*. However, there are situations where FID habitat impacts occur even when the *Guidelines* are followed. Therefore, in order to meet the conservation and protection requirement, local jurisdictions should include in their management programs mitigation requirements that must be met whenever FID habitat is impacted.

Mitigation that results in the conservation and protection of FID habitat can be achieved in a number of ways. FID mitigation can, in many cases, be achieved on-site concurrently with general forest replacement requirements (reforestation) if the reforestation area expands or creates new FID habitat. **Off-site mitigation should only be considered when no effective, long-term on-site habitat protection is possible.** The determination that adequate on-site protection cannot be achieved and that off-site mitigation may be pursued should be made by the local jurisdiction with the input of DNR and the Critical Area Commission Staff. The use of off-site mitigation, if well directed, may provide for the creation/protection of large, potentially high quality forests. This method of FID protection is similar to the concept of "no net loss" made popular by wetland protection programs where impacts must first be avoided and only when avoidance is not possible, new habitat is created to replace wetlands lost.

For example, a proposed development may comprise 200 acres of contiguous forest, of which only 40 acres occur within the Critical Area. If the forest outside of the Critical Area is developed, the remaining Critical Area portion of the forest may contain only marginal habitat even if preserved in perpetuity. Given the small size and isolated character of the forest remnant, suitable FID habitat may, over time, be lost as landscape-level and forest tract-level fragmentation occur. (See Figure 1.) This can change a forest that functions as a "source" (an area that contributes individuals to the population at large) into a forest that functions as a "sink" (an area where reproduction is not sufficient to compensate for mortality).

In another example, there may be no options for avoiding impacts when developing a small forested grandfathered lot with a single family dwelling. If it is determined that there are no alternative development scenarios where FID habitat impacts could be avoided, off-site mitigation may provide a better long-term FID habitat protection strategy.

As an alternative to requiring small property owners to find their own sites for FID mitigation, local jurisdictions may adopt a fee-in-lieu program under which the local jurisdiction would take responsibility for implementing the mitigation. A local government may be better equipped to ensure successful restoration and protection of a mitigation area as well as to help landowners of

smaller properties meet requirements. The opportunity for creating and maintaining large forested habitat areas may be greater when a number of smaller projects are combined. However, it is recommended that in the case of impacts due to larger projects (e.g., new subdivision, commercial development) the landowner or developer should be held responsible for locating the mitigation site.

How much mitigation should be required?

When FID habitat is impacted, the amount of FID mitigation required is based on the following:

1. A determination of whether or not the *Guidelines* are followed;
2. The number of acres of FID habitat that is directly cut; and
3. The number of acres of interior habitat loss (cut or converted to edge).

Factors which may be taken into account when determining if the *Guidelines* can be followed include the size of the parcel, whether or not the parcel is grandfathered, and site constraints that may limit development designs.

If it is determined that the *Guidelines* were followed, the amount of FID mitigation should equal **the number of acres of *direct forest habitat loss***.

If it is determined that the *Guidelines* were not followed, the amount of FID mitigation should equal **the number of acres of *direct forest habitat loss*, plus, two times the number of acres of *interior habitat loss* (FID habitat cut or converted to edge)**.

The following steps are proposed as a method to determine the amount of interior habitat lost or impacted under a proposed development scenario.

1. Identify and calculate the acreage of all FID habitat on the parcel, taking into account all contiguous forest areas on and off the property. (See page 8 - how to determine if FID habitat is present).
2. Identify and calculate the pre-development acres of forest interior by delineating the 300-foot wide forested edge and measuring the acreage of remaining interior habitat. (See figure 6.)
3. Calculate the area of forest cut in the interior and edge of FID habitat. This area is considered the ***direct forest habitat loss***.
4. Determine the post-development forest cover and remaining interior habitat by delineating the proposed new edge habitat after development (300 ft. wide forested edge) and measuring the acres of interior habitat that remain. Edge habitat is created whenever there is a minimum 30 foot wide break in the forest canopy (e.g., a road or lawn).
5. Subtract the post-development interior from the pre-development interior. This area is considered the ***interior forest habitat loss***.

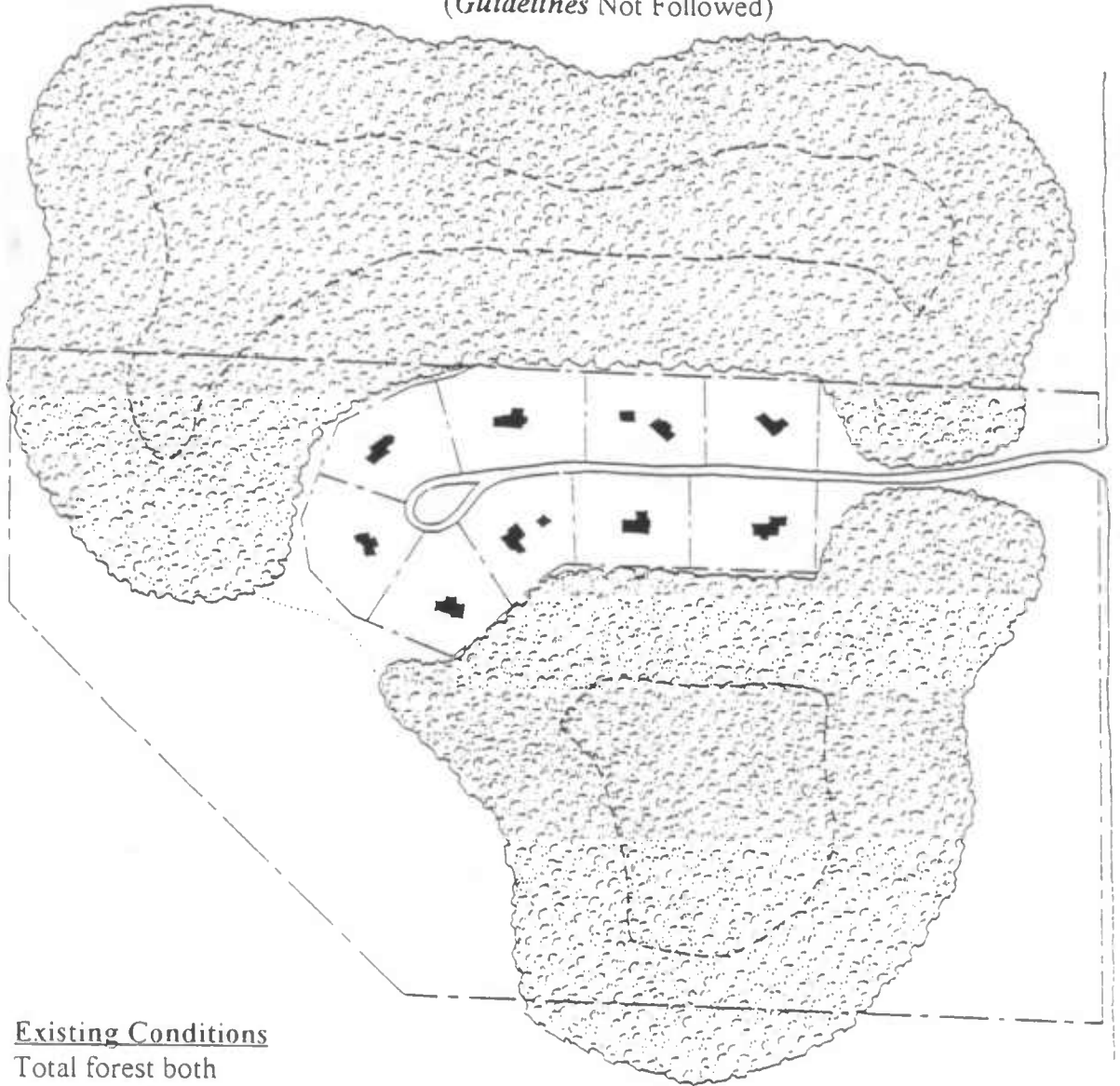
The following example demonstrates how two site designs with the same number of acres cleared can result in widely different levels of interior impacts.

Example:

Consider a 96 acre site purchased for development. The site is 70% forested with agricultural fields on the southwestern and the eastern edges of the parcel. The forest on the property is connected to a larger forest. The entire forest both on and off the parcel is functioning as FID habitat. . The owner proposes to build nine houses. He directs his consultant to design two different layouts for the nine lots. The consultant prepares two site plans and calculates the amount of direct and interior loss of FID habitat after development using the method described above. (See Figures 6A and 6B.)

Figure 6A

DEVELOPMENT SCENARIO 1
(*Guidelines* Not Followed)



Existing Conditions

Total forest both
on and off parcel = 112 acres

Parcel size = 96 acres

Forest on parcel prior
to development = 67 acres

FID habitat on parcel
prior to development = 67 acres

Forest interior
prior to development = 37 acres

Post Development Conditions

Total forest to be cut = 21 acres

Total forest to remain on parcel = 46 acres

Forest in northern corner of parcel = 10 acres

Forest in southern portion of parcel = 36 acres

Total FID habitat to remain on parcel = 10 acres

(Forest fragment in southern portion of parcel is
less than 50 acres, too small to support FID; northern
portion of the forest is part of a forest tract that is larger
than 50 acres with greater than 10 acres of interior.)

Interior forest to remain on parcel = 1 acre

FID Mitigation (*Guidelines* not followed)

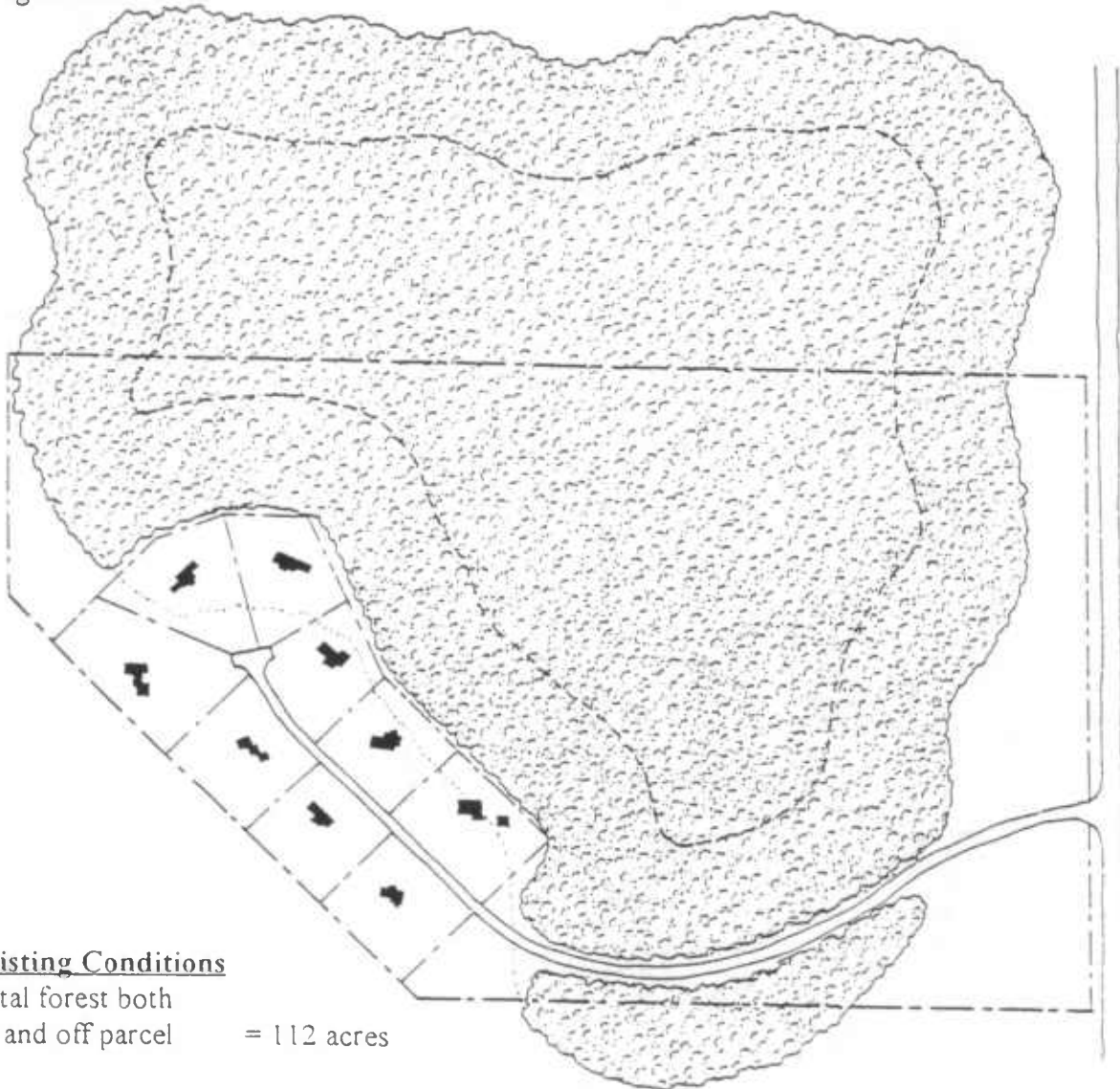
Direct FID forest loss = 21 acres

Interior forest loss = 37 acres

Mitigation = Direct FID forest loss + 2(Interior forest loss) = 21 acres + 2(37) = 95 acres

DEVELOPMENT SCENARIO 2
(Guidelines Followed)

Figure 6B.



Existing Conditions

Total forest both on and off parcel = 112 acres

Parcel size = 96 acres

Forest on parcel prior to development = 67 acres

FID habitat on parcel prior to development = 67 acres

Forest interior prior to development = 38 acres

Post Development Conditions

Total forest to be cut = 10 acres

Total forest to remain on parcel = 57 acres

Total FID habitat to remain on parcel = 55 acres

(A small portion of the forest to be left in the southern part of site will be isolated from the rest of the forest and too small to function as FID habitat.)

Total interior to remain = 27 acres

FID Mitigation (Guidelines Followed)

Direct FID habitat loss = 10 acres

Interior forest loss = 11 acres

Mitigation = Direct FID habitat loss = 10 acres

What is Acceptable as Mitigation?

The goal of mitigation is to provide long-term FID habitat, therefore FID mitigation sites must contain or result in (e.g., via reforestation) a contiguous area of at least 100 acres with a minimum of 20 acres of interior. The minimum 100 acres of contiguous forested area does not have to be contained in one parcel. There should be a reasonable expectation that a mitigation area will remain undeveloped and forested in perpetuity. **

**For assistance in finding appropriate mitigation sites see Appendix C.

Once the areas of *direct forest habitat loss* and *interior forest habitat loss* have been calculated and the required acreage of mitigation is determined, mitigation for the FID forest habitat losses must be either in the form of :

Option #1 - Creation of FID habitat through reforestation (mitigation for direct loss and interior loss; and

Option #2 - Protection of existing FID habitat (mitigation for interior loss only)

For *direct forest habitat* impacts, all mitigation must result in the creation of new FID habitat. Again, simple forest replacement proposed to meet the basic Critical Area reforestation requirements can satisfy the FID mitigation only if the reforestation area creates a new area of FID habitat or expands an existing habitat area.

Once mitigation for the direct forest habitat impact has been satisfied, mitigation for the *interior forest habitat* impact may be achieved either by creation of FID habitat (reforestation) or protection of existing FID habitat. However, when the protection option is chosen, the protected acres are given only half credit toward the required mitigation acres. Reforestation is given greater credit toward meeting the interior forest habitat mitigation requirements than protection due to the fact that all forest in the Critical Area are afforded some protection under the Critical Area Criteria. While the long-term viability of existing FID habitat is improved with permanent protection, new habitat areas must be created to maintain and increase the area of viable FID habitat in the Critical Area.

Option #1 - Creation of FID habitat through reforestation

Reforestation to create FID habitat refers to the reestablishment of locally native forest on a currently non-forested site that will create a forest large enough to function as FID habitat. Reforestation through natural succession or planting is given full credit toward FID mitigation requirements. For example, if the total mitigation required for impacts to FID habitat is ten acres, then reforestation of ten acres of FID habitat would fulfill the FID mitigation requirement.

If mitigation creates new FID habitat through planting or natural reforestation, this mitigation may counted toward the basic Critical Area forest replacement requirements. However, forest replacement may not count toward FID mitigation unless it creates FID habitat.

FID Reforestation Guidelines

1. Fill in gaps or openings in existing forested areas or non-forested peninsulas
1. Reforestation should be designed to maximize the area of interior habitat (see Figure 5).
2. Establish or extend a riparian forest buffer to provide a minimum buffer width of at least 300 feet. This reforestation should be part of a forest tract at least 50 acres in size.
3. All mitigation, with the possible exception of that along a riparian area, should result in the establishment of a minimum forest tract size of 100 acres of which 20 acres is forest interior.
4. Use natural succession and/or plantings of locally native tree and shrub species to create new habitat.
5. When enlarging forest patches, create shapes such as circles or squares which minimize edge and provide interior habitat.
6. Connect forest fragments to other forest or forest fragments with a corridor at least 300 feet in width.
7. The reforestation area should be comprised predominantly of hardwood. If planting, plans should be designed so that at the time of canopy closure at least 75% of the canopy tree species are locally native hardwoods.
8. All mitigation sites must be permanently protected through a conservation easement or other legal mechanism. (See Appendix D.) No development may occur in these areas. Some timber harvesting may occur provided Critical Area timber harvest guidelines are followed.

Option #2 - Protection of existing FID habitat

Protection of existing FID habitat as a form of mitigation refers to the permanent protection of existing forest habitat from development impacts. Protection may be achieved through the acquisition of the land, purchase of development rights and protection by conservation easements. Half credit toward the FID mitigation requirement is given. For example, if the mitigation required for FID habitat is 10 acres, then the protection of 20 acres of FID habitat would fulfill the mitigation requirement.

FID Protection Guidelines

1. All mitigation should result in the establishment of a minimum forest tract size of 100 acres of which 20 acres is forest interior. Generally, the larger the size of a forest tract, the greater the value for FID.

2. In most cases the older a forest stand, the more valuable it is for the greatest number of FID.
3. Protect forest land adjacent to lands that are currently protected or are managed with a conservation objective (e.g., public lands, lands protected through land trusts, wetlands, habitat of threatened and endangered species.)
4. All mitigation sites must be permanently protected. No development may occur in these areas. Some timber harvesting may occur provided Critical Area timber harvest guidelines are followed. Refer to Appendix D. for information on conservation easements.

Conclusion:

Mitigation is only one component of a complete protection strategy for FID in the Critical Area. FID habitat protection begins with putting the mechanisms in place to avoid development impacts to forest habitat. In a hierarchy of protection strategies for FID, mitigation is considered acceptable only after the options of protection through the location and design of development have been exhausted. Most important, mitigation options can only be effectively used if adequate and viable land and forest areas are made available for creation, enhancement and protection.

Long-term and landscape level planning for FID is dependent on a wide array of land use planning tools and conservation site design methods, and can be greatly enhanced by combining forces with existing voluntary and regulatory programs. Many land trusts, local and state government, and incentive programs are currently protecting forests that can serve as core tracts to add on to within a county or a region. When mitigation requirements for natural resources such as forested wetlands are combined with mitigation for FID and protection of threatened and endangered species habitat individual efforts can be much more beneficial overall. Critical to maintaining a healthy forest habitat in the Critical Area is cooperation across jurisdictional boundaries and between public and private interests as well as a shared commitment to the goal of conserving and protecting Maryland's population of forest interior dwelling birds.

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Appendix A

FID CONSERVATION WORKSHEET

Parcel size _____ Total acreage
 _____ Critical Area acreage

Existing

Forest cover _____ total contiguous acreage
 Forest cover _____ total acres CA
 FID habitat* _____ total acres CA
 FID interior _____ acres CA
 Calculate interior by subtracting out a 300 ft. edge.**

If available: _____ acreage of contiguous forest area both
 in an out of the CA within a 3-mile radius.

Post development

Forest cover _____ total acres CA
 FID habitat _____ total acres CA
 Interior habitat remaining _____ acres CA
 Interior habitat lost*** _____ acres CA

***Pre-development FID interior acreage - post development FID interior acreage

***How to Identify FID Habitat**

Assume FID habitat is present if a forest meets either of the following minimum conditions:

1. Forests at least 50 acres in size with 10 or more acres of "forest interior" (see below to calculate interior) habitat. The majority of the forest tracts should be dominated by pole-sized or larger trees (5 inches or more in diameter at breast height), or have a closed canopy, or
2. Riparian forests at least 50 acres in size with an average total width of at least 300 feet. The stream within the riparian forest should be perennial, based on field surveys or as indicated on the most recent 7.5 minute USGS topographic maps. The majority of the forest tracts should be dominated by

pole-sized or larger trees, or have a closed canopy.

In lieu of using the above criteria for determining if FID habitat is present, a FID survey may be done by a qualified FID observer. See page _____ of the Guidance Document for the procedures to be followed. You may contact the Maryland Department of Natural Resources, Forest Wildlife Divisions or the Critical Area Commission for a list of qualified observers.

****How to Determine Interior and Edge**

To determine the interior of a forest, the 'edge' of 300 feet is subtracted from the total contiguous forest. The area left is forest interior provided it is at least ten acres in size.

Edges are created along man-made intrusions in the forest. When natural openings such as open water, wetlands, and streams provide create natural breaks in the forest, there is no need to subtract a 300 foot edge from these openings because they tend to enhance FID habitat.

Riparian forests of 300 feet or greater are considered interior habitat when calculating FID habitat in the Critical Area provided that they have a minimum of 50 contiguous acres or are connected to forest that has been determined to be FID habitat.

Please answer the following questions regarding the FID Site Design Guidelines and how they were applied to the project.

1. Has development (e.g., house, septic reserve areas, driveway) been restricted to nonforested areas? Yes _____ No _____

If no, explain _____

2. If development has not been restricted to nonforested areas, has development been restricted to:

a. perimeter of the forest (within 300 feet of the forest edge)?
Yes _____ No _____

b. thin strips of upland forest less than 300 feet wide? Yes ___ No ___

c. isolated forests less than 50 acres in size? Yes ___ No ___

d. portions of the forest with low quality FID habitat;
e.g. areas that are heavily fragmented,
relatively young, exhibit low structural diversity, etc? Yes ___ No ___

3. Have new lots been restricted to forest clearings and/or forests as described in #2 above? Yes ___ No ___

If no, please explain how property owners will be prevented from clearing in the FID habitat on their property (i.e. protective covenants/easements)?

4. Will forest removal be limited to the "footprint" of the house and that which will be necessary for the placement of roads and driveways? Yes ___ No ___

5. Have the number and lengths of roads been minimized? Yes ___ No ___

6. Have the width of roads and driveways been reduced to 15 feet and 25 feet respectively? Yes ___ No ___
If no, explain _____

7. Will the forest canopy be maintained over roads and driveways? Yes ___ No ___

8. Will the forest canopy be maintained up to the edge of roads and driveways? Yes ___ No ___

9. Will 80% of the forest interior be maintained after development?
Or what percentage of interior has been preserved on the site after development?
Yes ___ No ___

If no, then what percentage of forest interior will be maintained? ___%

10. Are there special conditions on the site that limit where houses and other development activities may be located such as wetlands, steep slopes, etc.? If so please identify and explain
-
-
-

11. Do you believe that the *Site Design Guidelines* have been followed and that FID habitat has been conserved on this site?

Yes _____ No _____

MITIGATION REQUIREMENTS

If the *site design guidelines* have been followed the required mitigation will be the creation of FID habitat equal to the acreage being directly cut or disturbed. (See _____ for specific mitigation options and criteria.)

Enter acreage of FID habitat that is being directly impacted _____ acres.
THIS IS YOUR MITIGATION REQUIREMENT WHEN THE SITE DESIGN GUIDELINES ARE FOLLOWED.

If the *site design guidelines* have not been followed complete the following.

A. Pre-development FID habitat _____ acres.

B. Post development FID habitat _____ acres.

C. Pre-development FID habitat interior _____ acres.

D. Post development FID habitat interior _____ acres.

E. FID habitat being directly impacted..... _____ acres.
 (Subtract B From A)

F. Interior lost due to development _____ acres.
 (Subtract D from C)

G. Multiply F. times two (2) _____ acres and add to E. = _____ acres.
THIS IS YOUR MITIGATION REQUIREMENT WHEN THE DEVELOPMENT GUIDELINES HAVE NOT BEEN MET.

Appendix B

Information Required for Mitigation Site Development Plan

1. A brief description of mitigation requirements based on associated development project and how the mitigation plan will meet these requirements.
2. A brief description of the FID habitat that is being impacted including acreage, amount of interior lost, dominant tree and shrub species and aquatic and/or other features that help define habitat characteristics.
3. Include a site location map depicting the geographic relationship between the impact site and proposed mitigation site and a vicinity map of enough detail to locate the site for monitoring purposes.
4. Describe the existing land use and ownership, adjacent land use and position in the landscape in relation to other forest tracts.
5. Describe the proposed plant communities that will be created/protected. If creating FID habitat indicate if natural regeneration or plantings will be used.
6. If natural regeneration is proposed describe the likely seed source, any site or soil preparation that will be undertaken, control measures for invasive species, measures to protect from wildlife grazers, etc.
7. If planting, provide a list of trees and shrubs to be planted, planting densities, control measures for invasive species, measures to protect from wildlife grazers, and soil and or site preparations, watering regime, etc.
8. Provide assurance of the legal right to use the proposed property for mitigation (e.g. letter of intent, option to purchase, etc.)
9. Indicate who will be responsible for monitoring and a description of information that will be provided in the monitoring reports.

Appendix C

In order to assist local jurisdictions in the implementation of the FID guidance and the recommendation that forest habitat mitigation be required whenever impacts to FID habitat take place onsite, the following state and local programs are outlined. Each of the following programs may be used by local governments, planning staff, landowners, and developers to identify appropriate mitigation sites for FID habitat planting and protection of existing FID habitat. The state Critical Area Staff are available to assist in the identification of the most appropriate program for meeting mitigation requirements.

The Green Infrastructure Network (MD Department of Natural Resources):

Using Geographic Information Systems principles and landscape ecology, the MD DNR has mapped an interconnected network of natural lands across the state described as “hubs” and “corridors” that are prioritized for conservation and restoration activities based on their ecological significance (e.g., large contiguous areas of forest, sensitive species, important wetlands or stream, etc.) and the level of threat (e.g., protection status, development pressures, etc.). The goal of the Green Infrastructure Assessment is to help identify an ecologically sound open space network, and ultimately, to incorporate this valuable network into state and local land conservation planning efforts.

Green Infrastructure areas have been identified on public and private lands throughout the state through a series of maps and a database developed by the DNR. Because only limited statewide data is available to define this network, the help of local governments, land trusts, citizens and scientific experts is needed in this cooperative endeavor to further refine and identify the Green Infrastructure land network and effectively incorporate this information into state and local planning efforts.

The purpose of the Green Infrastructure land network is to create a coordinated statewide approach to land conservation and restoration that will identify and protect lands with important ecological and biodiversity characteristics; address problems of forest fragmentation, habitat degradation and water quality; maximize the influence and effectiveness of public and private land conservation investment; promote shared responsibility for land conservation between public and private sectors; and guide and encourage compatible uses and land management practices.

In addition, the Green infrastructure Land network could be used by local governments or developers to identify areas where FID mitigation, either habitat creation or protection, will achieve the goal of creating or enhancing viable FID habitat and be the most valuable. When refined on the local level, the Green Infrastructure Assessment may be useful in assessing the potential natural resource related impacts of a proposed development and in identifying opportunities for natural resource and habitat enhancement activities.

The hub and corridor information and maps that have been developed at the state and regional level will be available to local governments and can be used to identify target areas that may be best, suitable for targeting FID mitigation.

Contact information:

Maryland Land Trusts:

There are a number of active land trusts throughout the state of MD who's goals and objectives include permanent protection of natural resources areas through the use of land conservation tools such as conservation easements and land purchase. The following list of Maryland Local Land Trusts in the state is updated regularly by the Maryland Environmental Trust.

Contact information:

Critical Area Forest/FID Mitigation and the Conservation Reserve Enhancement Program:

In some counties, fee-in-lieu monies could be used to plant trees and purchase easements in conjunction with the U.S. Department of Agriculture Conservation Reserve Enhancement Program (CREP). CREP is a nationwide program that promotes the planting of streamside buffers and the restoration of wetlands on agricultural land by offering financial incentives to landowners who voluntarily remove land from agricultural production for a period of 10-15 years. A recent component of this program is also the purchase of perpetual easements on qualifying lands. This is where the greatest potential exists for CREP and Critical Area to combine forces to create and protect FID habitat. CREP will only pay for the first 150 feet adjacent to a waterbody. An area planted with Critical Area monies would be located landward of the 150-foot CREP forested buffer.

Planting Forested Buffers

The benefits offered to property owners would match the CREP bonus payments and cost-share. An area planted with Critical Area monies would be located landward of the 150-foot CREP forested buffer. Both the CREP and the Critical Area portions would be put in a perpetual easement to be held and enforced by the local Soil Conservation District (SCD), local land trust, or DNR. The benefits to the local Critical Area Programs include:

- The identification of forest/FID mitigation sites in the Critical Area to fulfill mitigation requirements and ensure no net loss of forest.
- Monitoring and enforcement of the mitigation sites would be in the hands of the Soil Conservation District, land trusts, or DNR, taking some burden off of the counties and helping to ensure that the trees are planted and survive.

Purchase of Easements on Existing Forest

Fees in lieu above the 1:1 mitigation ratio can be used for creative projects that help to restore/protect habitat and water quality. The monies could be used to purchase easements on forested areas in the Critical Area that are contiguous or near a CREP easement site.

Process

Some county planners are looking for ways to spend fees in lieu money. Local landowners may be interested in planting more acreage than is provided under CREP. In order to merge these two interests, local planners need to maintain communication with the Soil Conservation District and local land trusts so that interested landowners can take advantage of this additional funding source.

In some jurisdictions, County planners are looking for ways to spend fees in lieu and forest mitigation money. Local landowners may be interested in planting more acreage than is provided under CREP. In order to merge these two interests, local planners can be contacted to see whether there is any money available for interested landowners.

1. Landowner contacts local NRCS/SCD office or works with a local land trust regarding CREP contract and easement.
2. Landowners interested in obtaining this additional funding should contact their County Critical Area planner to find out if there are any funds available.
3. If money is available and the landowner decides to utilize Critical Area money for tree planting and an easement, then the landowner would go through the normal easement process (negotiate easement lines with DNR staff, submit easement applicant via local partner, receive bonus payment from the Board of Public Works in conjunction with a check from the local government for tree planting and easement, easement is executed and recorded).
4. Long term monitoring and stewardship would be handled by DNR and a local partner (land trust, SCD).

Payments

For a county to combine FID mitigation with CREP, the fee-in-lieu amount charged to those property owners that cannot mitigate on site would have to be comparable to the rates paid out by the CREP program. CREP pays up to 100% of the cost of tree buffers in addition to a bonus payment for every acre of trees restored and placed under a permanent easement. The bonus payment ranges, based on the County, from \$693 to \$2,716 per acre.

Contacts

To learn more about the CREP program, landowners should contact their local NRSC office. To learn more about the easement, contact Jeff Horan, Deputy Director of Forest, Wildlife and Heritage at DNR.

Appendix D

CONSERVATION EASEMENTS

For the purpose of protecting and maintaining FID habitat, conservation easements should meet the following minimum conditions:

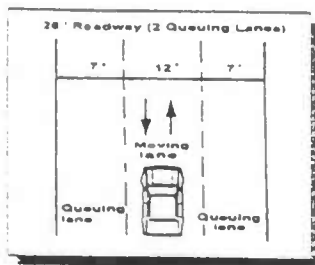
- * The agreement should be between the property owner (grantor) and the local government and/or a land conservancy group (grantees).
- * Restrictions on the property include the loss of development rights for the construction of houses and other structures.
- * New agricultural activities are prohibited. (i.e. clearing, draining, construction).
- * Any harvesting of timber must be done under an approved Timber Harvest Management Plan that would include a review for impacts to FID habitat.
- * Recreational activities may be allowed provided they do not alter the character of the forest and do not cause undue disturbance during the breeding season.
- * The easement shall be created in perpetuity.

Conservation easements should be held by either a local government agency and/or a local land trust that is willing and able to monitor compliance with agreements. An ideal situation is for both a local government agency and local land trust to jointly hold an easement on a property and be responsible for its enforcement. Often local land trusts are better set up than government agencies to monitor the easements for which they are responsible. There are approximately 40 local land trusts in Maryland.

APPENDIX E

Adapted from the *Model Development Principles*, 1998.
(Center for Watershed Protection, Website: www.cwp.org)

The following model development principles provide site design guidance for economically viable, yet environmentally sensitive development. The goal of using the principles is to provide planners, developers, and local officials with benchmarks to investigate where existing ordinances may be modified to reduce impervious cover, conserve natural areas (e.g., forest and FID habitat), and prevent stormwater pollution. These development principles identify areas where existing codes and standards can be changed to better protect forest, streams, and wetlands at the local level.



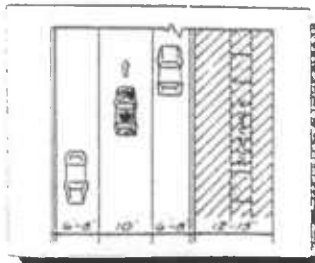
Residential Streets and Parking Lots (Habitat for Cars)

1. Design residential streets for the minimum required pavement width needed to support travel lanes; on-street parking; and emergency, maintenance, and service vehicle access. These widths should be based on traffic volume.



2. Reduce the total length of residential streets by examining alternative street layouts to determine the best option for increasing the number of homes per unit length.

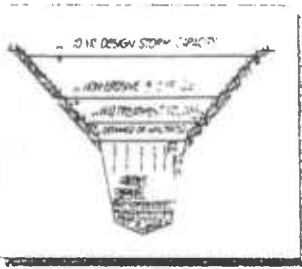
(Source: ULI, 1992)



3. Wherever possible, residential street right-of-way widths should reflect the minimum required to accommodate the travel-way, the sidewalk, and vegetated open channels. Utilities and storm drains should be located within the pavement section of the right-of-way wherever feasible.



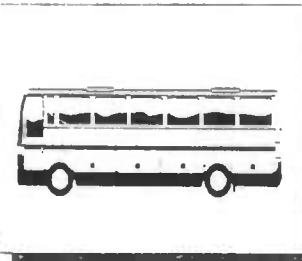
4. Minimize the number of residential street cul-de-sacs and incorporate landscaped areas to reduce their impervious cover. The radius of cul-de-sacs should be the minimum required to accommodate emergency and maintenance vehicles. Alternative turnarounds should be considered.



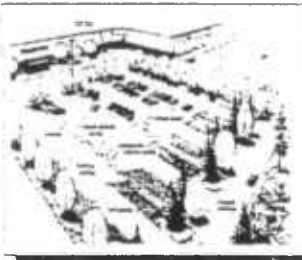
5. Where density, topography, soils, and slope permit, vegetated open channels should be used in the street right-of-way to convey and treat stormwater runoff.



6. The required parking ratio governing a particular land use or activity should be enforced as both a maximum and a minimum in order to curb excess parking space construction. Existing parking ratios should be reviewed for conformance taking into account local and national experience to see if lower ratios are warranted and feasible.



7. Parking codes should be revised to lower parking requirements where mass transit is available or enforceable shared parking arrangements are made.



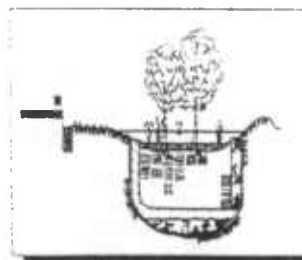
8. Reduce the overall imperviousness associated with parking lots by providing compact car spaces, minimizing stall dimensions, incorporating efficient parking lanes, and using pervious materials in the spillover parking areas.

(Source: Wells, 1995)



9. Provide meaningful incentives to encourage structured and shared parking to make it more economically viable.

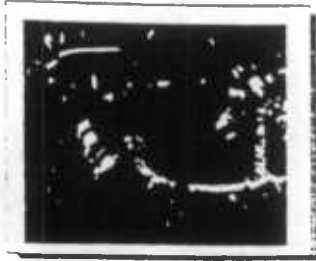
(Source: ULI, 1997)



10. Wherever possible, provide stormwater treatment for parking lot runoff using bioretention areas, filter strips, and/or other practices that can be integrated into required landscaping areas and traffic islands.

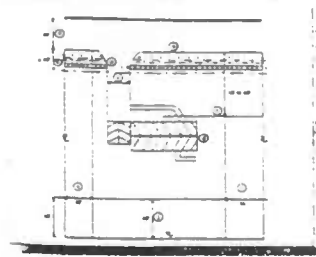
Lot Development

(Habitat for People)



(Photo Courtesy of Randall Arendt)

11. Advocate open space development that incorporates smaller lot sizes to minimize total impervious area, reduce total construction costs, conserve natural areas, provide community recreational space, and promote watershed protection.



12. Relax side yard setbacks and allow narrower frontages to reduce total road length in the community and overall site imperviousness. Relax front setback requirements to minimize driveway lengths and reduce overall lot imperviousness.



13. Promote more flexible design standards for residential subdivision sidewalks. Where practical, consider locating sidewalks on only one side of the street and providing common walkways linking pedestrian areas.

(Source: Arendt, 1994)



14. Reduce overall lot imperviousness by promoting alternative driveway surfaces and shared driveways that connect two or more homes together.



15. Clearly specify how community open space will be managed and designate a sustainable legal entity responsible for managing both natural and recreational open space.



16. Direct rooftop runoff to pervious areas such as yards, open channels, or vegetated areas and avoid routing rooftop runoff to the roadway and the stormwater conveyance system.

Conservation of Natural Areas

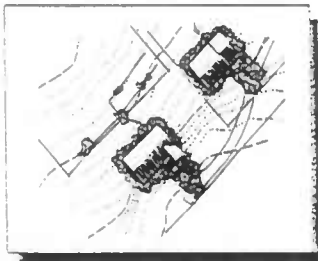
(Habitat for Nature)



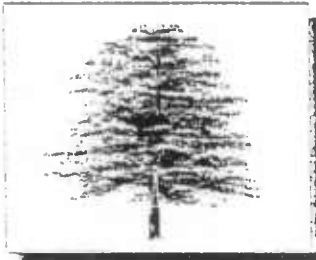
17. Create a variable width, naturally vegetated buffer system along all perennial streams that also encompasses critical environmental features such as the 100-year floodplain, steep slopes and freshwater wetlands.



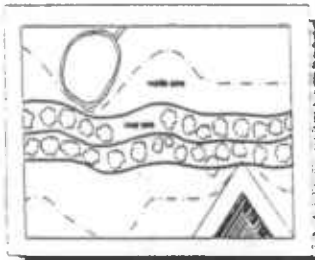
18. The riparian stream buffer should be preserved or restored with native vegetation that can be maintained throughout the plan review, delineation, construction, and occupancy stages of development.



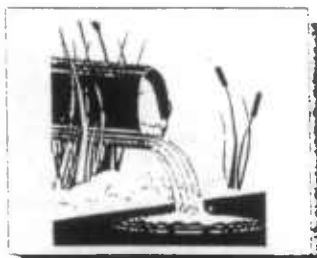
19. Clearing and grading of forests and native vegetation at a site should be limited to the minimum amount needed to build lots, allow access, and provide fire protection. A fixed portion of any community open space should be managed as protected green space in a consolidated manner.



20. Conserve trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native plants. Wherever practical, manage community open space, street rights-of-way, parking lot islands, and other landscaped areas to promote natural vegetation.



21. Incentives and flexibility in the form of density compensation, buffer averaging, property tax reduction, stormwater credits, and by-right open space development should be encouraged to promote conservation of stream buffers, forests, meadows, and other areas of environmental value. In addition, off-site mitigation consistent with locally adopted watershed plans should be encouraged.



22. New stormwater outfalls should not discharge unmanaged stormwater into jurisdictional wetlands, sole-source aquifers, or other water bodies.

CHESAPEAKE BAY CRITICAL AREA COMMISSION
45 Calvert Street, 2nd Floor
Annapolis, Maryland 21401

September 13, 1999

TO: Dave Bourdon, Chairman, Larry Duket, James Foor, Bob Goodman, Barbara Samorajczyk

FROM: Lisa Hoerger

SUBJ: Panel Discussion of Anne Arundel County Comprehensive Review Issues

We have agreed to meet with County staff at 9:00 a.m. on October 6, 1999 in Crownsville. Below is an outline of the issues we expect to cover at that meeting. Please telephone myself or Mary Owens at (410) 260-7516 if you have any questions or need clarification before our meeting.

Outline of Issues to be Discussed

1) *Clearing on grandfathered lots*

The County has included a provision to provide for clearing of grandfathered lots ½ acres or less that will be limited to the *minimum necessary* to accommodate a house, septic system, driveway, and reasonable amount of yard.

This provision was added by the County so that persons with small, existing grandfathered lots would not be subjected to the mitigation ratio or fees associated with clearing over 20%. With this provision, they will only have to reforest at a 1:1 ratio or pay .60 cents per square foot even when they clear more than 20% of their lot.

Commission staff agree with the concept of providing this flexibility for small lot owners. Other jurisdictions have provided similar measures, but have capped the amount of allowed clearing. Staff suggest that the County propose putting a cap on what constitutes minimum necessary to prevent total lot clearing on these small lots.

2) *Categories of Applications*

The Commission staff have requested the County to verify that all project applications are received by Commission staff as outlined in COMAR 27.03.01.03.

The County does send the Commission all rezonings, special exceptions, conditional uses, variances, major and minor subdivisions for review. However, administrative plats and projects in the RCA over 5,000 square feet are not sent. The Commission's regulations require notification of these types of projects and other local jurisdictions provide them. This issue needs to be discussed particularly in regard to projects in the RCA. An example would be the assisted living facility in Pasadena that proposed an 8,000 square foot building.

3) ***Grandfathering***

What or who determines when a parcel or lot is grandfathered?

Who verifies that parcels or lots proposed for development activities are properly grandfathered?

What is a residue parcel?

What is a reserve parcel?

4) ***Eight Inch Rule***

Commission staff understand this policy (?) to mean that a structure is permitted without a permit if it is less than eight inches above grade. The County informs us that their definition of structure does not include a structure that is not greater than six inches above grade. This could be problematic with regard to this type of structure when it is located in the Buffer or if the structure will cause impervious surfaces to exceed the limit.

5) ***Reforestation***

We have asked the County to provide us with a list of projects and estimates.

We will discuss with the panel a list of possible projects Commission staff and County staff have agreed upon when using reforestation monies.

6) ***Local Government Projects***

Commission staff need to be notified of local government projects in order to ensure that they are being reviewed for Critical Area compliance by the County.

7) ***RCA Uses***

The RCA Uses table has been updated since the September meeting. It is attached for your review and discussion of outstanding issues.

cc: Elinor Gawel

ANNE ARUNDEL COUNTY - PROPOSED RCA USES

STAFF REC.	PROPOSED USE	MODIFICATIONS
Okay	ANIMAL HUSBANDRY	
Okay	BED AND BREAKFAST HOMES IF FOOD SERVICE IS LIMITED TO ROOM GUESTS	Add, "...in an existing, grandfathered structure."
Okay	BED AND BREAKFAST INNS	Add, "... in an existing, grandfathered structure."
Okay	BLACKSMITH IF ACCESSORY TO A FARM	
Okay	BULK STORAGE FOR AGRICULTURAL PRODUCTS AS AN ACCESSORY USE TO A FARM	
Okay	CEMETERIES	Must be associated with an existing, grandfathered church and cannot have impervious areas (i.e. roads, parking) in excess of 15% of the site or 20,000 square feet, whichever is less.
Okay	CHURCHES AND ANCILLARY USES ON A MINIMUM SITE OF TWO ACRES PROVIDED IMPERVIOUS SURFACES ARE LIMITED TO 15% OF THE SITE OR 20,000 SQUARE FEET, WHICHEVER IS LESS.	
Okay	CLAY AND BORROW PITS OR SAND AND GRAVEL OPERATIONS	
Okay	COMMERCIAL TELECOMMUNICATIONS FACILITIES	
Okay	COMMERCIAL WATERMAN USES, NOT INCLUDING PROCESSING OR PACKING	
Okay	COMMUNITY BEACHES	
Okay	COMMUNITY PIERS AND WATER ORIENTED RECREATIONAL USES	
NO	COMMUNITY NONPROFIT SWIMMING POOLS IF IMPERVIOUS SURFACES ARE LIMITED TO 15% OF THE SITE OR 20,000 SQUARE FEET, WHICHEVER IS LESS	Add, " Must be associated with residential development within the RCA. "

	CONSERVATION USES, PRACTICES, AND STRUCTURES FOR THE MAINTENANCE OF THE NATURAL ENVIRONMENT	Add " Excludes stormwater management measures associated with non-RCA development. " ADD, "MUST BE ASSOCIATED WITH A RESOURCE UTILIZATION ACTIVITY."
Okay	DAIRIES	
Okay	EXHIBITS SHOWING HISTORICAL SHORELINE ACTIVITIES OR DEVELOPMENT	
Okay	EXISTING MARINAS	Add "grandfathered"
Okay	EXISTING YACHT CLUBS	Add "grandfathered"
Okay	FARM TENANT HOUSING, ON A SITE OF AT LEAST 20 ACRES AT A DENSITY NOT TO EXCEED MORE THAN ONE HOME FOR EACH 50 ACRES OF EACH FARMING OPERATION	CLARIFY THAT IT CANNOT EXCEED ONE DWELLING UNIT PER TWENTY ACRES.
Okay	FARMING	
Okay	FISH HATCHERIES	
Okay	FORESTRY	
Okay	FUR FARMING	
OKAY	GAME AND WILDLIFE PRESERVES NOT INCLUDING HUNTING OR SHOOTING. CLUBHOUSES, SALES, MAINTENANCE BUILDINGS AND PARKING ARE SHALL OR MUST BE LOCATED OUTSIDE THE RCA AND SUBJECT TO AN APPROVED SOIL CONSERVATION PLAN	
Okay	GOLF COURSES NOT INCLUDING CLUBHOUSES, SALES, MAINTENANCE BUILDINGS AND PARKING AREAS	
	GOVERNMENT BUILDINGS, STRUCTURES, FACILITIES AND USES THAT CANNOT BE LOCATED OUTSIDE THE RESOURCE CONSERVATION AREA	May be permitted provided they are subject to the provisions in COMAR 27.02.02.
Okay	GREENHOUSES IF ACCESSORY TO A FARM	
Okay	GROUP HOMES IN CLASSIFICATION ONE AND TWO	
Okay	HOME OCCUPATIONS	

Okay	HORSES AND PONIES ON SITES LESS THAN 40,000 SQUARE FEET	
Okay	KENNELS ON PROPERTIES OF AT LEAST 6 ACRES	
Okay	LEGITIMATE THEATER, OUTDOOR OR SHELTERED, IF THEY ARE TEMPORARY AND WITHOUT PERMANENT IMPROVEMENTS	Add, "... or involving development activities."
Okay	LIVESTOCK	
Okay	NURSERY FARM	
Okay	OUTSIDE STORAGE, ACCESSORY AND INCIDENTAL TO USES PERMITTED IN THE RCA, NOT TO EXCEED 10% OF THE LOT AREA OR 500 SQUARE FEET, WHICHEVER IS LESS	
Okay	PRIVATE AIRSTRIP OR HELIPAD	
Okay	PRIVATE CLUBS, COUNTRY CLUBS, SERVICE ORGANIZATIONS, AND NONPROFIT CHARITABLE AND PHILANTHROPIC ORGANIZATIONS OR INSTITUTIONS PROVIDED IMPERVIOUS SURFACES ARE LIMITED TO 15% OF THE SITE OR 20,000 SQUARE FEET, WHICHEVER IS LESS	Private clubs - out Country Clubs - out
Okay	PRIVATE EDUCATIONAL INSTITUTIONS PROVIDED THAT IMPERVIOUS SURFACES ARE LIMITED TO 15% OF THE SITE OR 20,000 SQUARE FEET, WHICHEVER IS LESS	Limit to PRESCHOOL , elementary and secondary education, no college or beyond
Okay	PRIVATE RESOURCE UTILIZATION OR OUTDOOR EXPERIENCE CAMPS NOT INCLUDING RECREATIONAL VEHICLES	DOES NOT INCLUDE DINING HALLS, OFFICES, POOLS, ETC. AREAS OF INTENSE ACTIVITIES SHOULD BE LOCATED OUTSIDE OF THE RCA.
Okay	PRIVATE RESIDENTIAL PIERS	
Okay	PRIVATE SWIMMING POOLS	
Okay	PUBLIC BEACHES	May be allowed if they meet the provisions in COMAR 27.02.02
Okay	PUBLIC PARKS, PLAYGROUNDS, AND OTHER RECREATIONAL USES	May be allowed if they meet the provisions in COMAR 27.02.02

Okay	PUBLIC UTILITY USES	May be allowed if they meet the provisions in COMAR 27.02.02
Okay	RECREATIONAL PIERS	
Okay	RIFLE, PISTOL, SKEET OR ARCHERY RANGES. CLUBHOUSES, SALES, MAINTENANCE BUILDINGS AND PARKING ARE LOCATED OUTSIDE THE RCA	
Okay	ROADSIDE STANDS WITH TEMPORARY SEASONAL STRUCTURES THAT SELL ONLY LOCAL PRODUCE, NOT TO EXCEED 500 SQUARE FEET	
Okay	SALE OF CHRISTMAS TREES BETWEEN DECEMBER 5 AND 25, NOT TO EXCEED ONE-HALF ACRE	
	SANATORIUMS, NURSING HOMES AND ASSISTED LIVING FACILITIES LIMITED TO 9 PATIENTS	Sanitoriums - out Nursing Homes - out DISCUSS Assisted Living limited to 9 patients conflicts with the proposed limitation on group homes in classes 1 and 2 which allows 7 patients. DISCUSS
Okay	SIGNS IN ACCORDANCE WITH TITLE 8 OF THIS ARTICLE	
Okay	SINGLE FAMILY DETACHED DWELLINGS	
OKAY	STABLES, COMMERCIAL OR COMMUNITY AND RIDING CLUBS SUBJECT TO AN APPROVED SOIL CONSERVATION AND WATER QUALITY PLAN NOT INCLUDING CLUBHOUSES, SALES, MAINTENANCE BUILDINGS AND PARKING AREAS	Need to discuss
Okay	TEMPORARY (NOT TO EXCEED 30 DAYS) NONPROFIT EVENTS INCLUDING FAIRS, CARNIVALS OR BAZAAR THAT DO NOT REQUIRE PERMANENT STRUCTURES	Add, "... or development activities."
Okay	UNENCLOSED STORAGE OF MANURE OR ODOR OR DUST PRODUCING SUBSTANCES OR USES, ON A MINIMUM SITE OF 10 ACRES, AS AN ACCESSORY USE TO A FARM	
OKAY	VETERINARY OFFICE AS AN ACCESSORY USES TO A FARM	Need to discuss
Okay	WINERY IF ACCESSORY USE TO A FARM	

MEMORANDUM

TO: Project Subcommittee Members

FROM: Tracy Batchelder

RE: Draft Forest Mitigation Guidance Paper

DATE: September 24, 1999

Attached you will find a copy of the draft of the Forest Mitigation Guidance Paper which I have researched and written over the past several months. This paper is a result of recognition on the part of Commission staff that:

- Some local jurisdictions find the mitigation requirements as written in the Criteria to be unclear and they, therefore, apply the regulations inconsistently or interpret them differently than what was intended in the Criteria;
- The actual mitigation in the field is often inadequate, unenforced or not maintained largely due to lack of local staff and available technical assistance;
- Mitigation can be difficult to carry out due to small lots and a lack of mitigation sites; but
- There are counties that have been successful in addressing problems associated with the mitigation requirements and there are state programs that can assist local jurisdictions and property owners in carrying out the mitigation requirements.

I have tried to clarify the mitigation requirements as well as offer case studies of counties that have successfully addressed some of the issues. My hope is that local jurisdictions and property owners will find this a useful resource to not only meet the requirements in the Criteria, but also consider the importance of mitigation in terms of the health of the Bay, its surrounding environs and wildlife.

Please come prepared to discuss the draft at the next Project Subcommittee meeting on October 6, 1999. I welcome any and all feedback!

DRAFT

FOREST MITIGATION GUIDANCE PAPER

Revised 9/20/99

Purpose of Guidance Paper

Forests provide a range of important environmental, economic and aesthetic benefits. This paper is meant to provide guidance to local jurisdictions on the forest mitigation requirements under the Critical Area regulations and discuss some of the challenges jurisdictions face in implementing the mitigation requirements. Case studies of counties that are taking an innovative approach to addressing some of these issues are offered as well as other approaches that local jurisdictions might find useful to fulfill the forest mitigation requirements.

Background

Forest and developed woodland protection and replacement is one of the main goals of the Critical Area Act. As stated in the Criteria:

The total acreage in forest coverage within a jurisdiction in the Critical Area shall be maintained or, preferably, increased (COMAR 27.01.02.04).

All forests that are allowed to be cleared or developed shall be replaced in the Critical Area on not less than an equal area basis (COMAR 27.01.02.04).

Two of the three goals of the Critical Area Act are to "minimize adverse impacts on water quality that result from pollutants that are discharged from structures or conveyances or that have run off from surrounding lands" and "to conserve fish, wildlife, and plant habitat" (Nat. Res. Art. §8-1808). Forests and developed woodlands not only provide habitat for wildlife, but are also important in maintaining water quality by trapping sediments, taking up nutrients, and immobilizing toxic substances (Chesapeake Bay Program, 1995). The maintenance of forest cover is, therefore, crucial to achieve the goals of the Act. Forests and developed woodlands can also enhance the aesthetic beauty of an area and provide other benefits to landowners such as reducing heating and cooling costs by acting as an insulator around homes.

By itself, maintenance of the area of forest cover will not be enough to maintain functioning forest ecosystems if the quality of the forest or developed woodland is not maintained or, preferably, improved in some cases. It is simply not enough to plant trees. Careful thought and planning should be given to what type of trees and what location will be optimal for maintaining or enhancing the functions of that forest ecosystem.

Illustration: Developed Woodland

Forest Mitigation Requirements for Clearing

The Critical Area Criteria specify when a property owner is required to replace trees (Table I). According to the Criteria, up to 20% of a forest or developed woodland can be cleared on a site designated as a Limited Development Area (LDA) or Resource Conservation Area (RCA) as long as the forest is replaced on *not less than an equal basis* or 1:1 mitigation. If more than 20%, but less than 30% is cleared, then the *total surface acreage of the disturbed forest* must be replaced on 1.5:1 basis. These mitigation ratios are based on the percentage of the on-site forest cleared, not the total acreage of the property. In addition, clearing violations "shall be replanted at three times the areal extent of the cleared forest" in lieu of the usual planting ratio required for the same amount of clearing for an approved purpose (COMAR 27.01.02.04).

Amount of Clearing	Mitigation
0% - 20%	1:1
20% - 30%	1.5: 1
Clearing Violation	3:1

There are no reforestation provisions for sites designated as Intensely Developed Areas (IDA). However, the Critical Area Criteria specify that permeable areas in the IDA shall be established in vegetation when practicable, development activities shall minimize destruction of forest and woodland vegetation, and programs should be established to enhance forest and developed woodland resources. The Criteria clearly intended to ensure that any trees removed in the Critical Area would be replaced and that the total acreage of forest or developed woodland would either be conserved or increased in order to maintain or improve water quality and habitat. Table 2 provides examples of how the mitigation requirements are applied and Table 3 summarizes the recommended credit for trees and shrubs planted in the Critical Area.

TABLE 2
Examples of How the Mitigation Requirements are Applied
<i>There is 80,000 square feet of forest on a seven acre property. A developer clears 20,000 square feet for a minor subdivision which is 25% of the existing forest coverage on the property. Therefore, the developer is required to mitigate at a 1.5:1 ratio equal to planting 30,000 square feet of forest. A combination of trees and shrubs can be planted to enhance the structural diversity of the forest.</i>
<i>There are 20 trees on a quarter-acre grandfathered lot. The landowner takes out 3 trees which is 15% of the existing forest coverage on the property. She is therefore required to mitigate at a 1:1 ratio equal to planting three trees.</i>

TABLE 3		
Credit in Square Feet <small>(Local jurisdictions can determine planting credits)</small>	Plant Size	Plant Spacing
100 sq. ft.	1 tree (2-inch caliper)	10-foot center
400 sq. ft.	1 tree (minimum: 2-inch caliper and either balled and burlapped or container grown) <u>and</u> understory vegetation (minimum: 2 small trees or 3 shrubs)	tree: 20-foot center understory: 10-foot center
50 sq. ft.	1 tree (seedlings)	7-foot center
50 sq. ft.	1 shrub	3 to 7-foot center

The General Assembly recognized the importance of including a 100-foot vegetated Buffer in the regulations as a habitat protection area in order to accomplish water quality and habitat objectives. In recognition of the importance of the Buffer in protecting the resources of the Bay and its shorelines, trees or vegetation cleared in the Buffer for an approved purpose, other than access and shore erosion control, should be mitigated on a 3:1 basis. Table 4 outlines Commission recommendations regarding mitigation for clearing in the Buffer.

TABLE 4	
Clearing in the Buffer	Mitigation
Clearing for new development/ redevelopment in Buffer (non-BEA)	3:1
Clearing for new development/ redevelopment in Buffer (BEA)	2:1
Shore Erosion Control	1:1
Shoreline Access in Buffer	2:1

Afforestation Requirements

In addition to the mitigation requirements for clearing, the Criteria specify that "if no forest is established on proposed development sites, these sites shall be planted to provide a forest or developed woodland cover of at least 15 percent" (COMAR 27.01.02.04). The following are examples of how this requirement is implemented in practice:

- A vacant grandfathered lot is going to be developed. The property owner is required to afforest the property so that 15% of the lot is established in forest.
- A grandfathered property has a dwelling on it and the rest of the property is in agriculture. The owner wishes to construct a 10x10 porch addition to the house. The property owner is required to afforest 15% of the residential site of the property, excluding the area in agricultural production as this is a separate use of the land.
- A new subdivision is being developed on a vacant farm that is largely unforested. The developer can choose to afforest 15% of each lot or provide 15% afforestation for the entire subdivision in one area of the property. Afforestation on one site of the property may help to create or maintain a forest that will support a diversity of wildlife, particularly if it is located adjacent to an existing forest.



Afforestation on each lot



Afforestation in designated
area of subdivision

Property owners can be given credit towards the afforestation requirement for existing vegetation on the property. Once a property owner meets the 15% afforestation requirement, no additional planting is necessary for any future alterations to the home. However, if any trees are removed during future renovations, the trees must be replaced as required by the Criteria and outlined in Table 1.

Lack of Mitigation Sites

In several local jurisdictions, the size of the average property in the Critical Area is too small to reasonably accommodate the amount of mitigation required by the regulations. The Criteria provide that local jurisdictions can create a fee in lieu program "*if the fee is adequate to ensure the restoration or establishment of an equivalent forest area*" (COMAR 27.01.02.04). This may put more burden on the local jurisdiction by having to collect and spend the fees. However, off-site mitigation can be more ecologically beneficial for smaller lots in densely populated areas where on-site plantings may turn into landscaping rather than creating or contributing to a forest. Small landscaped areas lose many of the important benefits of a functioning forest ecosystem. The lack of mitigation sites is a problem that several counties are faced with now and one that rapidly developing counties will face in the future. Some counties have found innovative ways of addressing this issue (see case studies 1,2 and 3).

Case Study #1: Mitigation Banking in Anne Arundel County

Anne Arundel County is highly urbanized and many of the lots in the Critical Area are small in size. Due to the size of the lots, there is little room for on-site forest mitigation thus property owners often pay a fee-in-lieu to the County. Subsequently, the County has a large fees in lieu fund and has had difficulty in spending the monies due to the lack of mitigation sites in the County's Critical Area. Another option for landowners is to plant trees off-site on private property in the Critical Area through a mitigation banking scheme. Mitigation banking enables the County to avoid collecting fees in lieu while ensuring that trees are being planted in the Critical Area.

There are five mitigation banking sites in the County. A property owner that is required to reforest can contact the landowners of these sites and pay them to plant trees on their property. The fees to plant on these sites are lower than the County's fees in lieu thus there is an incentive to buy into the mitigation banking scheme. The County requires a landowner choosing to use mitigation banking to submit a planting plan to the County, post a two-year bond to guarantee the planting, and put the planting site into a perpetual conservation easement. County staff go out on-site to approve the site and then re-visit the site after it has been planted to ensure consistency with the planting plan. Staff return to the site after two years to ensure that the plantings are surviving. For more information, contact the Anne Arundel Office of Planning and Code Enforcement at 410.222.7441.

Case Study #2: Advertising for Mitigation Sites in Calvert County

Calvert County has a fee in lieu fund and has had difficulty finding mitigation sites in the past, particularly large tracts of land to reforest. The County has been proactively locating mitigation sites through newspaper advertisements that offer free trees to landowners in the Critical Area. Fees in lieu are used to buy the trees and pay for all the related expenses to prepare and plant a site. The Calvert County Board of Commissioners established a Critical Area Reforestation Evaluation Committee (CARE) to develop the guidelines for the replanting program and to review and approve requests for tree plantings. CARE gives priority to reforestation sites greater than five acres and/or sites within 100-feet of tidal waters. The County continually receives applications from property owners requesting trees on their property. For more information, contact the Calvert County Department of Planning and Zoning at 410.535.2348.

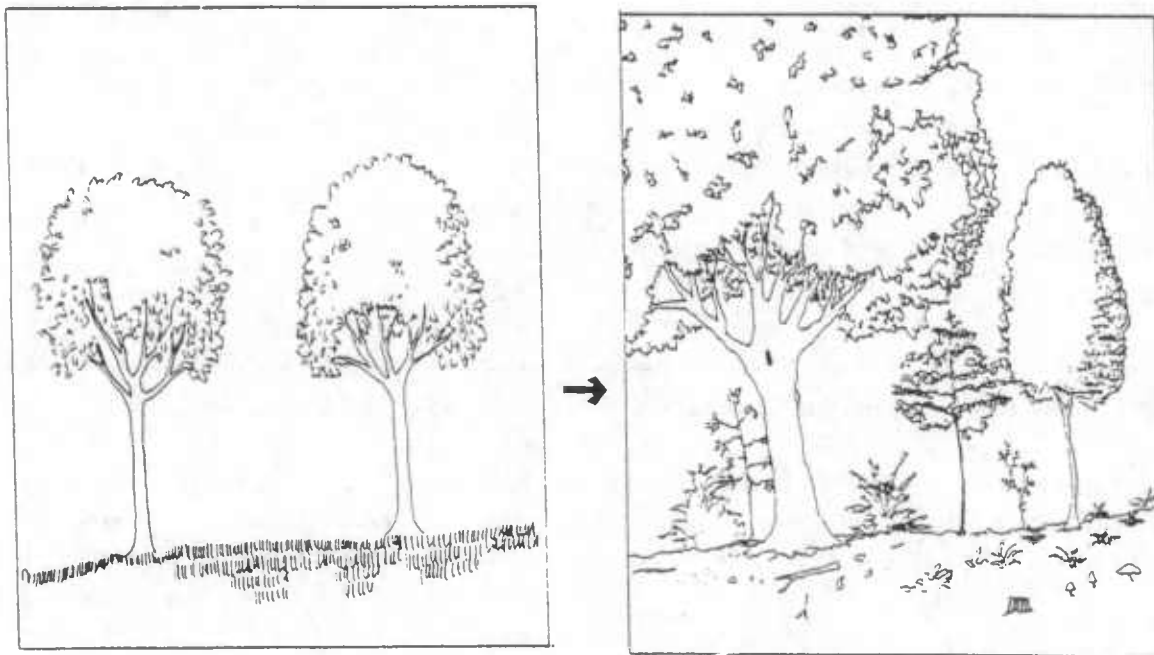
Case Study #3: Landowner Stewardship Referral Service

The Landowner Stewardship Referral Service was developed by the Watershed Restoration Division at the Department of Natural Resources (DNR). The service is designed to help interested property owners enhance the natural resources on their property, create new habitats and protect existing ones. The DNR developed a guide that can assist resource professionals and private property owners in determining which programs are available and best-suited to meet their specific objectives. The programs listed in the guide include federal, state, and private, non-profit programs. Local jurisdictions can use this service to facilitate the identification of potential forest mitigation sites on private properties to meet the Critical Area Program requirements of no net loss of forest. Jurisdictions that have collected fees over the 1:1 mitigation ratio could also use the service to identify and fund creative programs and projects that contribute to water quality protection and habitat creation (i.e. wetland restoration). In addition, the service can provide technical assistance to landowners in the Critical Area seeking help in planting and enhancing habitat on their property. For more information and to obtain the Landowner Stewardship Referral Service Guide for Funding and Assistance call the Maryland Department of Natural Resources at 800.989.8852.

Technical Assistance and Education

Technical assistance and education are important factors in ensuring that property owners are informed about the Critical Area and that mitigation is completed in a way that restores or enhances the forest resource. The use of native tree and shrub species should be emphasized since their chance of survival is greater as they are naturally adapted to their environment and can thrive with minimal watering and fertilizers. Native species will also maximize the diversity of native wildlife that depend on the forest. In some instances, natural regeneration may be the most appropriate form of mitigation. Because natural regeneration comes from the local bank of plant material, it assures the growth of vegetation adapted to site conditions and climate, a diversity of species and habitat for local wildlife, and higher survival rates (Sternberg & Wilson, 1995).

Plantings should be strategically located to enhance existing forest resources on the property. Planting adjacent to a forest or developed woodland, when possible, will help to create wildlife corridors. Creating an understory and leaving branches and leaves on the ground will enhance the structural diversity of the forest which is also important to plants and animals that depend on that forest for their survival (Lynch & Whigham, 1984; Marinelli, 1998; and Stein, 1993). An understory might include native shrubs and small trees such as mapleleaf viburnum, witch hazel or mountain laurel. The intent of the Critical Area Act was not only to maintain or increase forest cover, but to ensure that the quality of the forest or developed woodland is maintained in order to improve water quality and conserve plant and wildlife habitat. Commission staff are on hand to provide technical assistance with planting plans and to provide clarification on the mitigation requirements.



Creating a structurally diverse forest

Case Study #4: Educating Waterfront Property Owners in Anne Arundel County

Anne Arundel County has taken a proactive approach to educating property owners about the Critical Area Act and Regulations by developing a welcome package that is sent out to all new waterfront property owners located in the Critical Area. The welcome package includes a letter from the County Executive welcoming the property owner and informing them that they have bought a property in the Critical Area and that there are special requirements for these properties which are outlined in enclosed pamphlets. One pamphlet focuses on ways waterfront property owners can protect the 100-foot Buffer and the importance of a functioning Buffer. The other booklet provides some background on the Critical Area Act and requirements to be met when developing a property in the Critical Area, including impervious surface limits, afforestation and reforestation requirements, a sample Critical Area worksheet to be submitted with building permit applications, sample site plans, and an explanation of how and why the Buffer should be protected and expanded. For more information contact the Anne Arundel Office of Planning and Code Enforcement at 410.222.7441.

Technical Assistance through the Maryland Department of Natural Resources

Foresters with the Forest Service at Maryland's Department of Natural Resources (DNR) can provide technical assistance to landowners on tree planting and maintenance. Phone numbers of DNR Forest Service staff in each county can be obtained by calling headquarters at 410.260.8531 or through the online forester at DNR's website at www.dnr.state.md.us/forests/. In addition, landowners can buy seedlings at discounted prices from the John S. Ayton state tree nursery in Preston, Maryland. Call 410.673.2467 for more information.

Monitoring and Enforcement

It is not only important to ensure that mitigation requirements are carried out, but that the plantings survive once they are in the ground. Most local jurisdictions have enforcement mechanisms and survival requirements for plantings to ensure that the intent of the Critical Area Act is met. Case Study #5 illustrates how Baltimore County has found an effective way of enforcing and monitoring forest mitigation requirements.

Case Study #5: Monitoring for Compliance and Maintenance in Baltimore County

Baltimore County has developed an effective system for monitoring and enforcing the County's forest mitigation requirements. Property owners are required to develop a Chesapeake Bay Critical Area Management plan, enter into an environmental agreement and post a security before they can receive approval of a project plan, minor subdivision plan, grading permit, or building permit. The County performs four inspections over three years and if the plantings are acceptable they release the securities according to a specific schedule. A large portion of the security is held until the final inspection to ensure that the County has enough money to hire a contractor, if necessary, to do the plantings at the end of the three years. The minimum survival rate shall be seventy-five percent of the total number of plants per acre at the end of the three-year maintenance agreement. For more information on the County's program contact Baltimore County's Department of Environmental Protection and Resource Management at 410.887.3980.

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