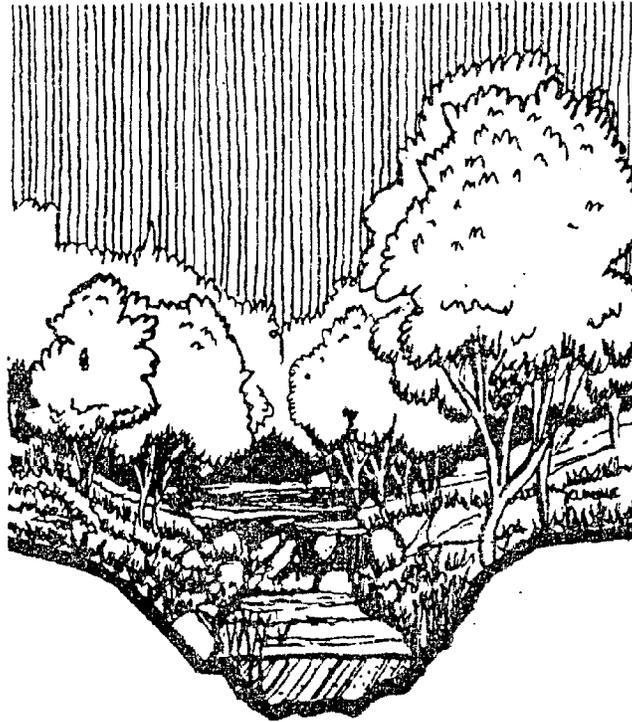

COASTAL ZONE MANAGEMENT PROGRAM
FY 1991
PROGRESS REPORT UPDATE



STREAM VALLEY MANAGEMENT
and
PROTECTION PROGRAM
IMPLEMENTATION

Presented to:

National Oceanic and

GB Administration;

565

.M3

S77

FY1991

1991

c.1

Dept. of Natural Resources,

Resources Division,

Coastal Zone Management Program.

Prepared by:

*Charles County Department
of Planning and Growth
Management, Planning
Department*

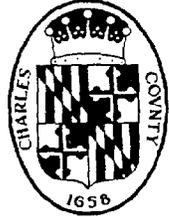
Date: September 30, 1991

GB565.M3S77 FY1991 1991 c.1

Funding for this Program is provided by the Coastal Resources Division, Maryland Department of Natural Resources, through a grant provided by the Coastal Zone Management Act of 1972, administered by the office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration.

CHARLES COUNTY GOVERNMENT
Planning and Growth Management

ROY E. HANCOCK, Deputy County Administrator



October 8, 1991

Ms. Gwynne Schultz
Coastal Resources Division
Department of Natural Resources
Tidewater Administration
Tawes State Office Building
Annapolis, MD 21401

RE: CONTRACT # C 209-90-002
PROGRESS REPORT UPDATE

US Department of Commerce
NOAA Coastal Services Center Library
2234 South Hobson Avenue
Charleston, SC 29405-2413

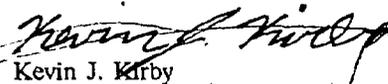
Dear Gwynne,

In response to the terms of this contract period (Oct. '90 - Sept. '91) for the implementation of the Stream Valley Management and Protection Program, five copies of this final report documenting the results of this year's work effort are being submitted to CRD for review and approval at this time. Final work products for this year's grant period may be broken down into 5 sections: Resource Protection; Watershed Management; Water Quality Monitoring; Land Trust Formation and; Education (see attached Time Frames and Work Products). Program updates will be addressed for each of the final work products in the context of this report. In addition, you will find enclosed copies of the Mattawoman Watershed Soil Survey Report, prepared and submitted by the Soil Conservation Service.

This report will also document: 1) An inventory of properties lying within delineated stream valleys, including lists of property owners; 2) A brochure explaining the management plan objectives, protection methods, implementation techniques and a description of land trusts and conservation easements; 3) A description of the activities undertaken to expand the local land trust, cooperative conservation easement program and other formalized measures to acquire and protect sensitive stream valley habitat areas, 4) Guidelines established for possible inclusion of other stream valleys not included in this program.

It was a meaningful endeavor this year, being given the opportunity (through CZM funding) to implement the goals and objectives of the Stream Valley Management and Protection Program - a Program which I feel very positive about for protecting Charles County's sensitive riparian environs. I am certainly looking forward to your comments and feedback with respect to our work products this grant period. Our requested reimbursement for expenditures accrued during this last quarter will be forthcoming. If you should have any questions or require any further clarification regarding this submittal, please don't hesitate to give me a call at 645-0599.

Respectfully submitted,


Kevin J. Kirby
Environmental Planner

KJK/ Attachments

SAY NO TO DRUGS

Post Office Box B

La Plata, Maryland 20646

(301) 645-0610 or 870-3935

EQUAL OPPORTUNITY COUNTY

STREAM VALLEY MANAGEMENT AND PROTECTION PROGRAM IMPLEMENTATION REPORT UPDATE

In response to the terms of this contract period (Oct. '90 - Sept. '91) for the implementation of the Stream Valley Management and Protection Program, five copies of this final report documenting the results of this year's work effort are being submitted to CRD for review and approval at this time. Final work products for this year's grant period may be broken down into 5 sections: Resource Protection; Watershed Management; Water Quality Monitoring; Land Trust Formation and; Education (see attached Time Frames and Work Products). Program updates will be addressed for each of the final work products in the context of this report.

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I PROGRAM UPDATES

A. Resource Protection District Overlay Zone

- Ordinance for the Resource Protection District

To protect Charles County's riparian and aquatic ecosystems, an Overlay Zone, termed the Resource Protection District (RPD), has been identified within the adopted 1990 Charles County Comprehensive Plan. The Overlay Zone is normally established to protect a single resource through the creation of a zoning classification that overlays the base zoning district, whether it is residential, commercial, industrial or agricultural. The delineation of the RPD includes all wetlands contiguous to stream valleys, floodplains, and their corresponding buffers.

The purpose of this ordinance is to protect stream valley habitat and stream water quality. The scope of these regulations shall apply to all proposed development, including: projects for which subdivision, site plan, building and grading permits or approvals are necessary; timber harvesting; and agriculture activities.

Given the realities of existing State and Federal regulations, it was realized that Charles County could only require agricultural producers and timber harvesters to abide by the most restrictive regulations currently in place. This strategy includes requiring the same compliances for agricultural and timber activities adjacent to stream valleys as are required adjacent to the Chesapeake Bay Critical Area (CBCA). We would be amiss to not mention that the RPD regulation affects far more properties than are currently within the jurisdictional boundaries of the CBCA. To question the effectiveness of the Soil Conservation and Water Quality plans which we are requiring of affected properties (i.e. the 25 ft. vegetative buffer), is to question State and Federal guidelines. The political realities of attempting to implement a more stringent regulation than State and Federal guidelines would be folly in a county as agriculturally strong as Charles - to propose this would be to compromise the passage of any regulation at all.

I PROGRAM UPDATES (cont.)

A. Resource Protection District Overlay Zone (cont.)

Maximum effort was taken in the drafting of this ordinance to establish guidelines for the inclusion of stream valley tributaries not included in the original inventory. The guidelines include establishing recognition of all tributaries and stream valleys with identified floodplains and/or wetlands. It is our opinion that the guidelines specified in this ordinance for delineation of the RPD is comprehensive in this respect. At this time, the language for the Resource Protection Overlay Zone Ordinance has been included within the recent draft Comprehensive Rezoning Ordinance. A copy of this language is included for your perusal (see Appendix A).

The schedule for approval of this ordinance, at this point in the Zoning Ordinance adoption, is: approval by the Planning Commission; conducting a public hearing on whatever changes may have occurred; final recommendations presented to the Charles County Commissioners and lastly; final action by the Commissioners. We are optimistic that we will have an adopted Zoning Ordinance, complete with a Resource Protection District, by the end of this fall, 1991.

- County-wide Mapping Status

At this time, all of Charles County's major stream valleys, including but not be limited to the Zekiah Swamp, Gilbert Swamp, Mattawoman Creek, Nanjemoy Creek, Swanson Creek, Indian Creek, and Port Tobacco River, have had their floodplains, contiguous wetlands and corresponding buffers digitized onto the County's tax-map database. Fine tuning of the map products are currently underway with reviews being conducted by planning staff, Planning Commission members, and County Commissioners. It is worth noting that the criteria for inclusion and delineation of this overlay zone is subject to change at the pleasure of both the Planning Commission and the County Commissioners. To date, we have had very strong support from the majority of Commission members to adopt the Overlay Zone as drafted.

- Inventory of Properties Within Resource Protection District

One of the work products included in implementing the SVMPP is compiling an inventory of properties lying within delineated stream valleys. This includes lists of property owners whose property may lie wholly or partially within the major stream valleys of the County. In compiling this inventory, two factors have been considered in order to prioritize the phasing of such a major inventory: Identifying those properties whose stream valley's lie within areas of high natural value such Natural Heritage Areas and Areas of Critical State Concern. This includes the entire Mattawoman, Zekiah, Upper Nanjemoy, and Port Tobacco stream valleys. At this time, we are submitting to CRD an inventory of those properties lying wholly or partially within the Resource Protection Zone of the Zekiah Swamp and the Mattawoman Creek - both identified as Areas of Critical State Concern (see Appendix C). These areas are our highest priorities for land acquisition. The Mattawoman Creek watershed corresponds with the County's Development District. The Zekiah Swamp is well known as one of the most significant natural areas in the Chesapeake Bay region. Because of the sizeable acreage of these areas and the large number of private holdings within them, it is reasonable to focus land acquisition activities exclusively on these areas at this time.

I PROGRAM UPDATES (cont.)

B. Mattawoman Watershed Management Plan

This document represents an integral part of the adopted Stream Valley Management and Protection Program (SVMPP) as a strategy to protect riparian habitats, protect the quality of stream waters, and conserve the environmental features and functions of Charles County's watersheds. The Mattawoman watershed was selected as a pilot study area in order to respond to the tremendous development pressure anticipated for this development district.

The Mattawoman Creek watershed offers unique management considerations compared to other watersheds in the County in that this region has been targeted as an area of "directed growth" in the adopted Charles County Comprehensive Plan. The implications of such intense development requires the development of this Watershed Management Plan thereby focusing on controlling further degradation of water quality by assessing current conditions, anticipating what impacts will be associated with urbanization, and adopting urban Best Management Practices (BMPs) for this development district as a means of controlling and regulating stormwater runoff.

This plan is further designed to meet the Watershed Management Plan (WMP) considerations as established by the Maryland Water Resources Administration, pursuant to the State's Nontidal Wetlands Protection Act. As such, it is anticipated that this WMP will take several years to develop and implement. Pursuant to the submitted schedule for the development of the Mattawoman WMP, Charles County has begun development of Phases I & II; Outline of the Concept Document & Issue Identification (see Appendix B).

Originally, an outgrowth of this plan was to draft a Watershed Management District Ordinance which would require such components as urban BMPs and the pre-treatment of SWM facility discharge before entering wetlands. It has become obvious, with the review of existing ordinances that a much more practical approach is to make these requirements County-wide (rather than watershed specific) and that a more logical vehicle to utilize in implementing such a regulation is in the existing Stormwater Management Ordinance. The rationale behind this is that with the changes slated for this current ordinance (as a result of review and assessment as a part of the WMP process) justifies a comprehensive overhaul of this ordinance in order to maximize inter-ordinance coordination between various goals and objectives. Therefore, Charles County withdraws its commitment to produce a Watershed Management District Ordinance this grant period and will not document expenditures accrued by county staff to produce it.

C. Water Quality Monitoring Program Strategy

Water quality monitoring in the County's streams has been identified as another major component of Charles County's SVMPP. As such, Charles County planning staff has developed a three-tiered Water Quality Monitoring Program Strategy which was adopted by the Charles County Commissioners on July 30, 1991 (see Appendix E). This program strategy covers the approach, organization, staffing, data interpretation, and costs of the program.

I PROGRAM UPDATES (cont.)

C. Water Quality Monitoring Program Strategy (cont.)

Stream monitoring will establish baseline data for existing water quality, which can be compared with future water quality data to establish trends and aid in tracking water quality problem areas. This three-tiered approach to water quality monitoring includes:

- 1) A volunteer oriented stream water quality monitoring program documenting the physical, chemical and benthic testing of palustrine stream waters;
- 2) Laboratory analysis of water quality which includes a more detailed technical and site specific analysis of water quality to be conducted in cases where the results of first tier sampling indicate that the quality of waters tested fall below accepted standards, and;
- 3) An in-stream computer monitoring station which would allow for water quality testing before, during and after crucial storm events when the true telling of a watershed's environmental health is most evident.

D. Charles County Conservancy

The formation of a County-wide land trust has been envisioned as a means of acquiring important and sensitive natural areas and of encouraging stream stewardship on the part of those property owners adjacent to stream valleys and, as such, identified as another component of implementing the SVMPP. The strategy for land trust formation has been to have the County Commissioners act as the formal land trust incorporators, thereby forming the Charles County Conservancy.

At this time, the County Commissioners have selected members for the steering committee (copies of steering committee meetings, solicitations and charge letter are enclosed for your review in Appendix D). The steering committee is charged with nominating the Board of Directors and providing recommendations on land trust bylaws, articles of incorporation, funding and role in the County.

E. Education

As with any new program whose objective and focus may be admirable if not controversial, its effectiveness is inherently limited by the manner in which the information is communicated to the people it might effect. The SVMPP has striven from its inception to present the programs goals and objectives to the residents of Charles County in a manner which would promote a stewardship on the part of those residents that might be fortunate enough to have a stream valley coursing through their "back 40". At this time, two brochures are being presented to CRD: One on Agricultural BMP's and a second on the Stream Valley Management and Protection Program.

The purpose of the Agricultural BMP's brochure is to describe various state and federal programs which exist that can help defray the costs associated with the design and installation of agricultural BMPs. although their currently exists a host of literature which describe different programs, there is no one source that describes them all. This brochure is intended to do just that, and is based upon the literature available on each grant program.

The purpose of the Stream Valley Management and Protection Program brochure is to explain the management plan objectives, protection methods, implementation techniques, and a description of land trusts and conservation easements.

STREAM VALLEY MANAGEMENT and PROTECTION PROGRAM

Time Frames and Work Products for 1990 - 1991

| <u>TASK</u> | <u>WORK PRODUCT</u> | <u>TIMELINE</u> FY1991 | <u>TIMELINE</u> FY1992 |
|---|----------------------|---------------------------|---------------------------|
| RESOURCE PROTECTION DISTRICT (RPD) | | | |
| Delineation @ 1"=600' | Delineated Taxmaps | 03/31/91 | ----- |
| RPD Ordinance | Draft Ordinance | 12/31/90 | ----- |
| WATERSHED MANAGEMENT | | | |
| Phase 1 - Concept Document | Concept | 09/31/91 | ----- |
| Phase 2 - Issue Identification | Issues | 09/31/91 | ----- |
| Phase 3 - Alternatives | Alternatives | ----- | 12/31/91 |
| Phase 4 - Scheduling | Scheduling | ----- | 03/30/92 |
| Phase 5 - Implementation | Implementation | ----- | 09/30/92 |
| WATER QUALITY | | | |
| Program Strategy | Program Strategy | 06/30/91 | ----- |
| Grant Funding | Grant Application | 08/15/91 | ----- |
| Citizen Monitoring | WQ Data | ----- | 10/01/92 |
| LAND TRUST | | | |
| Steering Committee | Charge Letter | 03/30/91 | ----- |
| Board of Directors | Appointment Letter | 09/30/91 | ----- |
| Goals and Criteria | Goals and Criteria | ----- | 06/30/92 |
| EDUCATION | | | |
| SVMPP Brochure | Educational Brochure | 08/30/91 | ----- |
| Agric. BMP Brochure | Educational Brochure | 08/30/91 | ----- |
| Agric. BMP Promoter | Grant Applications | 08/15/91 | ----- |

RESOURCE PROTECTION

OVERLAY ZONE

ORDINANCE

APPENDIX A

DRAFT
Resource Protection Overlay Zone (RPZ)

A. Statement of Purpose

- 1) The general purpose of this zone is to protect stream valley habitat and stream water quality. In particular, the purposes of this zone are to:
 - a) preserve floodplains in a natural state;
 - b) preserve wetlands associated with floodplains;
 - c) preserve significant habitat areas associated with stream valleys or in other locations;
 - d) prevent soil erosion and sedimentation by protecting steep slopes associated with stream valleys;
 - e) protect persons and property from environmental hazards such as unstable or highly erodible soils and flooding;
 - f) filter nutrients, toxics, and sediment from stormwater;
 - g) protect scenic values;
 - h) provide recreational opportunities; and
 - i) minimize public investment in floodplain stormwater management.

B. Scope

- 1) These regulations shall apply to all proposed development, including: projects for which subdivision, site plan, building and grading permits or approvals are necessary; timber harvesting; and agricultural activities.

C. Application

- 1) The Resource Protection Zone (RPZ) shall apply to those County streams or those portions of County streams outside of the Critical Area Overlay Zone, including but not limited to: Zekiah Swamp, Gilbert Run, Nanjemoy Creek, Swanson Creek, Indian Creek, Port Tobacco River, Mattawoman Creek, Chicamuxen Creek, Popes Creek, Wards Run, Kerrick Swamp, Mill Run, Beaverdam Creek, Hancock Run, Old Woman's Creek, Piney Branch, and tributaries thereof or of the Potomac River.

D. Resource Protection Zone Delineation

- 1) The Resource Protection Zone shall encompass an area based on the outermost combined limits of the existing 100-year floodplain if present, non-tidal wetlands contiguous with or within 25' of the stream channel or 100 year floodplain if present, and a buffer. Except as permitted in this ordinance, the land within this zone is to remain in an undisturbed natural state, and the outer edge of this zone shall constitute the limit of clearing and grading.

Resource Protection Overlay Zone (cont.)

E. Minimum Buffer Widths

- 1) The minimum buffer standards shall be as follows:
 - a) 100' - for perennial streams
 - b) 50' - for intermittent streams
- 2) The minimum buffer shall extend outward from the outermost limit of the 100-year floodplain or non-tidal wetlands adjoining the stream channel or floodplain, whichever is greater, or outward from both sides of the centerline of the stream channel in the absence of a 100-year floodplain and non-tidal wetlands. The buffer shall be measured horizontally from a floodplain, wetland, or stream channel without regard for the lay of the land.

F. Buffer Adjustment for Steep Slopes

- 1) The minimum buffer shall be increased to account for steep slopes contiguous with or within 25' of the minimum buffer. The buffer width shall be doubled or extend to the top of the slope, whichever is less, where average slopes greater than 15% adjoin the minimum buffer or are within 25' of the minimum buffer.
- 2) Percentage of average slope shall be determined by plotting a transect from the outer edge of the minimum buffer to the top of the adjoining slope, defined as the point at the top of slope where the percent slope falls below 15%, and calculating an average slope from the slope percentages crossed by the transect. The number of transects will vary depending on the uniformity of slopes adjoining a particular reach of a stream. Transects may be spaced up to 100' apart regardless of slope uniformity. However, transect spacing exceeding 100' shall be based on slope uniformity.

G. Use Restrictions

The following uses shall be prohibited in the RPZ:

- 1) Mining or excavation, except for existing operations;
- 2) Dredging except as may be permitted under state law.
- 3) Deposit or landfilling of fill, refuse, and solid or liquid waste, except manure applied as a crop fertilizer and acceptable fill permitted by the U.S. Army Corps of Engineers for streambank erosion control.
- 4) Alteration of the stream bed and bank of a waterway, except for best management practices to reduce stream erosion, and construction and maintenance of stream crossings for permitted uses.
- 5) Clearing of vegetation and grading, except as may be permitted under this ordinance.

Resource Protection Overlay Zone (cont.)

H. Permitted Uses

The following land uses shall be permitted, provided that the conditions herein are met:

1) **Agriculture**

Agricultural uses shall be permitted, provided that a soil conservation and water quality plan be approved by the Charles Soil Conservation District. The soil conservation and water quality plan shall include 25' vegetative filter strips adjoining streams.

2) **Timber Harvesting**

Landowner timber harvesting for personal use shall be permitted. Commercial timber harvesting shall be permitted, provided that the timber harvesting is conducted in conformance with Subtitle 16 - Forest Conservation, Annotated Code of Maryland, or a local program pursuant to said subtitle.

3) **Utility transmission lines, railroads, roads, stormwater management facilities, recreational non-motorized trails, public environmental education facilities, facilities for recreational access to a stream, and associated clearing shall be permitted, provided that:**

- a) Project location in the RPZ is essential for access or continuity and no reasonable alternatives exist.
- b) Crossings of the RPZ are as close to 90 degrees as reasonably possible.
- c) The project complies with the requirements of the U.S. Army Corps of Engineers, Maryland Department of Natural Resources, and the Floodplain Management Ordinance for Charles County, Maryland.
- d) The project is designed to minimize disturbance, clearing, and grading.
- e) Approved sedimentation and erosion control, best management practices, and revegetation plans in accordance With Subtitle 16 - Forest Conservation, Annotated Code of Maryland or local program pursuant to Subtitle 16 - Forest Conservation, as applicable, are implemented for the project.
- f) The habitats of federally or state listed threatened and endangered species or other critical habitats are fully protected.

I. Open Space Credit

- 1) Land within the RPZ may be used to meet open space requirements.

J. Extension of RPZ

- 1) The Planning Commission may extend the RPZ to include adjoining hydric soils, severely erodible soils, entire steep slopes, State designated natural heritage areas and wetlands of special concern, and the habitats of federally or state listed threatened and endangered species or other critical and significant wildlife and plant habitats deserving of protection.

Resource Protection Overlay Zone (cont.)

K Adjustment of District

- 1) The application of this zone to the County zoning maps shall be construed as general in nature and may be adjusted by the Planning Director upon the presentation of engineering data which delineates more precisely the boundaries of this zone.

L Plans and Plats Information

- 1) All plans submitted to Charles County for review shall indicate the boundary of the RPZ and buffer width, as applicable.
- 2) All plats prepared for recording shall clearly show:
 - a) The extent of the RPZ by metes and bounds;
 - b) A label stating, "Resource Protection Zone" for the area within the RPZ; and
 - c) A note stating: "There shall be no clearing, grading, construction or disturbance of vegetation in the Resource Protection Zone as further documented in a recorded conservation easement, except as may be permitted by the Charles County Planning Commission."
 - d) A conservation easement requiring that the RPZ land be perpetually maintained in natural vegetation shall be dedicated to the County or to a County land trust, should one exist. Said easement shall be recorded by deed or plat in the County land records for that portion of the property within the RPZ.

M. Construction Staking

- 1) The outer edge of the RPZ buffer shall be field staked and clearly delineated as the limit of clearing and grading prior to the commencement of clearing and grading activities within 50' of the RPZ, permitted clearing and grading in the RPZ excepted. The limits of permitted clearing and grading within the RPZ shall likewise be field staked and clearly delineated.

N. Enforcement

- 1) The enforcement provisions of the Charles County Erosion and Sedimentation Control Ordinance shall also apply to this zone.

O. Performance Bond

- 1) A performance bond or other surety in a form and amount established as acceptable to the County shall be executed by the owner or developer to cover possible damage to RPZ lands during construction. The bond or surety shall remain in full force until the work encompassed by the applicable grading permit has been completed and approved by the County. Accidental or incidental construction damage to the RPZ shall result in a full or partial forfeiture of the performance bond or surety, depending on the severity of the violation and the costs of restoring damaged RPZ land. It shall be the developer's responsibility to restore damaged RPZ land in accordance with County revegetation requirements.

Resource Protection Overlay Zone (cont.)

P. RPZ Variance Provisions

- 1) The variance provisions of Article XVIII shall apply to this ordinance.

Definitions to add to Zoning Ordinance:

Intermittent Stream - means a stream in which surface water is absent during a portion of the year, as shown on the most recent 7.5 minute topographic quadrangle or other topographic maps published by the United States Geological Survey, or as shown on an official map or aerial photograph as chosen by the Charles County Planning Commission.

Perennial Stream - means a stream containing surface water throughout an average rainfall year, as shown on the most recent 7.5 minute topographic quadrangle or other topographic maps published by the United States Geological Survey, or as shown on an official map or aerial photograph as chosen by the Charles County Planning Commission.

RESOURCE PROTECTION DISTRICT

PROPERTY OWNER INVENTORY

APPENDIX B

PROPERTY INVENTORY

MATTAWOMAN CREEK

| PROPERTY OWNER | TAX MAP# | PARCEL | ACREAGE |
|------------------------------|----------|--------|------------|
| George Rhodes | 2 | 1 | |
| Waldorf Restaurant | 3 | 1 | |
| | 4 | 1 | |
| Herbert S. Kidwell | 6 | 69 | 62.00 |
| Charlotte R. Rogers | 6 | 68 | 21.0 |
| Rainbow Construction, Inc. | 6 | 8 | 7.51 |
| N/A | 6 | 89 | |
| Cleota Langdon | 6 | 6 | 43.28 |
| Eunice B. Anderegg | 6 | 4 | 33.94 |
| C. M. Long Assoc. Inc. | 6 | 206 | 16.00 |
| N/A | 6 | 23 | |
| N/A | 6 | 170 | |
| William R. Porter | 6 | 175 | 16.31 |
| Thadeus J. Swenton | 6 | 208 | 36.50 |
| N/A | 6 | 70 | |
| N/A | 6 | 180 | |
| J.E. Bracy | 6 | 2 | 66.94 |
| Mildred Melton Cover | 6 | 7 | |
| Leo Tompkins | 6 | 1 | 126.68 |
| Waldorf Meth. Episcopal Ch. | 7 | 222 | 15.00 |
| Richard H. Estevez | 7 | 157 | 3.45 |
| Carroll T. Grandstaff | 7 | 214 | 3.88 |
| N/A | 7 | 188 | |
| Ashford Joint Venture | 7 | 152 | 119.06 |
| Rose Marie Borde | 7 | 132 | 35.39 |
| CMDC St.Char.Ltd. Part. | 7 | 108 | 60.15 |
| George Estevez | 7 | 62 | 42.50 |
| Richard H. Dobson | 7 | 27 | 221.50 |
| Berry Rd. Stream View Assoc. | 7 | 16 | 83.41 |
| Larry B. Wilkerson | 7 | 79 | 46.54 |
| David Edelen | 7 | 250 | 87.03 |
| Co. Comm. of Charles Co. | 7 | 240 | 32.19 |
| FEH Inc. c/o L.K.Farral III | 7 | 4 | 79.12 |
| Randy M. Shaban | 7 | 5 | Lot18-Sec2 |
| Joseph A. Moran | 7 | 205 | Lot31-Sec2 |
| Hillman Cornell | 7 | 242 | 20.00 |
| Maryland Quality Homes, Inc. | 7 | 170 | 12.46 |
| Joseph H. Gibson | 7 | 104 | Lot32-Sec2 |
| Co. Comm of Charles Co. | 7 | 156 | 20.73 |
| Waldorf Shopping Mall, Inc. | 7 | 302 | 36.94 |
| Monel Associates, Inc. | 7 | 1 | 101.00 |

| PROPERTY OWNER | TAX MAP# | PARCEL | ACREAGE |
|----------------------------|----------|--------|---------|
| Walter Wroblewski | 7 | 185 | 7.50 |
| Eugene C. Radcliff | 7 | 305 | 2.00 |
| N/A | 7 | 60 | |
| Leonard D. Sanford | 7 | 2 | 2.00 |
| William H. Clifton | 7 | 61 | 98.71 |
| Robert E. Noonan | 7 | 40 | 27.31 |
| John M. Edwards | 7 | 340 | 1.76 |
| Alice Pennington Bell | 7 | 329 | 0.47 |
| Laurence M. Ullman | 7 | 220 | 0.47 |
| Scotland Hts. Ltd. Part. | 7 | 221 | 91.20 |
| Brian N. Helland | 7 | 312 | 1.00 |
| Joseph A. Pickeral | 7 | 171 | 2.01 |
| Cleo A. Helland | 7 | 273 | 1.01 |
| Lewis R. Vest | 7 | 313 | 1.00 |
| Shirley Ann Proctor | 7 | 137 | 1.00 |
| N/A | 7 | 327 | |
| Elizabeth M. Proctor | 7 | 82 | 61.79 |
| William Junior Swann | 7 | 81 | 1.00 |
| Rhoderick R. Dyson | 7 | 28 | 67.93 |
| Lewis R. Vest | 7 | 272 | 125.35 |
| Richard Allen | 7 | 232 | 33.50 |
| Russell E. Knieser | 7 | 126 | N/A |
| Karl L. Elders | 7 | 163 | 1.00 |
| | 9 | 80 | |
| Henry Travathan | 13 | 173 | 23.60 |
| State of Md. D.N.R. | 13 | 189 | 22.76 |
| State of Md. D.N.R. | 13 | 57 | 99.66 |
| Hillen Morgan, Jr. | 13 | 146 | 134.52 |
| N/A | 13 | 113 | |
| Sharon Bolton | 13 | 54 | 94.10 |
| N/A | 13 | 181 | |
| Cafritz Foundation Et AL | 13 | 52-A | 248.79 |
| Jesse Meyers | 13 | 51 | 269.21 |
| Louis Bell | 13 | 81 | 188.95 |
| Louis Bell | 13 | 6 | 231.70 |
| Philip Dwyer | 13 | 1 | |
| Isabella Cole | 21 | 5 | 7.50 |
| Vintage Asso. % Cecil Boye | 21 | 10 | 10.00 |
| N/A | 21 | 51 | |
| Thomas Marbury | 21 | 59 | 0.45 |
| Walter Washington | 21 | 64 | |
| Earl Thomas | 21 | 65 | |
| Jane Datcher | 21 | 66 | |
| Harold Hancock | 21 | 60 | |
| Billy Dixon | 21 | 6 | 1.86 |
| George Grieninger | 21 | 7 | 2.11 |

| PROPERTY OWNER | TAX MAP# | PARCEL | ACREAGE |
|------------------------------|----------|--------|------------|
| N/A | 21 | 9 | |
| N/A | 21 | 52 | |
| N/A | 21 | 53 | |
| N/A | 21 | 13 | |
| Percontee, Inc. | 21 | 14 | 234.56 |
| Date Mueller | 21 | 26 | 14.00 |
| Joseph T. Dixon | 21 | 172 | 75.00 |
| Leo B. Dixon | 21 | 173 | 75.40 |
| Trimac, Inc. | 21 | 76 | 204.58 |
| Dept. of Forest & Parks | 21 | 28 | 754.00 |
| DNR | 21 | 24 | 56.00 |
| Robert Kravel, Jr. | 21 | 29 | |
| Vernon Haas | 21 | 17 | 32.41 |
| James Corridon | 21 | 61 | 69.73 |
| N/A | 21 | 113 | |
| Norman Irvine | 21 | 23 | 115.46 |
| N/A | 21 | 116 | |
| DNR | 21 | 187 | 73.40 |
| John Ray | 21 | 164 | 14.25 |
| DNR | 21 | 114 | |
| Benard M. Short Et Al | 22 | 34 | 134.00 |
| Garland Smythers | 22 | 101 | 50.07 |
| Henry L. Trevathan | 22 | 143 | 15.63 |
| Lanie Gesvero | 22 | 146 | 10.00 |
| Gunga Lee Dean | 22 | 144 | 10.00 |
| N/A | 22 | 200 | |
| N/A | 22 | 201 | |
| Gary Stine | 22 | 174 | 2.32 |
| Paul Thorne | 22 | 123 | 31.60 |
| Charles Co. Commissioners | 22 | 505 | 15.64 |
| N/A | 22 | 304 | |
| Paul Middleton | 22 | 308 | 23.73 |
| William J. Purvis | 22 | 371 | 44.30 |
| Benjamin Weiner | 22 | 305 | 50.48 |
| Earl Gates, Jr. | 22 | 183 | 128.00 |
| Lester Hamilton | 22 | 578 | 25.00 |
| Holly Station Partnership | 22 | 706 | 27.64 |
| Charles County Commissioners | 22 | 372 | 4.26 |
| Embassy Dairy, Inc. | 22 | 588 | 24.36 |
| Waldorf Restaurant | 22 | 254 | 32.66 |
| Lots-36,37,38,39,40,41,42 | 22 | 622 | Under 2ac. |
| Charles County Commissioners | 22 | 668 | 5.14 |
| Lots 1thru5-Block A | 22 | 605 | Under 2ac |
| Verdie Jefferson | 22 | 457 | 0.60 |
| Elsie B. Yuters, Trustees | 22 | 457.00 | 79.69 |

RESOURCE PROTECTION DISTRICT

PROPERTY INVENTORY

ZEKIAH SWAMP

| PROPERTY OWNER | TAX MAP# | PARCEL | ACREAGE |
|----------------------------|----------|----------|---------|
| State of Maryland, DNR | 74 | 71 | 286.41 |
| State of Maryland, DNR | 73 | 70 | 14.10 |
| Henry S. Bowling, Jr. | 73 | 16 | 60.88 |
| Levin Family Farms, Inc. | 73 | 34 | 238.56 |
| William E. Sill, Jr. | 73 | 6 | 318.10 |
| Charles Bowling III | 65 | 16 | 6.90 |
| Bowling's Zekiah Farm Inc. | 65 | 84 | 294.86 |
| Marion D. Cook, Sr. | 65 | 100 | 172.54 |
| Frank A. Bowling, Jr. | 65 | 25 | 103.95 |
| Garth E. Bowling | 65 | 93 | 99.35 |
| James W. Boarman, III | 65 | 71 | 67.68 |
| Willard A. Boarman | 65 | 22 | 450.00 |
| Brinsfield Farm, Inc. | 64 | 43 | 338.52 |
| PEPCO | 64 | 36 | 276.38 |
| Thomas J. Higdon | 64 | 110 | 317.37 |
| Harry L. Jones, II | 64 | 158 | 65.34 |
| Robert E. Cooksey | 64 | 14 | 330.36 |
| Mary L. Morgan | 56 | 9 | 226.20 |
| Elmer G. Marchi | 56 | 108 | 208.11 |
| GEM Investments | 56 | 5 | 224.75 |
| Norman F. Duehring | 56 | 111 | 120.09 |
| Katherine C. Long | 56 | 99 | 239.22 |
| George N. Schultz | 56 | 1 | 297.22 |
| J.S. Blacklock | 55 | 9 | 138.50 |
| J.S. Blacklock | 55 | 4 | 328.26 |
| James W. Thompson | 55 | 81 | 341.12 |
| Donald F. Fey | 55 | 40 | 170.78 |
| Ann C. Fey | 55 | 198 | 38.49 |
| Leo L. Seligson | 45 | 11,12,38 | 103.91 |
| Richard M. Gummere | 45 | 2 | 176.98 |
| W.A. Cooksey | 44 | 89 | 352.24 |
| Edwin R. Fischer | 45 | 3,14,16 | 1085.00 |
| Mazell Corporation | 45 | 13 | 288.30 |
| Raymond L. Brown | 45 | 9 | 234.18 |
| Sheldon L. Contract | 45 | 27 | 203.47 |
| Allan P. Clagett, Jr. | 45 | 15 | 356.79 |
| Herman Welch | 45 | 5 | 148.64 |
| Charles Foley | 45 | 4 | 400.00 |

| PROPERTY OWNER | TAX MAP# | PARCEL | ACREAGE |
|------------------------------|----------|--------------|---------|
| Sunnyside Farm, Inc. | 35 | 171 | 353.74 |
| Edward W. Wetherald | 35 | 36 | 225.15 |
| Benjamin M. Edelen | 35 | 107 | 124.52 |
| Jeffery W. Earnshaw | 35 | 129 | 62.83 |
| Ella M. Bowling | 35 | 93 | 88.00 |
| Edward B. Bowling | 35 | 95 | 31.54 |
| Francis X. Cooksey | 34 | 77 | 87.63 |
| J. Frank Cooksey | 34 | 20 | 146.37 |
| Edward A. Mohler | 34 | 74 | 30.10 |
| Meredith E. Hendricks | 34 | 19 | 52.72 |
| Neil Myers | 34 | 42 | 200.00 |
| J. Stewart Brinsfield | 34 | 79,L15 | 40+ |
| Lawrence C. Abell | 34 | 11 | 311.68 |
| Francis L. Stonestreet | 34 | 21 | 206.50 |
| Dennis J. Anderson | 34 | 96 | 110.24 |
| Dietrick H. Steffens | 34 | 7 | 152.77 |
| Juanita A. Young | 34 | 88 | 38.84 |
| Theresa Y. Banks | 34 | 9 | 111.90 |
| G. Forbes Bowling | 25 | 23 | 110.71 |
| Louise Jameson | 25 | 182 | 93.00 |
| Charles I. Scatter | 25 | 103 | 147.00 |
| Alice I. Jameson | 25 | 16 | 79.09 |
| Irads Sadeghian | 25 | 98 | 222.46 |
| Bryantown Joint Venture | 25 | 17 | 191.19 |
| Dewey E. Dick | 25 | 113 | 11.86 |
| Charles County Sand & Gravel | 25 | 9,8 | 283.22 |
| Richard Chaney | 25 | 214 | 4.83 |
| Thomas Mac Middleton | 25 | 139 | 247.29 |
| Bernard P. Hemming | 25 | 79 | 205.22 |
| John A. Boothe | 25 | 110 | 22.40 |
| Margaret G. Brown | 25 | 109 | 23.28 |
| Nellie E. Chase | 25 | 111 | 13.29 |
| Annie C. Wade | 25 | 24,135 | 142.22 |
| Ronald A. Mandey | 16 | 92 | 141.03 |
| Hubert F. Robinson | 16 | 241 | 97.01 |
| Erika M. Blevins | 16 | 240,36 | 96.86 |
| Lewis W. Mandcet | 16 | 33 | 50.16 |
| George Chapman-Heirs | 16 | 119 | 186.00 |
| Salah H. Hosny | 16 | 60 | 142.72 |
| Mudd Farms. Inc. | 16 | 10 | 201.00 |
| Sarah F. Gardiner | 16 | 9 | 121.00 |
| John S. Bayley | 16 | 123 | 37.92 |
| Andrew E.A.B. Chapman | 16 | 120 | 166.00 |
| Clarence J. Lucas | 16 | 3 | 153.72 |
| Howard E. Wall, Jr. | 16 | 83 | 20.00 |
| Jimmie E. Conley | 16 | 4,40,209,226 | 73.60 |

| PROPERTY OWNER | TAX MAP# | PARCEL | ACREAGE |
|-----------------------------|----------|--------|---------|
| Delia A. Byrd | 16 | 98 | 144.00 |
| James A. Doyle | 16 | 15 | 160.23 |
| Elinor W. Cam | 16 | 117 | 125.00 |
| Charles Co. Sand & Gravel | 16 | 13 | 148.18 |
| Gardiner Road Joint Venture | 16 | 216 | 90.66 |
| Charles Co. Sand & Gravel | 16 | 11 | 82.94 |
| DNR | 16 | 6 | 23.27 |
| DNR | 9 | 18 | 96.35 |

MATTAWOMAN

WATERSHED MANAGEMENT PLAN

APPENDIX B

MATTAWOMAN
WATERSHED MANAGEMENT PLAN

Work Program
and
Concept Document Outline

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MATTAWOMAN WATERSHED MANAGEMENT PLAN
Work Program and Document Outline

INTRODUCTION

This document represents an integral part of the adopted Stream Valley Management and Protection Program (SVMPP) as a strategy to protect riparian habitats, protect the quality of stream waters, and conserve the environmental features and functions of Charles County's wetlands. It also represents a contractual work product to Coastal Zone Management pursuant to implementing the SVMPP for FY1991.

It became apparent in defining the parameters of the Stream Valley Management and Protection Program that a gestalt approach to viewing and dealing with the entire watershed was necessary in order to maximize the effectiveness of protecting sensitive riparian corridors. One cannot expect to propose any kind of comprehensive improvement to the quality of stream waters without considering the watershed as a whole. The cumulative impact of land uses and misuses of the entire watershed are most clearly apparent along riparian corridors - a stream's water quality offering mute testimony to land use practices and stewardship. Micro-management of only the stream waters would compromise the program's effectiveness without considering the headwaters, tributaries and uplands whence the streams derive their existence. For these reasons, the need for comprehensive watershed management plans were identified in order to minimize the deleterious impacts associated with continued urbanization. The Mattawoman Creek watershed has been chosen as the pilot watershed management plan because of the foreseeable development pressures anticipated in this identified County growth area.

Elements:

This Watershed Management Plan is comprised of three major components which include:

- * Resource Protection - Including Nontidal Wetlands*
- * Water Resources - Including Water Supply & Water Quality*
- * Storm Water Management - Including Sediment and Erosion Control*

This plan is further designed to meet the watershed management plan requirements as established by the Maryland Water Resources Administration, pursuant to the State's Nontidal Wetlands Protection Act.

I OUTLINE OF CONCEPT DOCUMENT (Task 100)

A Purpose of the Watershed Management Plan

The purpose of the Mattawoman Watershed Management Plan is: to protect the quality of water resources, including surface waters & water supplies; provide increased open-space, recreational and educational opportunities throughout the watershed; and conserve the environmental features and functions of the watershed's natural resources. This will be achieved through: a thorough inventory and assessment of all existing natural resources, including non-tidal wetlands; inventory and assessment of existing storm water management (SWM) facilities; review and assessment of existing regulatory controls; monitoring of water quality, and; implementation of watershed-wide strategies aimed at improving water quality.

The Mattawoman Creek watershed offers unique management considerations for it is this region that has been targeted as an area of "directed growth" in the adopted Charles County Comprehensive Plan. The implications of such intense development requires controlling further degradation of water quality by assessing current conditions, anticipating what impacts will be associated with urbanization, and adopting urban Best Management Practices (BMPs) for this development district thereby controlling stormwater runoff. Comparable efforts are also needed to protect wetlands, natural resources, and water supplies.

B Scope of Planning effort

The scope of the watershed management plan responds to several criteria as recommended by the Maryland Water Resources Administration and certain considerations which are specified in the recent Nontidal Wetlands Protection Act. The regulations specify that watershed management plans include a functional assessment of nontidal wetlands in the watershed, a strategy for their protection - including limiting cumulative impacts, and addressing water supply and flood management. These elements constitute the minimum planning effort that will fulfil the legal mandate.

C Planning Objectives

The primary planning objectives of the watershed management plan are to:

- 1) Improve and protect the quality of stream water resources in the watershed for the benefit of public health and safety;
- 2) Improve the quality of storm water runoff and minimize the potential of flooding in the watershed for the benefit of public health and safety;
- 3) Conserve and protect the watershed's environmental features and functions including nontidal wetlands and significant wildlife habitat areas;
- 4) Provide and develop increased open-space, recreational and educational opportunities along stream valleys and throughout the watershed;
- 5) Define wellhead protection areas and develop wellhead protection strategies;
- 6) Develop map and data information bases on the watershed's physical and environmental features.

I CONCEPT DOCUMENT (cont.)

D Expected Results

The results expected from this watershed management plan (WMP) include having a detailed inventory of existing conditions in the watershed, a comprehensive list of issues to be addressed, and a course of action laid out to implement the objectives of this WMP. This will be utilized as a basis by which certain areas may be targeted for protection and/or conservation. The primary result of this effort will be to establish preventative as well as corrective regulations addressing conservation of environmental features and protecting water quality. Examples of a preventative regulatory approach include establishing a Watershed Management District whereby urban BMPs would be mandatory.

E Description of the Watershed Planning process

The planning process includes natural resource inventory mapping and formulation of technical management plans that will address natural resource protection, cumulative environmental impacts, wetlands mitigation, water supply protection, stormwater and flood management. The methodology for developing the watershed management plan involves the following process:

- 1) Inventory and analysis of the existing stream system and watershed conditions. Elements to be studied include:
 - a. Environmental features including soils, geology, slopes, vegetation, significant plant & animal habitat areas, and the functional assessments of all wetlands;
 - b. Non-point source pollution sources along the Mattawoman Creek;
 - c. Recreation facilities and open space lands;
 - d. Existing land use and zoning.
- 2) Research and evaluation of State and County plans & policies relevant to the study area:
 - a. Charles County Comprehensive Plan;
 - b. Charles County Stream Valley Management and Protection Program;
 - c. Charles County Subdivision and Zoning Ordinances;
 - d. Comprehensive Water and Sewerage Plan;
 - e. County Floodplain Management, Stormwater Management, Grading and Sediment Control Ordinances;
 - f. Maryland Nontidal Wetland Protection Act;
 - g. Prince George's County Ordinances & Policies.
- 3) Conduct a community meeting to allow local residents the opportunity to participate in establishing goals, identifying problems and needs, and developing plans for the watershed.
- 4) Identify specific problem areas including water quality, flooding, erosion, sedimentation, degradation of the natural environment, etc.

I CONCEPT DOCUMENT (cont.)

E Description of the Watershed Planning process (cont.)

5) Develop a management plan for the watershed. This includes:

- a. Establishing goals and objectives for alleviating problems in the watershed and plan for the future use of the watershed's future resources;
- b. Recommend policies and actions that will address the goals and objections of the plan.
- c. Develop a strategy for the implementation of the plan.

F Tentative Work Plan (see next page)

G Coordination with other Planning efforts

As with any significant planning project, coordination with other planning efforts is essential to ensure the effectiveness of a comprehensive watershed management plan. The watershed management plan must be responsive to on-going and future efforts by the federal, state, and local governments. The aforementioned research and evaluation of State and County plans & policies relevant to the study area would be the minimum effort necessary to coordinate the management objectives with other planning efforts. This includes:

- a. Charles County Comprehensive Plan;
- b. Charles County Stream Valley Management and Protection Program;
- c. Charles County Subdivision and Zoning Ordinances;
- d. Comprehensive Water and Sewerage Plan;
- e. County Floodplain Management, Stormwater Management, Grading and Sediment Control Ordinances;
- f. Maryland Nontidal Wetland Protection Act;
- g. Prince George's County Ordinances & Policies.

TENTATIVE WATERSHED MANAGEMENT WORK PLAN

| <u>TASK</u> | <u>WORK PRODUCT</u> | <u>TIMELINE</u> FY1991 | <u>TIMELINE</u> FY1992 |
|---------------------------------------|---------------------|---------------------------|---------------------------|
| <i>Phase 1 - Concept Document</i> | Concept | 09/30/91 | ----- |
| <i>Phase 2 - Issue Identification</i> | Issues | 09/30/91 | ----- |
| <i>Phase 3 - Alternatives</i> | Alternatives | ----- | 12/31/91 |
| <i>Phase 4 - Scheduling</i> | Scheduling | ----- | 03/30/92 |
| <i>Phase 5 - Implementation</i> | Implementation | ----- | 09/30/92 |
| a) Water Resources | | | |
| * Monitoring Program | | | |
| - Program Strategy | Program Adoption | 09/30/91 | ----- |
| - Program Coordinator | Grant Applications | 09/30/91 | ----- |
| * Wellhead Protection Ordinance | Draft Ordinance | ----- | 06/30/92 |
| b) Natural Resources | | | |
| * RPD Ordinance | Adopted Ordinance | ----- | 12/30/91 |
| * Land Trust Formation | Committee Formed | ----- | 12/30/91 |
| * Resource Inventory | Inventory | ----- | 03/30/92 |
| * Resource Assessment | Assessment | ----- | 06/30/92 |
| c) Stormwater Management | | | |
| * Revised SWM Ordinance | Revised Ordinance | ----- | 10/30/91 |
| d) Education | | | |
| * BMP Promoter | Grant Applications | 09/30/91 | ----- |

Long Range Strategy for Implementation

Integrating the results of this tentative work program into existing and proposed County programs will require nothing less than a focused and concerted effort on all parties involved. This suggests a need to identify this program as a priority initiative in order to carry the goals and objectives through to implementation. How Charles County achieves this challenge will depend, in large, on the availability and procurement of funding. At this time, this makes establishing even a tentative long range strategy for implementation a bit premature. This section will be discussed in more detail in Phases 4 & 5 under Scheduling Implementation.

II INFORMATION MANAGEMENT (Task 110)

A Watershed Characteristics/Background

The Mattawoman Creek watershed is located in south central Maryland and covers about 50,500 acres in Charles and Prince George's Counties (see Figure 1, Location Map). It lies within commuting distance of Washington, D.C. and satellite metropolitan, commercial and business centers. The description of this watershed covers the freshwater part of the watershed above the legal tide limit.

The Mattawoman Creek begins in Prince George's County, extends along the Prince George's and Charles County boundary from U.S. Route 301 west to Billingsley Road, turns south between Maryland Airport and Myrtle Grove Wildlife Refuge and empties into the Potomac River. The area of the creek, with associated wetlands and floodplains, has been designated as an area of **Critical State Concern** by the Maryland Department of Natural Resources: Mattawoman Creek is among the most important of the Potomac Basin spawning waters as its tidal and non-tidal wetlands are essential nursery areas for many species of fish. These wetland areas of the creek also support large numbers of wildlife and provide excellent habitat for diverse types of bird, plant and animal life.

The watershed area has a humid continental climate with an average precipitation of 47 inches and a mean temperature of 56 degrees F annually. Maximum rainfalls occur in the summertime, although rain is fairly evenly distributed throughout the year. The growing season averages about 190 days between mid-April and mid-October. Mattawoman Creek lies in the partly dissected uplands of the Atlantic Coastal Plain physiographic province. The major soil types in the area are the Beltsville, Sassafras, and Bibb series. These unconsolidated sands, gravels, silts and clays are the source material for the soils of the Mattawoman Drainage Basin and are quite erodible when exposed.

In 1970, approximately 60 percent of the watershed was wooded and about 30 percent was in agricultural use with the remainder in suburban or urban land use. About 10 percent of the watershed area has been identified as marsh and flood plain. There are 275 farms in the watershed, averaging 125 acres in size, producing corn, tobacco, soybean, and specialty crops. An additional 1500 acres of potential farmland has been identified in this watershed.

The Mattawoman 100 year floodplain area covers about 5,000 acres which is about 10% of the watershed. 50 percent of the floodplain is seasonally flooded, 45 percent is occasionally flooded bottomland hardwood and wooded swamp, 5 percent is non-wooded. There are few areas of prime farmland in the floodplain, and those present occur in isolated patches.

Wetlands, like floodplains perform numerous natural functions which make them ecologically important. They function as natural settling basins, and purify polluted waters. Wetlands are exceptionally productive wildlife habitats and also induce heavy vegetative cover which moderates temperature extremes and wind velocity. In addition, these areas can provide several recreational, scientific, and educational opportunities. Development which is incompatible with the functions of wetlands should be strictly limited or prohibited in these areas. Swamps along the Mattawoman are included on the Smithsonian Institution's Significant Natural Areas list.

The Maryland Department of State Planning identifies the Mattawoman Creek and its tributaries as one of the most important of the Potomac Basin's spawning waters (Md. DSP, 1981). Its tidal wetlands are nursery areas for many species of fish. The Mattawoman Creek and its tributaries support moderately high populations of bluegill, largemouth bass, pickerel, catfish, and white perch. The lower reaches of the main stem also support moderate to high populations of striped bass and herring during the spawning runs and provide an important nursery area for striped bass.

Public lands that protect portions of the Mattawoman watershed include the Myrtle Grove Wildlife Management Area, the Mattawoman Natural Environment Area, and the Cedarville State Forest. The Myrtle Grove Wildlife Management Area covers 834 acres in the southwestern part of the watershed.

II INFORMATION MANAGEMENT (cont.)

A Watershed Characteristics/Background (cont.)

Wildlife diversity and habitat are moderate to excellent in numbers and quality. The riparian corridor is used as resting and feeding grounds for diving and dabbling ducks, geese, whistling swans, and other migratory game such as mourning dove and woodcock. The riparian zone is also established breeding territory for wood ducks and herons. The relatively wide bottomland contains extensive wetlands, approximately 5,000 acres of seasonally flooded basins or flats which are dominated by hardwoods and wooded swamps. Deer, gray squirrel, cottontail rabbit, and bobwhite quail inhabit the stream valley year round, as do furbearers such as red and gray fox, raccoon, opossum, striped skunk, muskrat, otter mink, and beaver. Shorebirds, waders, songbirds, and raptors (including the osprey) are also present.

The Charles County Comprehensive Plan has designated the Mattawoman watershed as a primary Development District which coincides with the Mattawoman Sewer Service Area. This major development district is the principle center of population, services and employment for the County, accommodating 70% - 75% of the County's population growth through the year 2010.

There is some concern among watershed residents that the proposed Resource Protection District may be usurped by development or damaged by excessive siltation from construction sites. With appropriate zoning and enforcement of a watershed-wide sediment control program it is possible to maintain the Mattawoman Resource Protection District area in a relatively wild and undeveloped state.

Informational sources for this study include: The Mattawoman and Tributaries Floodplain Study; the Charles County Comprehensive Plan; the Stream Valley Management and Protection Program of Charles County, and; the National Wetland Inventory compiled by the USFWS.

B Interested Parties File

- 1.) Federal -
 - a) U.S. Fish & Wildlife Service
 - b) U.S. Environmental Protection Agency
- 2.) State -
 - a) Md. Department of Natural Resources
 - i Nontidal Wetlands Division
 - ii Coastal Resources Division
 - b) Water Resources Administration
 - i Watershed Management
 - c) Maryland Department of the Environment
 - i Sediment and Erosion Control
- 3.) County -
 - a) Planning Department
 - b) Developmental Services
 - c) Environmental Resources
 - d) Data Processing

III ASSESS LOCAL, STATE, and FEDERAL PROGRAMS (Task 130) [THIS SECTION IS IN DEVELOPMENT]

PHASE 2 - ISSUE IDENTIFICATION

I COMPREHENSIVE LIST OF ISSUES (Task 200)

The following section summarizes issues of concern in the watershed. Since this WMP is issue driven, it follows that each of the issues identified here would have a host of recommendations and/or actions aimed at resolving or addressing these issues. The common denominator in the issues presented here focus on solving present and future water quality problems and protecting the environmental features and functions of the watershed's natural resources. For the purpose of organization, these issues may be broken down into the following categories: Natural Resources Issues; Wetlands Issues; Water Resources Issues, and Stormwater Management Issues.

NATURAL RESOURCES ISSUES

The most paramount issue, in considering the interfacing of urban growth on a pre-existing natural environment, is protecting the environmental features and functions of the watershed's natural resources while accommodating the projected developmental pressures brought on by increased growth.

WETLANDS ISSUES

With the heightened awareness and mandated considerations given to the protection of non-tidal wetlands by State and Federal levels, a comprehensive WMP would seem incomplete without addressing the wetlands issue - especially in a watershed where identified wetlands account for fully 10 -15% of the watershed's area.

Wetland areas in the watershed occur in the floodplain of Mattawoman Creek, along her major tributaries of Old Woman's Run and Piney Branch, and in low lying seepage areas throughout the headwaters of the stream network. They are especially prevalent where the stream course is wide, shallow and slow moving. Man-made blockages such as dams, train railroad beds, and roadways have also created wetland environments, in some areas where none have existed previously. The continued loss and degradation of wetlands due to the foreseeable development within the watershed's development district indicates a need to inventory and assess all wetlands within the watershed. The following list summarizes the issues which need to be addressed in the Mattawoman watershed:

- 1.) Comprehensive Wetland Inventory;
- 2.) Functional Assessment of all Wetlands;
- 3.) Wetland Mitigation Sites to be Located.

Comprehensive Wetland Inventory

The existing sources of wetland information in the Mattawoman watershed include the National Wetland Inventory and the State of Maryland Wetland Guidance Maps. It is worth noting that these existing references are limited - indicating, at best, only approximate extents of nontidal wetlands. It is the intent of this comprehensive inventory that all non-tidal wetlands within the watershed be located and delineated as per the most recently adopted State and Federal definitions.

WETLANDS ISSUES (cont.)

Functional Assessment of Non-tidal Wetlands

Although the majority of wetlands within the watershed have been identified by type, there currently exists no documentation as to what the various functional assessments are of these protected resources. This is an element which the State of Maryland requires under the recent Non-tidal Wetland Act legislation. For this reason, efforts will be focused on developing a systematic assessment technique utilizing the regional manual which the DNR has produced for this purpose - Maryland WET.

This suggests a need to develop a methodology utilizing available reference sources, including aerial imagery, soil maps and NWI maps, and a system of ground-truthing developed assessment. The key here is to develop a functional assessments technique whereby time in the field would be minimized. The reality of staffing constraints significantly limit the ability to commit extensive field time in developing functional assessments.

Identification of Wetland Mitigation Sites

Another requirement of the State of Maryland is the identification of potential wetland mitigation sites within the watershed. In spite of the requirement that all developments "shall take all necessary steps to first avoid adverse impacts and then minimize losses of wetlands", there will continue to be losses of wetlands in the watershed which will require mitigation to be performed - usually at higher ratios - within the same watershed (if feasible). For this reason, a comprehensive inventory of potential mitigation sites should be performed.

WATER RESOURCES ISSUES

The surface water quality of all rivers is defined by the inter-relationship of chemical, physical, and biological conditions of the water and the manner in which these conditions affect the various components and uses. These water quality parameters indicate whether streams, marshes and bays are generally suitable for aquatic life, human consumption, and recreational use. It comes as no surprise that one of the most viable indicators of stream health is its ability to support aquatic life. Good water quality supports designated uses and meets water quality goals.

Water quality degradation, on the other hand, has noticeable impacts on the aquatic environment. The principal results of water degradation include bacterial contamination, oxygen depletion, algal blooms, and sediment pollution. Bacterial contamination makes waters unsafe for swimming and for shellfish harvesting. Oxygen depletion causes fish mortality if too much dissolved oxygen is consumed in the oxidation of organic materials. Algal 'blooms' occur due to excessive discharges of nutrients such as nitrogen and phosphorus. Excessive levels of sediment suffocate stream bottoms and reduce sunlight to submerged aquatic vegetation.

Water quality enhancement is an important priority in the State of Maryland. Water of good quality supports food chains, is necessary for safe recreational use, and is critical to the maintenance of human health. Furthermore, the biological health of the Mattawoman Creek depends on the water quality of its tributaries. As such, improving water quality has become a major focus in the formulation of this Watershed Management Plan.

WATER RESOURCES ISSUES (cont.)

One of the most fundamental issues in considering the impacts of urban growth on water quality, is identifying strategies for protecting water quality while accommodating the projected developmental pressures brought on by increased growth. Water quality issues which have been identified and need to be addressed in the Mattawoman Creek watershed include:

- 1.) Existing and historical water quality information and interpretation inconclusive and inadequate;
- 2.) Point and Non-Point source pollution remain unchecked;
- 3.) Identifying and restoring degraded stream sections;
- 4.) Ensuring that adequate Well-Head Protection exists;
- 5.) Ensuring that the risk of Salt-Water Intrusion is addressed.

Existing and historical water quality information -

Existing water quality in Mattawoman Creek has been compiled from several sources. These include; The Maryland Water Quality Inventory (prepared by the Dept of Health and Mental Hygiene in 1984), the Maryland Synoptic Stream Survey (prepared by DNR in 1988), An Evaluation of Stream Liming Effects on Water Quality and Spawning of Migratory Fishes (prepared for DNR in 1989), and General Fisheries data (compiled by DNR's Monitoring and Data Management).

Although the scopes of these reports are clearly not limited to the Mattawoman, they do provide a fragmented status report of stream water quality in sections of Mattawoman Creek. This information could be useful in comparing future water quality data. However, it should be noted that the fragmented nature of existing water quality data render the information inconclusive - providing the curious investigator with not much more than a "snapshot picture" of selected streams water quality on a given day yesteryear. In order for this, and future water quality information to be useful, a comprehensive baseline of water quality data must be compiled and interpreted. This gives strength to the proposal, adopted by the County Commissioners in August, 1991, for implementing a water quality monitoring program thereby giving the County a scientific basis for interpreting water quality information and trends.

Existing and historical water quality information (cont.) -

The purpose of establishing a baseline of existing water quality is to determine the status of water quality within the watershed. This will be used in order to aid in identifying water quality problem areas, pollutant sources and provide direction for corrective actions or policies. Other possible sources of water quality information include:

- a. State sources; DNR, WRA, USGS
- b. Other sources (local, special interest groups)

WATER RESOURCES ISSUES (cont.)

Point and Nonpoint source pollution

With more and more emphasis being placed on controlling point and nonpoint source pollution state-wide, it follows that a comprehensive strategy should be developed in order to inventory and address this issue. Of the two, nonpoint source pollution remains the larger and more elusive culprit.

Nonpoint source pollution is the by-product of a variety of land use practices, including farming, timber harvesting, mining, and construction runoff caused by urban development. It also results when rain washes pollutants in urban areas into sewer systems and storm drains (urban runoff). Agriculture accounts for the largest share of the nation's nonpoint source pollution, affecting about 50 - 70 percent of waters assessed (evaluated for water quality) through soil erosion from croplands and overgrazing, and runoff of pesticides and fertilizers.

Degraded Stream Sections

Degraded stream sections throughout the watershed's stream system offer mute testimony as to the impacts that increased urbanization can have on a once healthy riparian environment. Vagrant dumping, unauthorized filling, fish migration barriers, in-stream construction activity and unshaded stream sections are just a few of the more serious elements which contribute to degraded stream sections.

This situation could be remedied by involving citizens in the watershed to act as the eyes and ears of the county by reporting violations and assisting with community efforts aimed at stream valley cleanups. In order to address this issue in a comprehensive manner, dump sites and other forms of degradation should be located, inventoried, characterized, prioritized and strategized for involving the community and possible grant funding to repair these areas.

Well Head Protection

Well heads require protection from the direct introduction of contaminants and from microbial pollution. Maryland currently has regulations directed toward protection of wells which provide minimum wellhead protection to all public water supply wells. In order to provide this protection to all private wells also, research should be conducted utilizing the following minimum references:

- a. State of Maryland Wellhead Protection Program
- b. Existing Model Ordinances

Salt Water Intrusion

Long-term ground-water withdrawals have the potential of lowering ground-water levels which may lead to the directional reversing of ground-water flow in the confined aquifer sediments under the adjacent Potomac River. There is existing documentation of these flow conditions having caused river water to intrude into parts of this confined aquifer system. In order to assess existing problems and protect the aquifer from any future salt water intrusion, existing studies should be included in the WMP.

STORMWATER MANAGEMENT ISSUES

The purpose of Stormwater Management is to minimize the adverse effects increased land development has on water quality and riparian resources. Land development has the potential to significantly degrade water quality in downstream receiving waters. These impacts also include stream channel erosion, local flooding, sedimentation and pollutant transportation, all of which adversely effect water quality. Adequate stormwater management is achieved through responsible planning, engineering, engineering review, construction inspection, and post-construction maintenance inspection including functional assessments of all existing stormwater management facilities and structures. The cumulative impacts caused by an omission of any of these checks may render an entire stormwater management facility inadequate. In reviewing the status of existing stormwater management planning review, construction, and inspections in Charles County, the following issues have come to light:

- 1) Existing subdivisions with no SWM controls
- 2) Existing subdivisions with inadequate SWM controls
- 3) Shortcomings in current Stormwater Management and Grading & Sediment Control Ordinances
- 4) Shortcomings in current Inspection programs
- 5) Inadequate stormwater hydrologic reference studies available
- 6) Inadequate enforcement of SWM and Sediment & Erosion Control compliance

Each of these issues justify the need for a comprehensive assessment and inventory of not only existing stormwater management systems, but, perhaps more importantly, inventorying and assessing those developments which occurred prior to the adoption of the County's Stormwater Management Ordinance.

The implications of such an increased work load on current staffing is staggering. Already, current divisions in Planning, Development Services (Engineering), and Inspections are operating beyond staffing capacity. This points to a definitive need to increase staffing, allocating an engineer/stormwater inspector to do storm water management exclusively.

Existing subdivisions with no SWM controls

The majority of developments that had proceeded the Charles County Stormwater Management (SWM) Ordinance were constructed with no SWM controls due to no regulatory requirement being in place. For this reason, these developments need to be identified, inventoried, and inspected to assess a potential need to retrofit those developments with stormwater management facilities. This would include the inventory and establishment of a database for all significant subdivision developments constructed prior to the adoption of the Ordinance.

STORMWATER MANAGEMENT ISSUES (cont.)

Existing subdivisions with inadequate SWM controls

Even with the adoption of the SWM ordinance, it has become apparent that relatively few developments have constructed the SWM facilities which were initially designed. Recently, Charles County conducted a preliminary survey of existing SWM facilities and has found that approximately 70% of those SWM facilities inspected differ from those which were originally reviewed and approved by county engineers. As a result, a high number of SWM facilities or controls have proved to be inadequately suited for the development they serve. As a consequence, these facilities suffer problems with the design, construction, and are often plagued with chronic maintenance problems, and in some cases, no longer function as designed.

The problem can be summarized as the tendency of development designers to fit the SWM facility to the development - often locating the facility in the residual or unusable portions of the site - rather than fit the development to the site by responding to the most logical and effective placement of the SWM facility.

This issue points to the necessity of establishing a program to inspect all developments and assess the need for creation and/or modification of stormwater management systems (retrofit candidate sites). This includes:

- a. Preliminary survey of existing SWM facilities through the use of checklists;
- b. Preliminary functional assessments of problematic SWM facilities by County engineering personnel;
- c. Institute a stormwater retrofit program to provide stormwater management in existing developed areas that have inadequate stormwater controls.

Evaluate County Ordinances -

Stormwater Management Ordinance -

Charles County recently underwent a review by the State Sediment and Stormwater Administration (SSA). The purpose of these triennial reviews is to determine whether the County is operating an acceptable stormwater management program. An acceptable program has an SSA approved Stormwater Management (SWM) Ordinance, a plan approval process that provides SWM for every land development subject to the ordinance, the ability and information necessary to review SWM plans adequately, and the necessary inspection and enforcement procedures that ensure the proper construction and maintenance of approved SWM measures.

County staff is currently revising and updating its SWM ordinance in response to State feedback. Staff is also taking this opportunity to include several of the Watershed Management Plan strategies such as requiring urban BMPs and requiring the pretreatment of SWM facility discharge before entering wetlands, including these in the revised ordinance. A copy of this effort will be forwarded to CRD and WRA as soon as staff completes the revisions.

STORMWATER MANAGEMENT ISSUES (cont.)

Evaluate County Ordinances -

Grading and Sediment Control Ordinance -

Charles County's Grading and Sediment Control Ordinance offers some very well intentioned language in order to control the mounting sedimentation pollution resulting from developmental grading and construction. The ordinance requires an approved Soil and Erosion Control Plan, approved by the Charles Soil Conservation District, for most clearing and/or grading activity within the County. However, current County policy is to not take jurisdictional authority to enforce the approved Sediment & Erosion Control Plan. This, in effect, compromises the goals and objectives of the ordinance.

To date, the County's policy of passing the burden of enforcement to the State - which is as understaffed as the County - has resulted in numerous violations remaining unchecked. Until the County takes action on this issue, continued disregard for ordinance compliance will occur resulting in further degradation to surface waters.

Construction and Maintenance Inspections for SWM facilities -

The shortcomings of the County's Stormwater inspection program, as documented by a recent triennial County review by the State of Maryland, is an issue which demands action. An inventory and maintenance inspection of all private and public SWM facilities is a requirement of the State of Maryland. The Charles County SWM Ordinance which was adopted in July, 1984 requires construction and maintenance inspections of all facilities. Currently, there is no data available related to the functioning condition of existing SWM facilities. This is due to no maintenance inspection program having been implemented in the past. This points to a need for the improvement and/or revision of the County's inspection and enforcement programs which are responsible for regulating and inspecting SWM facilities. The number and/or frequency of unscheduled site inspections should be increased. This would require that manpower needs be met.

In conducting and maintaining systematic SWM construction and maintenance inspections, the most limiting problem seems to be the decentralized, fragmented approach to inspecting and assessing SWM facilities. The County could do much to improve its SWM construction and maintenance inspection system by combining the SWM plan review and inspection process to form a more focused priority program. Other jurisdictions have combined watershed planning, engineering, inspections, and water quality monitoring in order to better administer the goals and objectives of their SWM ordinance.

Stormwater Hydrologic Reference Studies -

The ever-increasing development pressures besetting the Mattawoman watershed demands that more attention be placed on accurately delineating the 100-year floodplain. The current resources available (such as the FEMA and SCS floodplain study) lack the detail necessary to accurately assess the extents of the floodplain on feeder streams and tributaries in this watershed.

For this reason, a stormwater hydrologic study of the watershed must be conducted in order to identify potential floodplains, flood-sources and problems, predict impacts of future development, and target areas for future action.

II SCREEN ISSUES (Task 210)

The following list summarizes issues aimed at solving water quality problems in the watershed.

Wetlands -

- 1.) Comprehensive Wetland Inventory
- 2.) Functional Assessment of all Wetlands
- 3.) Wetland Mitigation Sites to be Located

Water Resource -

- 1.) Existing and historical water quality information and interpretation inconclusive and inadequate.
- 2.) Point and Non-Point source pollution remain unchecked
- 3.) Degraded stream sections
- 4.) Well Head Protection
- 5.) Salt Water Intrusion

Stormwater Management -

- 1.) Existing subdivisions with no SWM controls
- 2.) Existing subdivisions with inadequate SWM controls
- 3.) Shortcomings in current Stormwater Management and Grading & Sediment Control Ordinances.
- 4.) Shortcomings in current Inspection programs
- 5.) Inadequate stormwater hydrologic reference studies available
- 6.) Inadequate enforcement of SWM and Sediment & Erosion Control compliance

III SELECT FINAL ISSUES (Task 220)

IV SET MANAGEMENT GOALS (Task 230)

V RE-EXAMINE CONCEPT DOCUMENT (Task 240)

LAND TRUST START-UP

APPENDIX D

INTER-OFFICE MEMORANDUM

TO: Mel Bridgett, County Administrator

THRU: Roy E. Hancock, Deputy County Administrator, PGM

FROM: George J. Maurer, Senior Environmental Planner
Department of Planning (PGM)

SUBJECT: Land Trust Steering Committee

DATE: May 23, 1991

As per the Commissioners' work session on May 21st, I have revised the letter requesting nominees for the steering committee, (attached) and added several groups to the organizations list. I have also changed the completion date on the steering committee charge letter to November 30, 1991. Please contact me at ext. 688 if you have any questions about the attached materials.

GM/ssa
A:Steer.Comm

Attachment

COMMISSIONERS' LETTERHEAD

_____, 1991

Land Trust Steering Committee
Charles County, MD

RE: Committee Charge of Responsibilities

Dear Steering Committee Members:

In fulfillment of the adopted County Comprehensive Plan and in compliance with County legal agreements with the U.S. EPA and the State pursuant to a Coastal Zone Management grant, the County is to establish a land trust and land acquisition program. The purpose of the steering committee is to assist the County Commissioners in deciding how and in what form a land trust should be established. We intend that the work of the committee provide the Commissioners with an informed basis for decision making, and that the outcome be the result of discussions among a group of individuals representing a broad cross section of Charles County. The steps the committee is to follow and the issues it is to address are listed below:

Steps

1. Review general information on land trusts, and specific material issue by issue.
2. Develop alternatives for each issue.
3. Provide recommendations with accompanying rationale for each issue.
4. Produce a report containing sections based on the issues, as well as a set of land trust articles of incorporation and bylaws.
5. Make a presentation and submit the committee report to the Commissioners by or before November 30, 1991.

Issues

- Public vs. private form
- Voluntary vs. staffed
- Accountability to County Commissioners
- Land trust mission, goals, and objectives
- Role and vis a vis County government
- Funding needs and sources for start up, for continuing operations and for land acquisition
- Land trust name
- Recommended nominees for land trust board

The Charles County Commissioners wish the committee success in carrying out its charge, and thank each of its members for the voluntary service they have agreed to provide to their community. The members of the steering committee can take pride for their role in the formation of a Charles County land trust and the lasting benefits it will provide to the citizens of Charles County.

Very truly,

COUNTY COMMISSIONERS OF
CHARLES COUNTY, MARYLAND

Thomas Mac Middleton, President

Robert J. Fuller

Nancy J. Sefton

Murray D. Levy

Dale E. Speake

THOMAS MAC MIDDLETON, PRESIDENT
ROBERT J. FULLER
MURRAY D. LEVY
NANCY J. SEFTON
DALE E. SPEAKE



MELVIN S. BRIDGETT
COUNTY ADMINISTRATOR

County Commissioners of Charles County

P. O. BOX 8
LA PLATA, MARYLAND 20646
(301) 645-0550 OR D.C. 870-3000

JUL 3 - 1991

July 1, 1991

Charles County Garden Club
P.O. Box 1496
La Plata, Maryland 20646
Attention: Ann Jameson

Dear Ms. Jameson:

The Commissioners of Charles County are establishing a steering committee to develop recommendations on the creation of a Charles County land trust. A land trust is an organization devoted to the preservation of important natural historical, agricultural, and open space lands. It is capable of preserving such lands by purchase, easement, or donation. We invite your organization to submit up to three nominees for the steering committee.

The attached charge letter outlines the tasks and steps that the steering committee is to complete. The Commissioners view this as an important undertaking. The steering committee is to be a working group, and its members must be committed to completing the committee's work.

Please provide us with two nominees within two weeks of the receipt of this letter, if possible, or within four weeks at the latest. If this is not possible, contact the Charles County Commissioners at 645-0550. Please include a brief biography for each nominee (form attached).

The Commissioners are requesting nominations from a wide variety of groups which represent business, farm, recreation, historical, and environmental interests. It is our intent to establish a broadly based committee. While we would like to select a representative to the steering committee from each of the many groups, it will not be possible to do so for the reason of keeping the committee to a manageable size. We ask for your understanding

SAY NO TO DRUGS

EQUAL OPPORTUNITY COUNTY

Charles County Garden Club
July 1, 1991
Page - 2 -

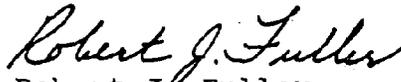
if a nominee is not selected from your organization.

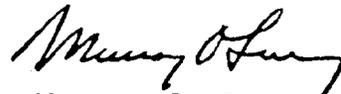
If you have questions about the land trust or steering committee please contact George Maurer with the Charles County Planning Office at 645-0610. We look forward to receiving your nominations.

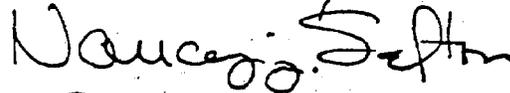
Very truly,

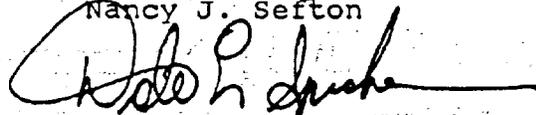
COUNTY COMMISSIONERS OF
CHARLES COUNTY, MARYLAND


Thomas Mac Middleton, President


Robert J. Fuller


Murray D. Levy


Nancy J. Sefton


Dale E. Speake

Attachment(s)

ck

ORGANIZATIONS WITH CHARLES COUNTY CHAPTERS

Joan Bowling, Chair
Wicomico/Zekiah Advisory Board
% Neal Welch
DNR Capital Programs Administration
2012 Industrial Drive
Annapolis, MD 21401

Southern Maryland Audubon Society
George Wilmot, President
P.O. Box 181
Bryans Road, MD 20616

Quail Unlimited
Jimmy Farmer, Chairman
% Gallery Jamel
630 Old Line Center
Waldorf, MD 20602

Forestry Board
Bob Eaton, Chairman
P.O. Box 2746
La Plata, MD 20646

Accokeek Foundation
Wilton C. Corkern
3400 Bryan Point Road
Accokeek, MD 20607

Charles County Board of Education
John Bloom, Superintendent
P.O. Box D
La Plata, MD 20646

Charles County Farm Bureau
John Jarrett, President
Rt. 1, Box 255
Nanjemoy, MD 20662

Izaak Walton League
Charles County Chapter
Dudley Gardiner
Box 248
Hughesville, MD 20637

Economic Development Commission
Donald Reinke, Director
P.O. Box V
La Plata, MD 20646

Southern Maryland Bar Association
Charles Bongar, President
P.O. Box 696
Waldorf, MD 20601

Park Board
Lynn Lyons
6404 Loy Dr.
Waldorf, MD 20601

Charles County Chamber of Commerce
Judy E. Rye
516 North Highway 301
La Plata, MD 20646

Southern Maryland Builders Industry Assoc.
Robert Heier, Vice President
% F.S.I. Design Group
P.O. box 1935
La Plata, MD 20646

Charles County Historical Society
% Charles County Community College
Mitchell Road, P.O. Box 910
La Plata, MD 20646-0910

Southern Maryland Trailriders
Donald Hancock, President
7 Maryland Trailriders-Club, Inc.
P.O. Box 1318
White Plains, MD 20695

Potomac Valley Dressage Association
(P.V.D.A.)
170 Oliver Shop Road
La Plata, MD 20646

Elaine Ryan

Southern Maryland Quarterhorse
P.O. Box 87
Hughesville, MD 20657
Attention: Debbie Bussie

Western Charles County
Business Association
Joseph Morton, President
Rt. 2, Box 197A
Bryans Road, Maryland 20616

Charles County Garden Club
P.O. Box 1496
La Plata, MD 20646
Attention: Ann Jameson

Farm Bureau
John W. Jarrett, President
Rt. 1, Box 255
Nanjemoy, Maryland 20662

Port Tobacco Historical Society
P.O. Box 302
Port Tobacco, Maryland 20677
Attention: Kathleen Blanche

Waterman's Association
RR 1, Box 46
Newburg, Maryland 20664
Attention: William Rice

Southern Maryland Board of Realtors
Lyle Sackie
P.O. Box 400
Hughesville, Maryland 20637

Ducks Unlimited
%Pat Bowling
Bryantown, Maryland 20617

ORGANIZATIONS LACKING CHARLES COUNTY CHAPTERS

Chesapeake Bay Foundation
162 Prince George Street
Annapolis, Maryland 21401

Potomac Fisheries Commission
P.O. Box 9
Colonial Beach, VA 22443

Sierra Club
Potomac Chapter
Bryantown, Maryland 20617

Dwight Johnsen
P.O. Box 177
St. Mary's City, MD 20686

a. 27 Appointments - Land Trust Steering Committee

Motion was made by Mr. Fuller to appoint the following persons to the Charles County Land Trust Steering Committee:

Wayne St. Clair James F. Farmer
Stephen F. Colton David Cooksey
Peggy Schaumburg Dennis Woodruff
Steve Cardano Andres R. Sine
Joyce Hancock Charles Ellison
Gemma Theresa Nelson Rick Hamilton
Enoch C. Bryant Eli Flam

The motion was seconded by Mr. Speake and passed with all Commissioners voting in favor.

The Commissioners also requested that the NAACP be contacted regarding a nominee for the Land Trust Steering Committee.

Thomas C. Hayden, Jr., County Attorney, and Susan P. Hathaway, Personnel Director, joined the meeting.

WATER QUALITY MONITORING

PROGRAM STRATEGY

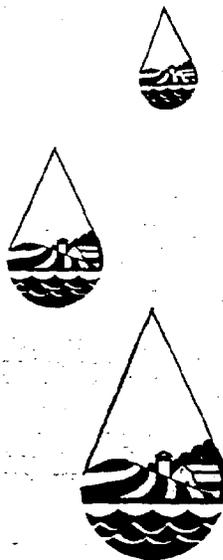
APPENDIX E

WATER QUALITY MONITORING

PROGRAM STRATEGY

for

CHARLES COUNTY, MARYLAND



Presented for Review to:

COMMISSIONERS OF CHARLES COUNTY

Thomas "Mac" Middleton
Nancy J. Sefton Robert J. Fuller
Murray D. Levy Dale E. Speake

Date:

July 30, 1991

Prepared by:

Kevin J. Kirby
Environmental Planner
Charles County Department of
Planning and Growth Management,
Department of Planning

Edited By:

George J. Maurer
Senior Environmental Planner

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Funding for this Program is provided by the Coastal Resources Division, Maryland Department of Natural Resources, through a grant provided by the Coastal Zone Management Act of 1972, administered by the office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration.

A PROPOSED WATER QUALITY MONITORING PROGRAM

SUMMARY

Water quality monitoring in the County's streams has been identified as a major component of Charles County's Stream Valley Management and Protection Program (SVMPP), adopted by the County Commissioners in September, 1990. Stream monitoring will establish baseline data for existing water quality, which can be compared with future water quality data to establish trends and aid in tracking water quality problem areas.

In keeping with the established goals of Charles County, a three tiered approach to comprehensive stream water quality monitoring is proposed. This includes:

- 1) A volunteer oriented stream water quality monitoring program documenting the physical, chemical and benthic testing of palustrine stream waters;
- 2) Laboratory analysis of water quality which includes a more detailed technical and site specific analysis of water quality to be conducted in cases where the results of first tier sampling indicate that the quality of waters tested fall below accepted standards, and;
- 3) An in-stream computer monitoring station which would allow for water quality testing before, during and after crucial storm events when the true telling of a watershed's environmental health is most evident.

INTRODUCTION

This report represents a submittal to Coastal Resources Division (CRD) as a portion of the FY1991 grant requirements for implementing the SVMPP. The purpose of the adopted SVMPP is to protect and conserve the environmental features and functions of Charles County's streams, wetlands and floodplains. The goal was to develop a comprehensive program for the environmental protection of riparian habitat and stream water quality in Charles County while providing recreational and educational opportunities for its citizens. Under the terms of the contract, this report addresses the program strategy and implementation techniques of the Water Quality Monitoring Program.

Water Quality and the Aquatic Environment

Water quality is an important priority in the State of Maryland. Water of good quality supports food chains, is necessary for safe recreational use, and is critical to the maintenance of human health. Furthermore, the biological health of the Chesapeake Bay depends on the water quality of its tributaries - 100,000 miles of them! As such, improving water quality has become a major focus in the Chesapeake Bay initiatives, resulting in the Maryland General Assembly's Critical Area Law, enacted in 1984.

The surface water quality of all rivers is defined by the inter-relationship of chemical, physical, and biological conditions of the water and the manner in which these conditions affect the various components and uses. These water quality parameters indicate whether streams, marshes and bays are generally suitable for aquatic life, human consumption, and recreational use. Other uses defined within the State's stream classification system include shellfish harvesting waters, natural trout waters and recreational trout waters. It comes as no surprise that one of the most viable indicators of stream health is its ability to support aquatic life. Good water quality supports designated uses and meets water quality goals.

Water Quality and the Aquatic Environment (cont.)

Water quality degradation, on the other hand, has noticeable impacts on the aquatic environment. The principal results of water degradation include bacterial contamination, oxygen depletion, algal blooms, and sediment pollution. Bacterial contamination makes waters unsafe for swimming and for shellfish harvesting. Oxygen depletion causes fish mortality if too much dissolved oxygen is consumed in the oxidation of organic materials. Algal 'blooms' and other excessive growths of aquatic plants occur due to excessive discharges of nutrients such as nitrogen and phosphorus. Excessive levels of sediment suffocate stream bottoms and reduce sunlight to submerged aquatic vegetation.

During the late 1970's and early 1980's, the National Urban Run-off Program documented differences in stormwater quality based upon predominant watershed land uses. The study showed that there were increases in particulate matter, coliform bacteria, and oxygen demanding materials in nonpoint source runoff from construction sites, lawns, and largely impermeable surfaces such as parking lots, roof tops, and roadways associated with urbanization (MWCOG, 1983). Subsequently, there developed an increased public awareness of the importance of nonpoint source pollution in contributing to the overall decline of the Chesapeake Bay and its tributaries (USEPA, 1983). Much of this pollution was being carried out in runoff from agriculture and urban lands to the non-tidal portions of the Bay's tributaries, then to tidal reaches and, eventually, to the Bay itself (USEPA, 1988).

Existing Water Quality Information in Charles County

Existing water quality in Charles County has been compiled from several sources. These include; The Maryland Water Quality Inventory (prepared by the Dept of Health and Mental Hygiene in 1984), the Survey of Anadromous Fish Spawning Areas (prepared by DNR in 1975), the Maryland Synoptic Stream Survey (prepared by DNR in 1988), An Evaluation of Stream Liming Effects on Water Quality and Spawning of Migratory Fishes (prepared for DNR in 1989), and General Fisheries data (compiled by DNR's Monitoring and Data Management).

Although the scopes of these reports are clearly not limited to Charles County, they do provide a fragmented status report of stream water quality in sections of the County. This information could be useful in comparing future water quality data. However, it should be noted that the fragmented nature of existing water quality data of County streams render the information inconclusive - providing the curious investigator with not much more than a 'snapshot picture' of selected streams water quality on a given day yesteryear:

In order for this, and future information to be useful to the County, a comprehensive baseline of water quality data must be compiled and interpreted. This provides justification for implementing a comprehensive water quality monitoring program. This will give the county a scientific basis for identifying water quality problems and trends.

With environmental awareness growing in our community, the timing is perfect for proposing an avenue for public participation in water quality monitoring. Monitoring by citizens in our County could be a tremendous asset not just in terms of assistance in compiling water quality data, but in acting as the eyes and ears of an environmentally conscience community.



A THREE-TIERED APPROACH TO COMPREHENSIVE MONITORING

Water quality monitoring in the County's streams has been identified as a major component of Charles County's Stream Valley Management and Protection Program, adopted by the County Commissioners in September, 1990. Stream monitoring will establish baseline data for existing water quality, which can be compared with future water quality data to establish trends and aid in tracking water quality problem areas. In keeping with the established goals of Charles County, a three tiered approach to comprehensive stream water quality monitoring is proposed. This includes:

1st Tier - Citizen (and Public School) Monitoring Program

A two-part volunteer oriented stream water quality monitoring program documenting: Physical, chemical and benthic testing of palustrine stream waters and; Physical & chemical testing of esturine waters. The sampling for benthic organisms will occur on a tri-annual basis; once in early spring, late summer, and again in late fall. The testing of physical and chemical parameters will be done concurrently with the benthic sampling in addition to ongoing monthly testing. This testing will quantify water quality trends and identify stream segments with water quality problems. Key players in establishing a viable citizen monitoring program include: 1) a Monitoring Coordinator; 2) core, volunteer Team Leaders (see discussion under Personnel, Parameters and Equipment for First-Tier water quality testing); and 3) public schools including educators in environmental education programs.

2nd Tier - Laboratory Analysis

As needs dictate from the results of the First-Tier monitoring, a more detailed technical and site specific analysis of water quality would be in order. In addition to testing all the first-tier parameters, the contractor and/or County may choose to test additional parameters such as heavy metals (see discussion under Second Tier Parameters).

3rd Tier - In-Stream Computer Monitoring

In-stream computer monitoring is one of the most comprehensive methods of testing water quality in order to track probable sources at a specific site over a long period. This allows for water quality testing before, during and after crucial storm events when the true telling of a watershed's environmental health is most evident. It is during these storm events that the majority of nutrients and sediment enter the watershed's stream system. In addition to testing water quality with the full range of laboratory analysis including heavy metals, information pertaining to peak-discharge flows and corresponding precipitation data would be available. It is worth noting that Anne Arundel County's Instream Water Quality Monitoring Program has enjoyed tremendous success and has provided invaluable information with regard to non-point source pollution tracking.

PROGRAM MANAGEMENT

Data Management

The data gathered through this program would be computerized and stored according to geographic location (i.e. specific location/watershed) on an appropriate soft-ware package such as d-Base. Raw data would be compiled and interpreted by producing descriptive statistics which compare water quality data with adopted standards. Water quality trends and problems would be identified and summarized in an annual statistical report containing tables, charts, and graphs. By adopting acceptable water quality ranges for each of the parameters noted, a red flag would go up when water quality data falls outside these ranges. Monitoring will allow for the identification of water quality trends and problems as they occur from year to year.

PROGRAM MANAGEMENT (cont.)

Base Line Data

In order to establish a comprehensive baseline of existing water quality data each sampling station would be tested once monthly during the first year. In addition, parameters should be tested at each station after significant storm events. The data that is collected during this initial year (and following years) will be entered into a data management software package, assessed and interpreted to ascertain what the status is of our County's streams. The baseline results, after interpretation, will dictate where to place later research emphasis. This will be based on those sampling sites which exhibit an unusual spectrum of water quality data - sites where the tested water quality falls outside of the accepted norms.

Usage of Water Quality Monitoring Information

This water quality data is to be used to track water quality trends in Charles County. By systematic investigation of water quality, existing conditions can be documented and interpreted, areas requiring more intensive analysis can be identified, and areas requiring restoration can be identified. Local users of the data may include County agencies such as the Department of Health and the Department of Planning. State agencies such as DNR's Fisheries and Habitat Assessment Divisions and MDE's Water Resources Administration have also expressed an interest in utilizing local data on water quality. Citizen monitoring data would also be valuable to the citizens of the County, especially those residents on whose creeks monitoring is taking place in that it would frequently be the only documented water quality information available for those creeks.

By analyzing the data and determining the probable causes and sources of water quality degradation, measures can be taken to correct the problem - be it a construction site with inadequate sediment fencing or an existing development that may be a prime candidate site for BMP retro-fitting. Monitoring would provide a means for the County to assess and address the impacts associated with improper compliance of State and County development regulations (such as sediment and erosion control, stormwater management). This data could be utilized as a tool to detect problems that may require the attention of various inspection and enforcement agencies. Monitoring can give regulatory agencies a statistical basis by which to assess environmental impacts with respect to water quality and further the County's goal of maintaining good water quality.

Sampling Stations

The locations of key, benthic, water quality sampling stations should be placed at strategic points within the watershed's stream system. Criteria for sampling site selection would be based on accessibility to the site (both parking and stream access), on-site conditions (i.e., adequate gravel beds for benthic sampling), and geographic positioning within the watershed. The program's initial sampling sites will focus in the county's development district watersheds. For instance, in the Mattawoman Creek watershed, where intense urban development can be expected to occur, sampling stations would most effectively be placed at periodic intervals all along the main stem and at strategic locations along the major tributaries (Old Woman's Run and Piney Branch). In a more rural setting, such as the Nanjemoy watershed, perhaps as few as two or three sampling stations along the main stem would be sufficient. Sampling stations should, wherever possible, be selected with consideration given to such elements as point discharge points, and intense residential development.

The locations of ongoing monthly chemical and physical sampling stations may be selected based on the ease and accessibility to the site with respect to the individual stream sampler. Citizens participating may wish to run monthly water quality tests in their backyard streams and docks thereby providing the program with a broader spectrum of existing water quality conditions County-wide. This continuous, monthly sampling by citizen monitors would provide a documented basis for detecting changes in stream water quality after the initial baseline of data is established.

FIRST-TIER PARAMETERS, PERSONNEL AND EQUIPMENT

First-Tier Sampling Parameters

These physical parameters are derived from *Standard Methods for the Examination of Water and Wastewater*, by the American Public Health Association. These parameters have been selected based on volunteer ability, existing Quality Control Assurance literature, and equipment budgeting. Minimum data to be collected in the first-tier monitoring includes:

- Alkalinity-** Alkalinity is a measure of a stream's capacity to neutralize acids. The alkalinity of natural waters is due primarily to the salts of acids, although bases may also contribute. Such substances act as buffers to resist a drop in pH resulting in acid addition (such as acidic soils or "acid rain"). Alkalinity is thus a measure of the streams buffering capacity and in this sense is used to a great extent in the testing of stream waters.
- Biological Indicators -** There are four groups of insects which should be present in all streams: stone flies, may flies, caddis flies and true flies. Generally, the stone flies are the most sensitive to pollution, followed by the may flies, then the caddis flies, with the true flies tolerating highly contaminated waters. Seasonal stream surveys of aquatic insects will be conducted on a tri-annual basis in coordination with the public schools, Maryland Save Our Streams, and the citizens monitoring program.
- Dissolved Oxygen -** Dissolved Oxygen (DO) levels in natural waters depend on the physical, chemical, and biochemical activities in the water body. The analysis for DO is a key test in water pollution and waste treatment process control. In streams, low DO levels usually signify a heavy loading of decomposing organic matter which in turn results in high Biological Oxygen Demand (BOD). High BOD in a stream system sets into motion biological and chemical processes which lead to severe oxygen loss, or hypoxia. Depending on temperature, waterflow and other environmental conditions, hypoxia or even anoxia (total absence of oxygen) can result, leaving bottom waters all but uninhabitable by normal fauna.
- Nutrients -** Nutrient levels of total Phosphorus and total Nitrogen will be tested. Nitrogen and Phosphorus are found naturally in the environment and are also used extensively in chemical fertilizers. When found in excess of natural conditions in streams and estuaries, these nutrients cause the rapid growth of algae - algal blooms - to occur. This reduces light to SAV, and leads to oxygen depletion in the stream system.
- pH Value -** pH (hydrogen ion concentration) is one of the most important and frequently used tests in water chemistry. pH is used in alkalinity and carbon dioxide and many other acid-base equilibria. At a given temperature the intensity of the acidic or basic character of a solution is indicated by hydrogen ion activity. Natural waters usually have pH values in the range of 4 - 9, and most are slightly basic because of the presence of bicarbonates and alkaline earth metals. The neutral point is pH 7.5.
- Temperature -** Temperature readings are used in the calculation of various forms of alkalinity, in studies of saturation and stability with respect to calcium carbonate, and in the calculation of salinity. In stream water studies, water temperatures as a function of depth are often required.
- Turbidity -** Turbidity is an expression of the optical property that causes light to be scattered and absorbed rather than transmitted in straight lines through a water sample. Turbidity in water is caused by suspended matter, such as clay, silt, plankton and other microscopic organisms. The clarity of water is a major determinant of the condition and productivity of the system. Reduced light affects aquatic plants, reducing the plants ability to photosynthesize. Excessive levels of sediment suffocate stream bottoms and spawning areas.

FIRST-TIER PARAMETERS, PERSONNEL AND EQUIPMENT

Personnel

Monitoring Coordinator

The Monitoring Coordinator is proposed to be a half-time position, working for the Charles County Department of Environmental Resources. Among the Monitoring Coordinator's duties would be to: coordinate the overall program; coordinate team leaders, volunteer recruitment and training; determine sampling locations; maintain and disburse test equipment; receive, compile, and interpret data; check for accuracy of data and conduct quality control checks; and publish an annual report. See appendix A for a proposed Stream Water Quality Monitoring Coordinator position description. This half-time position could be combined with a half-time sludge coordinator position that has been under discussion. Both responsibilities involve water testing and data recordation.

Volunteer Team Leaders

The Volunteer Team Leaders would act as watershed coordinators, organizing volunteer efforts within their respective watersheds. These Team Leaders may originate from County Government, including schools and/or local environmental organizations such as the Izzak Walton League, or anyone that may have the willingness to take on the responsibility and work in conjunction with the County and State in establishing an on-going water quality monitoring program.

Non-Tidal Streams Monitoring Parameters & Equipment

Physical/Chemical Analysis

The testing of water would be done by volunteers on a weekly, or even monthly basis. A procedural manual and data sheets would accompany the test equipment. These parameters have been selected based on volunteer ability, existing Quality Control Assurance literature, and equipment budgeting.

| | Parameter | Equipment | Unit of Measurement | Cost |
|-----|-------------------|-------------------------------|---------------------|--------------|
| 1.) | Alkalinity | LaMotte Alkalinity kit | ppm | 17.15 |
| 2.) | Dissolved Oxygen; | LaMotte titration kit | ppm | 26.75 |
| 3.) | Temperature; | LaMotte armored thermometer | degrees Celsius | 15.00 |
| 4.) | Turbidity; | LaMotte turbidity test kit | NTU | 23.45 |
| 5.) | Nitrate; | LaMotte nutrient test kit | ppm | 37.90 |
| 6.) | pH; | LaMotte test kit (wide range) | pH units | <u>21.60</u> |
| | | | | \$ 141.85 |

Aquatic Insect Sampling

Among the best indicators of water quality are the biological organisms (or lack thereof) which inhabit a stream. Seasonal or tri-annual assessment of water quality through biological sampling or insect counts, will give accurate determinations of stream health and begin to pin-point possible causes of poor water quality. For instance, because chemical spills are of a transitory nature, all evidence of an incident may wash away before a scheduled chemical testing of water quality. With biological testing, although the contaminant may be gone, its effects will be evident in the absence or change in insect populations. Save Our Streams, which is a non-profit organization that provides environmental information to individuals and groups, has an excellent program developed for volunteers which provides accurate assessment of water quality by aquatic insect inventories (referred to as bio-indicators).

| | Parameter | Equipment | Unit of Measurement | Cost |
|-----|----------------|------------|----------------------------|-------|
| 1.) | Bio/indicators | Kick Seine | Insect Diversity/Sq. Meter | 25.00 |

FIRST-TIER PERSONNEL, PARAMETERS AND EQUIPMENT (cont.)

Tidal Waters Monitoring Parameters & Equipment

Physical/Chemical Analysis

In order to assess water quality in tidal waters, a different set of chemical and physical parameters is necessary than those utilized in the testing of non-tidal waters. These parameters have been selected based on volunteer ability, existing Quality Control Assurance literature, and equipment budgeting.

| | Parameter | Equipment | Unit of Measurement | Cost |
|-----|-------------------|-------------------------------|---------------------|------------------|
| 1.) | Alkalinity | LaMotte Alkalinity kit | ppm | 17.15 |
| 2.) | Dissolved Oxygen; | LaMotte titration kit | ppm | 26.75 |
| 3.) | pH; | LaMotte test kit (wide range) | pH units | 21.60 |
| 4.) | Salinity | Fisher Hydrometer | ppt | 22.35 |
| 5.) | Temperature; | LaMotte armored thermometer | degrees Celsius | 15.00 |
| 6.) | Water Clarity | Secchi Disk | inches | <u>23.35</u> |
| | | | | \$ 126.20 |

SECOND-TIER PERSONNEL AND PARAMETERS

In cases where the results of first tier sampling indicate that the quality of waters tested fall below accepted standards, a more detailed technical and site specific analysis of water quality may be in order. A number of options exist in determining who will conduct these more rigorous water quality testing parameters. The County could choose to contract the work out to a qualified consultant or expand the existing facilities in-house at the Mattawoman Treatment Plant (see attached cost estimate). In addition to testing all the first-tier parameters, the contractor and/or County may choose to test additional parameters such as:

- 1.) Nutrients
 - P-total, P-ortho, ammonia, nitrite, nitrate
- 2.) Total Coliform Bacteria
- 3.) Total Dissolved Solids (TDS)
- 4.) Total Suspended Solids (TSS)
- 5.) Chemical Oxygen Demand (COD)
- 6.) Biological Oxygen Demand (BOD)

THIRD-TIER FUNCTIONS AND PARAMETERS

In certain watersheds of the county, continual environmental impacts resulting in water quality degradation may warrant the establishment of a more comprehensive water quality monitoring station. An in-stream computer monitoring program may be established in order to follow water quality as far downstream as possible in the non-tidal portion of County streams. This computerized, remote monitor will conduct both monthly baseflow samples and automated flow and water sampling during individual storm events. Both stream flows and water column concentrations will be measured during crucial storm events as well as monthly sampling.

When the streams exceed a pre-determined cfs discharge, an automated water sampler would begin pumping pre-programmed volumes from the stream into a refrigerated composite sample container. Water sampling would then continue at equal volumes of accumulated flow during a storm, providing flow-weighted results. Sampling would be terminated when the stream stage decreased below a criterion height.

THIRD-TIER FUNCTIONS AND PARAMETERS (cont.)

The station set-up, as illustrated in Figure 1, shows the equipment housed inside a weather-proof fiberglass shelter with a rain gauge mounted on an adjacent pole. The rain gauge and the stream stage measuring device (the pressure transducer) would provide input to a portable microcomputer. The microcomputer would control water sampling during storm events, as well as storing rainfall, stage, flow, and sampling data.

Possible funding sources for an in-stream computer monitoring station's purchase, operation and maintenance may be through funds generated in stormwater utility districts. Other funding possibilities include applying for specific grants through MDE, WRA and DNR where water quality monitoring has been identified as a State priority.

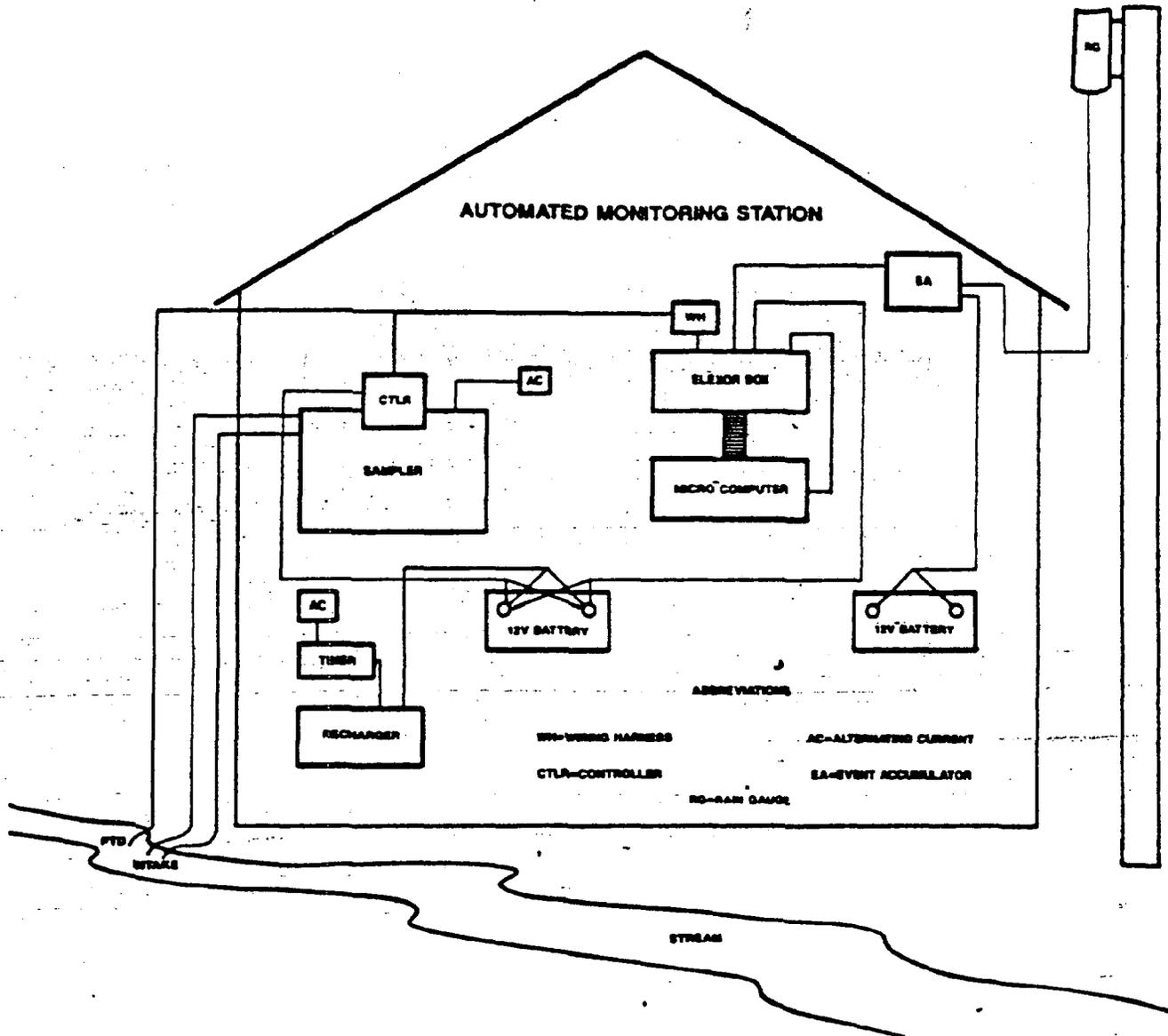


FIGURE 1 - The Automated Stream Monitoring Station

COST ANALYSIS FOR WATER QUALITY MONITORING

A cost analysis has been performed on the three tiers of the proposed water quality monitoring program.

1st Tier - Citizen (and Public School) Monitoring Program

The costs associated with initiating the Citizen Monitoring Program may be broken down to personnel, test equipment, and misc. support (printing) expenditures.

| | |
|--|-----------------|
| Monitoring Coordinator (1/2 time position) ----- | \$12,000 |
| Test Equipment (20 complete sets) ----- | \$ 5,600 |
| Misc. support (base-line soft ware, printing)----- | <u>\$ 300</u> |
| | \$17,900 |

2nd Tier - Laboratory Analysis

These are two possible scenarios to consider in compiling a quantitative and qualitative laboratory analysis of water quality.

- I) Establish an in-house stream water quality division to perform water quality testing at the Charles County central water quality lab;
- II) Use a consultant to do the water quality testing on a contractual basis;

A comparison has been done between scenario I, establishing an in-house capability, and scenario II, consultant services. The full cost estimate reports submitted by the Mattawoman facility and Chesapeake Analytical Laboratory, Inc. are documented in the following pages. For comparative analysis of the two submittals, figures have been computed reflecting relative annual costs for water quality analysis of 50 sites tested on a monthly basis.

Scenario I - In-house

| | YEAR 1 | FUTURE YEARS |
|---------------------------------|------------------|-------------------|
| Mattawoman Facility - | | |
| Capital Outlay (once only)----- | \$19,700. | |
| Field Services ----- | \$24,000. | \$ 24,000. |
| Lab Services ----- | <u>\$23,200.</u> | <u>\$ 23,200.</u> |
| | \$66,900. | \$ 47,200. |

Scenario II - Consultant

| | | |
|------------------------------------|------------------|-------------------|
| Chesapeake Analytical Laboratory - | | |
| Field Services ----- | \$30,000. | \$ 30,000. |
| Lab Services ----- | <u>\$32,400.</u> | <u>\$ 32,400.</u> |
| | \$62,400. | \$ 62,400. |

3rd Tier - In-Stream Computer Monitoring

The in-stream computer monitor is notably the most costly. But then, you get what you pay for - the most comprehensive analysis of stream water quality available. It should be noted that the most costly component of this tier is that of professional consultant services, instrumental in setting-up the monitoring station and interpreting the generated data. The relative cost for these monitoring stations and consultant services per station are as follows:

| | |
|-----------------------------|------------------|
| Consultant Services ----- | \$ 30,000 |
| Equipment & Structure ----- | <u>\$ 17,000</u> |
| | \$ 47,000 |

COST ANALYSIS FOR WATER QUALITY MONITORING (cont.)

Conclusions

The First Tier, while exhibiting the most attractive cost to the county by using volunteers, would require coordination of efforts between the County, the Community College's environmental training center, the public school's environmental education center, and established volunteer organizations such as Save Our Streams. There are a number of useful roles that may be played by adult volunteers and motivated students in our community. These include doing analysis in the field with portable test equipment, collecting and managing data for subsequent input into the County's water quality data bank, and collecting field samples for delivery to a lab as a possible assistance to Tier II monitoring. These are all potentially attractive roles for public spirited, and environmentally conscious citizens. The disadvantages and/or challenges of utilizing volunteer groups for sample collection is that of assuring quality control. If the sampling collection is done improperly, the data integrity would be compromised.

In comparing the Second Tier Scenarios I & II in laboratory water quality testing, it is worth noting that the capital outlay for needed equipment (vehicle, test equipment, etc.) reflected in the Mattawoman Facility figures will only occur at the onset of the program. An annual cost of approximately \$47,200. can be expected in subsequent years after the initial start-up costs.

Tier III, while exhibiting the most cost to the County also offers the most comprehensive analysis of water quality. Possible funding sources for an in-stream computer monitoring station's purchase, operation and maintenance may be through revenue generated by a stormwater utility district tax. Other funding possibilities include applying for specific grants through MDE, WRA and DNR where water quality monitoring has been identified as a State priority.

LIABILITY ISSUES AND VOLUNTEERS

As with any program involving volunteers, the issues regarding liability and compensation must be examined. While participating in an event, a volunteer could become injured and require medical treatment. A volunteer also could be sued for damages by a property owner as a result of carrying out their duties on behalf of a government entity. Finally, a volunteer could sue the County for damages in connection with volunteer activities.

In Maryland, broad based protection for volunteers was embodied in the Local Government Tort Claims Act (LGTC) for actions arising from events on or after July 1, 1987. The LGTC applies to local government employees which are defined to include "a volunteer who, at the request of the local government, and under its control and direction, was providing services or performing duties". The statute requires that, as a local government volunteer, they will be provided with legal defense in any actions that alleges damages resulting from tortious acts or omissions committed within the scope of volunteer work with the local government. Unless a valid claim can be made under the Maryland Tort Claims Act, volunteers will not be allowed to file a suit against the State (County) because of the doctrine of sovereign immunity. There exist, however, other possible means for volunteers to be compensated for injuries received during the course of their services for the County. One possibility may be an "umbrella" coverage extended to volunteers under the County's liability insurance. Another strategy may be to obtain coverage specifically for volunteers participating in this program. A third possibility is to draft a waiver of liability, absolving the County from any risks and liability (see Appendix A, sample liability waiver). This last strategy is the least desirable due to the general legal transparency of a liability waiver.

A recommended strategy in lessening the potential for an injury is to insure that adequate training is provided to volunteers prior to "getting their feet wet". Most of these proposed sampling parameters will require technical training, particularly where test instrumentation, sample preservation, and data analysis are concerned. A generous offer has been extended to the County by the Director of the Maryland Center for Environmental Training (MCET) whereby the water quality monitoring program may count on utilizing the MCET facilities as a training site for volunteers, and as a staging area for use on days of benthic water testing/sampling. Possibilities to include in the training program include a mini-lecture series focusing on all aspects of the volunteer water quality monitoring effort.

Liability Insurance Coverage for Volunteers

Through the Volunteer Insurance Service (VIS) Association, it is possible to obtain insurance for injuries or death resulting from accidents occurring as a result of volunteer services. Details may be obtained from VIS, a national nonprofit organization (Source: Volunteers and the Law in Maryland).

Maryland's Workers' Compensation Act

As a general matter, volunteers are not covered under the Workers' Compensation Act. To be covered by the Act, one must be an "employee" which is defined generally as someone receiving remuneration or payment for his or her services (Source: Volunteers and the Law in Maryland).

APPENDIX A

- IMPORTANT LIABILITY NOTE -

The Charles County Department of Planning and Growth Management (PGM) intends that citizen volunteers participating in this program are not acting on behalf of PGM in any official capacity. As such, it is the Department's intent that citizen volunteers are not authorized to be considered agents, employees, or representatives of the Department for any purpose, and that citizen volunteers are not entitled to the same benefits enjoyed by Department employees.

Citizen volunteers must recognize the potential for injury to themselves and their real and personal property, and to other persons and their real and personal property, which may result from citizen volunteer activities conducted under the Citizens Stream Water Quality Monitoring Program. The Department intends that citizen volunteers expressly assume all risks and liability for any injuries to, or caused by, citizen volunteers under this program.

Citizen volunteers will be instructed in proper sampling techniques and handling of sampling chemicals. They will also be cautioned that if there is ever any doubt, they should give safety priority over sampling. Every participant will also receive a copy of the water quality monitoring strategy and sampling procedures.

SAMPLE LANGUAGE FOR LIABILITY WAIVER

In consideration of the foregoing, I, myself, my heirs and executors do hereby release and discharge all Charles County Citizen Water Quality Monitoring Program supporting organizations for all claims, damages demands, actions, and whatsoever in any manner arising or growing out of my participation in said monitoring program.

SAMPLE LANGUAGE TO ACKNOWLEDGE TRAINING AND ORIENTATION

I, the undersigned, having received an orientational training in the proper use and procedures of water quality data collection techniques, do hereby acknowledge the potential hazards involved with reckless or unsafe handling of chemical reagents involved with the testing of water quality.

Signature:

Date:

Parent or Guardian:

(If a volunteer is under 18 years of age, a parent or guardian must sign the waiver)

APPENDIX B

CHARLES COUNTY GOVERNMENT
JOB DESCRIPTION
(Proposed)

JOB TITLE: Stream Water Quality Monitoring Coordinator

DEPARTMENT: Planning and Growth Management

DIVISION: Environmental Resources

SUPERVISORY RELATIONSHIP:

Reports To: Environmental Resources Director

PRIMARY PURPOSE OF JOB:

Performs a variety of administrative and technical duties relative to a county-wide stream water quality monitoring program.

REQUIRED KNOWLEDGE, EDUCATION, SKILL:

1. Bachelors degree in Biology, Ecology, Marine Science or related field or an equivalent combination of experience and training which provides the required knowledge, skills and abilities.
2. Maryland Class "D" drivers license
3. Knowledge of various State and Federal water quality regulations.
4. Knowledge of the use of standard office equipment/machines.
5. Interpersonal skills and public relations.

DUTIES:

- | | | |
|-----|----|---|
| 30% | 1. | Coordinates team leaders, volunteer recruitment and training. |
| 20% | 2. | Receives, compiles, and interprets water quality data. |
| 15% | 3. | Disseminates information to the public, other County, State and Federal agencies. |
| 15% | 4. | Conducts quality control checks. |
| 5% | 5. | Checks for accuracy of water quality data. |
| 5% | 6. | Determines sampling locations. |
| 5% | 7. | Maintains and dispenses test equipment. |
| 5% | 8. | Performs other related duties as assigned. |

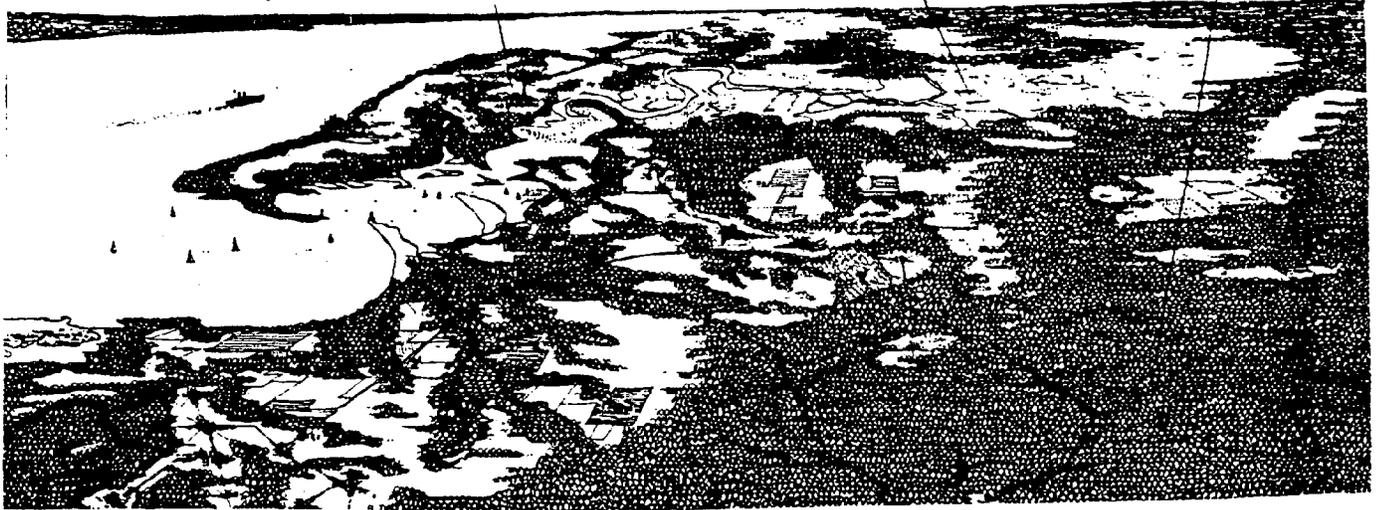
ACCOUNTABILITY:

Is accountable for the complete, prompt and effective performance of all assigned duties and the compliance with County policies and procedures.

CHARLES COUNTY AND MARYLAND SAVE OUR STREAMS NEED YOUR HELP IN

MONITORING MATTAWOMAN CREEK

Sunday, May 12, 10:00 am to 3:30 pm



Charles County citizens will begin ongoing stream valley monitoring of Mattawoman Creek. This monitoring project will commence a citizen/government watch of the Mattawoman to establish a data baseline of existing water quality. Once established, the data can be compared with future water trends in order to keep track of the Mattawoman's stream health.

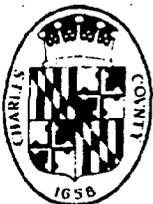
****Training will be held at Charles County Community College in the Environmental Training Center**

****Learn how to determine water quality by collecting aquatic insects using kick-seining techniques.**

****Learn how you can Adopt-A-Stream in your neighborhood!**

****Join Charles County citizens along with Maryland Save Our Streams in helping to restore and preserve our waterways.**

This event is free and open to the public. To pre-register please contact Kevin Kirby at 645-0610



APPENDIX C

WATER QUALITY MONITORING
FIELD DATA SHEET

Please complete a separate data form for each assessment and at each site.

Assessment Date: _____ Sampling Station Number: _____

Name(s) of Assessor(s): _____

Stream Name: _____

Stream Location (use map coordinates if possible): _____

Organizational Affiliation: _____

Number of: Stoneflies _____ Mayflies _____ Caddisflies _____

Other organisms _____ Total Number of Organisms _____

Describe other organisms: _____

How would you rate the quality of the stream at this point? Please circle one:

- a. Excellent b. Good c. Fair d. Poor

If you rated the stream fair or poor, what do you think is the cause of the pollution?

Water Color: Please Circle One:

- a. medium brown b. dark brown c. reddish brown d. green brown
e. yellow brown f. green g. other (describe) _____

Water Odor: Please Circle One:

- a. sewage b. oily c. musky d. fishy e. rotten eggs
f. none g. chlorine h. other(describe) _____

Black color on deeply imbedded stones? YES NO

Major land use visible from your sampling station: Please Circle One:

- a. forest b. residential c. commercial d. institutional e. industrial
f. pasture g. other

APPENDIX C

WATER QUALITY MONITORING
FIELD DATA SHEET

Data compiled by: VJK

Date collected: 15 MAY

Air Temp: 87° F

Watershed: MATAWOMAN

Wind Direction: NE

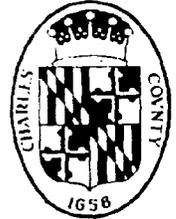
Station: SLIPPS CREEK

| PARAMETERS | UNIT | MEASUREMENTS |
|------------------|------|--------------|
| Alkalinity | ppm | 24 ppm |
| Dissolved Oxygen | ppm | 8.3 |
| Temperature | C | 17° C |
| Turbidity | NTU | N/A |
| Nitrate | ppm | N/A |
| pH | pH | 6.0 |

Conclusions

Overall water quality at this location appears good based on the preliminary inventory of aquatic insects present. Although we were unable to test the entire host of first tier parameters (due to unavailable equipment) the chemical parameters tested indicate acceptable levels.

CHARLES COUNTY GOVERNMENT
Planning and Growth Management



ROY E. HANCOCK, Deputy County Administrator

September 30, 1991

Mr. Gary Hodge
Tri-County Council
P.O. Box 1634
Charlotte Hall, Md. 20622

Dear Mr. Hodge,

This letter is a follow-up to a letter you have received from the Charles County Commissioners seeking your endorsement for grant funding for use in association with water quality programs as authorized under section 205(j) and 604(B) of the Clean Water Act (copy of letter attached). The County wishes to obtain grant funds for the creation of a position to staff the County's water quality monitoring program. To help the County obtain grant funds we would like an endorsement letter from Tri-County Council to submit with our application.

The Federal Clean Water Act stipulates that at least 40% of 205(j) funds allotted to each State be used by "substate" agencies for water quality planning and assessment. The Act further clarifies that activities such as water quality investigations, water quality planning and water quality monitoring would qualify for these planning grant funds. The Maryland Department of the Environment, having taken a lead role in administering these funds state-wide, has indicated a priority interest in "...assessments of point and non-point source pollutant, including nutrient loads to the Chesapeake Bay or its tributaries". Discussions with contacts at the federal funding level (EPA) have indicated that in order for "substate" (county) agencies to apply for these grants, they must be sponsored by a State or Regional agency. This includes Tri-County Council.

This program is in keeping with other established priorities in MDE's specific areas of interest in utilizing these funds. These include: assessment of small creek and estuary reclamation needs; and efforts to improve the targeting and tracking of non-point source "best management techniques".

The requested funding of \$32,500 covers the salary and fringe costs of a new full-time position for managing the Water Quality Monitoring Program. A proposal sheet and a copy of the program strategy is attached for your information. We intend to formally submit a pre-proposal to Mr. J. L. Hearn, Director, Water Management Administration at 2500 Broening Highway, Baltimore, Md 21224, with your letter of endorsement, for consideration of 205(j) funding during the FY1992 cycle.

Thank you for your assistance in this matter. Please feel free to contact Kevin Kirby of my staff at 645-0610 if you have any questions regarding the program strategy or this request.

Sincerely,
Jaquelyn Magness Seneschal
Jaquelyn M. Seneschal
Director of Planning

Attachments
- Water Quality Program Strategy

KJK/

SAY NO TO DRUGS

Post Office Box B La Plata, Maryland 20646 (301) 645-0610 or 870-3935

EQUAL OPPORTUNITY COUNTY

PROPOSAL STATEMENT SHEET

Purpose in Seeking Grant Funding -

Charles County wishes to establish a water quality monitoring program in order to establish a data base of existing stream water quality and to track trends in water quality, especially in those areas identified within the County's development district.

Grant Source -

As authorized under section 205(j) and 604(B) of the Clean Water Act; administered federally by the Environmental Protection Agency; administered state-wide by the Water Management Administration, Maryland Department of the Environment.

Grant Request -

Charles County's purpose in obtaining grant funding is for the creation of a full-time position in Charles County Government which would manage the adopted Water Quality Monitoring Program (see Monitoring Coordinator position description on page 15 of the attached program strategy). Total cost for funding this position (including salary and fringe) is \$32,500. Among the Monitoring Coordinator's duties the first year would be to: coordinate the overall program including coordinating team leaders, volunteer recruitment and training; determine sampling locations; maintain and disburse test equipment; receive, compile, and interpret data; check for accuracy of data as well as conduct quality control checks; and publish an annual report.

