

People, Land, and Water at the Headwaters of Rappahannock River Basin: A Model Approach to Watershed Management Planning

I. Project Abstract:

A. This proposal requests support for a model watershed management planning process in Rappahannock County, Virginia, at the headwaters of the Rappahannock River Basin. A grant from NFWF will help us improve water quality protection tools while implementing vegetative buffers to help meet the goals of the Chesapeake 2000 Agreement, the Rappahannock Tributary Strategy, and the County Comprehensive Plan. Our approach combines rigorous analytic and scientific methods with broad stakeholder participation, focus on individual landowner responsibility for land management; and close coordination with local government. The proposed project builds upon learning and accomplishments of Phases I and II of this work, funded in part by NFWF. We will leverage financial and in-kind support and technical assistance from 15 state and regional agencies and nongovernmental organizations and many individuals. Our methodology and model will provide the foundation for watershed protection not just for Rappahannock County, but also for similar rural watershed jurisdictions.

B. Final product(s) – Outcomes will include the following: a comprehensive geographic information system (GIS) database for all watersheds within Rappahannock County (E01 – E06); identification of most vulnerable subwatersheds; a new, high resolution land cover classification map for identifying forest cover on riparian buffer areas; identification of cost-effective incentives for landowner implementation of vegetative buffers; progress towards meeting our County's goals for forested riparian buffers in the Rappahannock Tributary strategy, for both agricultural and suburban BMPs; a model process of collaboration among several organizations for achieving Tributary Strategy goals and engaging landowners in watershed planning; a proposed county overlay district or ordinance for protection of riparian corridors; three public education programs, and dissemination of the model to local community, partners, agencies and watershed protection groups.

II. Proposal

A. Project need.

The proposed project addresses two simultaneous needs:

- 1) for the landowners and leaders of a rural county at the headwaters of the Rappahannock River basin to understand and take action on managing the health of our watersheds and quality of streams; and
- 2) to reduce the amount of sediments, nutrients, and contaminants entering our 755 miles of streams and 576 ponds by protecting and restoring vegetative riparian buffers.

B. Goals and Objectives.

The long-term goal of this 5-year initiative is to protect our watersheds and water quality by preserving and restoring riparian vegetative buffers, controlling erosion and sedimentation, and mitigating the ongoing conversion and fragmentation of farms and forests. This requires a combination of: public education and participation; individual landowner actions; cost sharing programs for agricultural and forestal BMPs; local government policies, incentives, and ordinances; and watershed management plans in the 2009 revision of the County's Comprehensive Plan. Our project addresses goals of the Chesapeake 2000 Agreement, Rappahannock River Basin Tributary Strategy, and County Comprehensive Plan.

Objectives in proposed Phase III (Sept. 2006 – December 2007) are to:

- Weave together the scientific, environmental, social, educational, economic, engineering, and political aspects of watershed management in ways that work for our people, topography, land uses, land cover, economy and political processes.
- Accomplish this within a focus on increasing the percentage of riparian buffer area that is preserved or restored to forest cover on both agricultural and "suburban" land uses. We seek to increase the forested buffer acres using agricultural BMPs by at least ten percent -- from 972 to 1069 -- and institute a pilot program for forested buffers on suburban land, implementing 40 acres of stream and pond buffer area.

- Refine and apply our subwatershed vulnerability assessment model to the entire county area, thereby helping to prioritize watershed management efforts.
- Create a new land cover classification based on 2006 satellite imagery to serve as baseline for evaluating future progress in increasing forested riparian buffers.
- Identify the cost-effective incentives and educational strategies that result in landowners implementing vegetative buffers along streams and ponds on their land.
- Help landowners analyze and understand the health and vulnerabilities in their local small watershed areas; present information to landowners/ stakeholders in ways useful for decision-making; and help landowners to decide upon and implement best management practices for improving our watersheds with special focus on forested buffers for streams and ponds;
- Help Rappahannock County’s governing bodies understand, articulate, and enforce public policies and tools best suited to addressing our watershed’s vulnerabilities, with special focus on implementing policies of the Comprehensive plan that address protection of riparian corridors.
- Evaluate the environmental, economic, and political effectiveness of our approach, using quantitative indicators of riparian vegetative buffer preservation and restoration, and detailed records of the educational, technical assistance, and financial incentives offered to and used by landowners.

This project will greatly enhance our community’s ability to develop an effective county-wide watershed management plan over the next four years. We intend for our model to be useful to similar localities.

C. Overall context:

Among the Rappahannock Tributary Strategy goals for improving water quality and habitat by the year 2010 are: reduction in nutrient and sediment loading, addressing chronic erosion and stream bank instability in the western Rappahannock basin, and implementing the CREP program basin-wide. Rappahannock County, headwaters of this river basin, is an ideal location to test and implement a model watershed management planning process that will help meet the Tributary Strategy goals. The Rappahannock County allocations for the Tributary Strategy “Input Deck” provide us with useful provisional goals for 2010 for forestry, agricultural, and urban/suburban BMP’s with respect to riparian forested buffers and hence reductions in erosion, sedimentation, nutrients, biological impairments and other contamination. The Trib Strategy for our County calls for an increase by the year 2010 from 972 to 1,704 acres of forested buffer area in agricultural BMPs, and establishment of 908 acres of forested buffers in suburban BMPs.

Our project addresses these commitments in the *Chesapeake 2000 Agreement*: 1) Preserve, protect, and restore those habitats and natural areas that are vital to the survival and diversity of the living resources of the Bay and its rivers; 2) Achieve and maintain the water quality necessary to support the aquatic living resources of the Bay and its tributaries and to protect human health; 3) Develop, promote, and achieve sound land use practices which protect and restore watershed resources and water quality, maintain reduced pollutant loadings for the Bay and its tributaries, and restore and preserve aquatic living resources; and 4) Promote individual stewardship and assist individuals, community-based organizations, businesses, local governments, and schools to undertake initiatives to achieve the goals and commitments of the agreement.

The County. Our rural County (population 6,983) is at the headwaters of the Rappahannock River watershed, and covers an area of about 267 square miles. The county seat is about 65 miles west of Washington, D.C. and 120 miles NW of Richmond. The NW boundary is in the Blue Ridge Mountains. The Rappahannock River forms the NE boundary with Fauquier County. Altitudes range from about 3,700 feet above sea level in the Blue Ridge, to the lowest point at 360 feet near the Culpeper County border. Most of the County can be classified as steep hillside. Seven hundred and fifty-five (755) stream miles (National Hydrology Database 2005), many on steep slopes, crisscross our rural landscape. There are approximately 576



ponds totaling about 540 acres in area. All or portions of the following hydrologic units are within the county: E01, E02, E03, E04, E05, E06. **(Please see maps in Attachment D).** Drinking water for 96 % of residents comes from private wells, springs or streams. Segments of four of our major streams are designated 303(d) impaired by the VA DEQ.

Land Cover. Among the 13 subwatersheds in the Upper Thornton River hydrologic unit, the percentage of 100-foot riparian buffer area that is forested ranges from only 26 percent in White Walnut Run to 99 percent in the Upper North Fork, in the Shenandoah National Park (SNP). The SNP is 31,700 forested acres of the county's land area. Nearly 69 percent of the County's land cover is deciduous, mixed, or evergreen forest. About 74,000 acres are in commercial forestland. Pasture, hay, and crops account for nearly 30 percent of land cover, and less than one percent of land cover is low density residential.

Agriculture. While our economy has historically been based upon agriculture, 1990-2000 saw the most precipitate decline in agricultural employment in our history. One of the 10 main goals of the County's Comprehensive Plan is to "encourage and maintain a viable rural agricultural and tourism-based economy compatible with the County's size and character." A complementary goal is to "discourage the continuing conversion of land from agricultural uses to other uses that challenge our ability to stabilize and balance our local tax base." One priority of RappFLOW is on helping to preserve the agricultural economy and land use in ways that protect and enhance the water resources and watersheds.

Local policies. The 2004 County Comprehensive Plan recognizes the County's rivers as one of the most significant environmental resources and calls for policies that: "a) encourage greenbelts along the rivers; b) inform the public of the benefits and values of preserving the river corridor; and c) control development in areas adjacent to the rivers that may include development restrictions such as setbacks, buffers, or other means, or limitations on water withdrawals and/or effluent discharges." (p. 78) A next step is to find additional legal, regulatory, political and economic mechanisms that the county can employ in implementing these policies.

Conservation. There are currently 21,939 acres in Agricultural and Forestal Districts. Over 16 percent of privately owned land in the County is under conservation easement (Virginia Outdoors Foundation). Several organizations, including the County government, have proactive programs to encourage conservation and farmland preservation through easement donation and purchase of development rights. The Board of Supervisors adopted a down-zoning of approximately 90 percent of the County's land area in 1986, thereafter allowing a maximum development density of one dwelling unit per 25 acres in agricultural zones. Comprehensive Planning justification was based on natural resource conservation imperatives. Land use taxation also encourages preservation of agriculture and forestry land uses.

Challenges. According to the Rappahannock Tributary Strategy, "The 100-foot buffer area ... is deemed to achieve at least 75 percent reduction of sediments and a 40 percent reduction of nutrients." Landowners individually have the power to make and implement decisions concerning land use and management practices that will have the greatest impact on water quality and riparian corridors. Volunteers, farmers, community leaders, and our partner organizations have discussed at length the issues, mechanisms, incentives and strategies needed to overcome challenges that confront landowners when they consider making changes in land use and management associated with conserving and restoring vegetative riparian buffer areas.

For agricultural land uses, we do have several tools and incentive programs to assist landowners, and these need to be more pro-actively applied. However, as our Tributary Strategy Input Deck shows, we also have the challenge of implementing forested riparian buffers on non-agricultural or "suburban" land: 908 acres by 2010. There are 4,613 parcels in the county that are less than 26 acres, totaling 28,240 acres, and these constitute about 20 percent of the total parcels area. We need to help landowners learn to conserve or restore forested riparian buffers on these (mostly) non-agricultural land use parcels.

Role of RappFLOW. RappFLOW's mission is to help preserve, protect, conserve and restore water resources and watersheds our County shares with surrounding jurisdictions. Partners include citizen volunteers, state and federal agencies, local government, and local and regional nongovernmental organizations. See <http://www.RappFLOW.org>. Phase I (2003 – 2004) was funded in part by \$7,200 grant from NFWF and over \$43,000 in matching support from local organizations and volunteers. Phase I established a foundation

for watershed management planning through broad stakeholder involvement, community education and outreach, an atmosphere of inclusiveness and openness, strong ties with experts in government, business, and nonprofit organizations, and identification of high priority watershed protection issues. Phase I culminated in a strategic planning workshop of key stakeholder groups. They expressed overwhelming affirmation that RappFLOW should facilitate the citizenry and leaders through a scientifically sound process to determine the steps for protecting its watersheds. A core team of volunteers then laid out a five-year set of goals and strategies for watershed management planning processes.

As of January 2006, we are midway through Phase II, “People, Land, and Water in the Upper Thornton River Watershed,” supported in part by mini-grant from the Rappahannock-Rapidan Planning District Commission and Virginia DCR, a Chesapeake Bay small watershed grant from the NFWF, technical assistance from local, state, and regional agencies, and the time and talents of many volunteers.

RappFLOW proactively engages the voices of community leaders and a wide range of stakeholders.

Participants have included excavators, construction contractors, fishermen, farmers, educators, artisans, gardeners, woodworkers, artists, realtors, attorneys, information technologists, sawyers, forest landowners, foresters, homeowners, members of the board of supervisors and planning commission and the county administrator.

Status of the project “People, land and water of the Upper Thornton River Watershed” as of December 2005 is shown in the following table. This project is scheduled for completion in August 2006.

Planned Phase II Task or Product	Status as of December 2005
1) Conduct Upper Thornton Subwatershed Vulnerability Assessment	90% complete
Train leaders in watershed assessment, water quality monitoring methods, regulatory environment, BMPs, Trib Strategy; TMDL’s; BMPs	Center for Watershed Protection 5-day institute; Citizen Monitoring and Sustainable forestry workshops; technical assistance from VA DEQ, DCR, DOF, NPS, SOS, CSWCD, DGIF, RRRRC, Ag. Ext.
Collect all geo-referenced digital data layers	Acquired or created layers (all except biotic indicators & soils)
Delineate Upper Thornton subwatersheds (SW)	Completed & revised & applied 13 subwatersheds
Select and quantify subwatershed assessment factors	Completed except biotic indicators, wetlands & soils; ongoing
Apply ranking system to subwatersheds	10 factors applied; model to be evaluated by expert panel
Map all factors & subwatershed assessments	Completed for all factors interpreted to date; BMP’s in process.
Estimate future build-out factors by subwatershed	Methodology started; countywide estimates made for E&S
2) Engage Stakeholders	50% complete
Establish RappFLOW Advisory Committee	First formal meeting held Oct. 6, 2005
Work with CSWCD & NRCS & landowners	Program initiated with CSWCD/NRCS - underway
Identify resident & landowner interests	Created, tested, revised survey and database of 1500 resident & landowner addresses. (Please see attachment survey instrument).
Set up subwatershed - based study groups	Pilot study created model. Upper Thornton groups scheduled Jan – June 2006; created “My Watershed” web maps & “Backyard Watershed” maps to support this structure.
Work with County Water Quality Advisory Cttee	6 meetings in 2005; reports are on RappFLOW website
Report to BOS and Planning Commission	4 presentations in 2005
Recruit, train, coordinate, motivate volunteers	20+ trained in field data collection; Professional Coordinator of volunteers contracted in Nov. 2005
3) Assess County’s Watershed Protection Capacity	80% complete
Review Comprehensive Plan, ordinances, enforcement, incentives with county officials	Conducted review and prepared capacity-building proposal to VA WQIF with county and SWCD
Identify political, regulatory, economic feasibilities for public policy	In progress. Public discussions of Tier III nomination of Hazel R. and proposed sewage treatment to Rush R. are revealing landowner & leadership interest factors.
4) Conduct One Subwatershed Analysis	Revised plan to include additional subwatershed
Detailed assessment in one subwatershed area	Conducted pilot study in Beaverdam Creek area June 2005
Engage high school students in subwatershed analysis	RCHS students GPS and map stream observations
Engage expert partners & trained volunteers	Shen. Nat’l Park biologist & Fish & Wildlife Service led fish survey; CSWCD & VA SOS led macroinvertebrate trng; VA DEQ assisted in data interpretation.
Engage landowners in study.	Major landowner led pilot study team; other owners informed of

	Water Quality testing results and BMP's;
Try out & revise field data collection methods & protocols	Water quality sampling; stream habitat & buffer observations; SOS macroinvertebrate sampling; fish survey
Report & map results	Pilot Completed June 2005; numerous maps of field data, land cover. Cause of Thornton River impairment found to be lack of riparian forested buffers and livestock in Beaverdam Creek tributary streams.
5) One Subwatershed (SW) Management Plan	In progress for Beaverdam Creek SW; Adding Rush R. SW
Proposed land use, stream buffers	In progress; need to increase # of landowners participating
Recommend more protective tools & incentives	In progress through CSWCD staff and peer landowner one-on-one conversations with major landowners.
6) Evaluation	In Progress.
Riparian lands protected	Baseline measures of forested buffers, easement & BMP acres.
Landowners participating in SW meetings	Scheduled for Jan – June 2006
Public meetings	Planning Commission, WQAC, & BOS public meetings on sewage treatment, TMDL's, Tier III
Plans for monitoring & eval of WQ changes	In process
Trib Strategy & C2K review meetings	In process in WQAC meetings
Public feedback to RappFLOW	Survey instrument sent Jan. 2006 to all 1,500 residents and landowners in Upper Thornton Watershed (Please see Attachments)
Volunteer training feedback	Ongoing
7) Dissemination	Ongoing
Establish formal steering committee	Advisory Committee established Oct. 2005
Update progress to BOS and Planning Commission	Four presentations in 2005
Status reports at county WQAC meetings	Bi-monthly reporting in 2005
Articles in local newspaper	12 articles and 12 Upcoming Events notices
Web site www.rappflow.org	"My Watershed" section maps of subwatershed assessments
Outreach to local and regional groups: presentations, reports, maps, research data.	CSWCD Board, Realtors' Group, state and regional Watershed Monitoring Conferences, Sustainable Forestry Workshops, Hazel River Task Force, Biodiversity Task Force, Scenic Virginia Award for Best Protection of Scenic River Corridor.

Of the many lessons learned thus far, the following are most salient to this proposal: - county leaders and landowners expressed surprise at the results of our small watershed pilot study, thus demonstrating the usefulness of empirical field studies for public education purposes - percentage of riparian buffer areas that are forested is unacceptably low in some subwatersheds; - for a conservation-minded county, participation in some cost-sharing BMP programs is lower than expected; - each landowner confronts a unique set of challenges and factors in making decisions to change land uses and management practices; - strong collaboration and coordination among nongovernmental organizations, local government, and regional groups could bring multiple tools and incentives to bear on land management improvements and conservation; - public discourse regarding watershed protection will most productively focus on private landowner decision making.

D. Methodology

We derived components of an effective plan from the book published in 2004 by VA-DCR entitled *Local Watershed Management Planning in Virginia: A Community Water Quality Approach*. We find the only feasible way to address all eight components is through an iterative process: the community's learning from one phase helps to define the level of specificity and challenge at the next phase. The following chart summarizes these iterations through three phases of our work for each of the 8 components.

DCR Recommended Plan Component	Phase I Methods 2003 - 2004	Phase II Methods 2005 - 2006	Proposed Phase III 2006 - 2007
1) Identify and involve stakeholders	Public education events pro-actively engaging range of stakeholders. Initiated Water Quality Advisory Cttee to County Government	Comprehensive survey in Upper Thornton watershed; Coord. w/ SWCD, regional commission, county gov't. Build partnerships.	Apply citizen survey results. Coordinate with major landowners. Public educ. re riparian buffers. Public comment w/ local & state govt agencies.
2) Establish vision & goals	Strategic planning workshops with local, state, regional	Create baseline database; survey interests in Upper Thornton	Establish county-wide understanding, vision and goals

	experts.	subwatersheds;	focusing on riparian buffers.
3) Assess watershed & identify critical concerns	Initiated GIS database; thematic maps of topo, land cover, slopes, streams, etc. for 2004 Comp. Plan.	Env. inventory in GIS database; vulnerability assessment for one watershed; field study in one subwatershed.	Extend vulnerability assessment to all watersheds in county. Focus on most vulnerable subwatersheds.
4) Institutional & regulatory framework	Identify and build relationships with federal, state, regional, local agency people.	Learn about Trib Strategy, TMDL, E&S ordinances, comp plan, cost-sharing BMP's; easements, PDRs.	Coordinate all tools and incentives for protecting and restoring riparian forested buffers.
5) Set goals	General directions for sustainable forestry, agriculture, riparian buffers, E & S control.	Use Trib Strategy input deck for 2010 as provisional quantified goals.	Quantify baseline and goals data for all riparian buffer BMPs, easements, in high priority areas.
6) Identify strategies, action plans	Public education re individual landowner roles and options for watershed protection.	Build inventory, assess watersheds, identify most vulnerable areas. Landowner contacts re CREP, other cost-sharing programs for ag. land management and BMP imp.	Coordinate orgs, incentives: CREP; cost-sharing for BMPs; riparian easements; PDRs; zoning, ord's for stream protection; public educ.; assist for pond mgmt, riparian buffers.
7) Identify resource needs	Primary focus on sources of technical assistance in forestry and agriculture and land management.	Resources for data, interpretation, legal and reg. info, BMP impl, easements, local govt capacity.	Identify cost-effective incentives. Coordination and collaboration among agencies, organizations.
8) Provide progress benchmarks	Primary focus on engaging participation of wide range of stakeholders.	Establish baseline information on watershed health and vulnerabilities. Prioritize needs. Identify feasible water quality measures.	Focus on benchmarks (riparian buffer BMP acres implemented) within framework of percent riparian buffer areas forested.

Task 1. Extend Watershed Vulnerability Analysis to all six hydrologic units in the County.

For the Upper Thornton River watershed (94 square miles), we delineated subwatersheds of 10 square miles or less and rated each subwatershed's protection level based on percentages of the following: forested land cover, land protected by the Shenandoah National Park, private land in conservation easements, streamside buffer area that is forested. We added points for large average parcel size and acres of BMP implementations, and assigned unfavorable points based on designated impaired waters and other negative factors such as the amount of riparian buffer area intersected by roads. After conducting an expert review of the assessment model as applied in the Upper Thornton, we will modify and extend the model to those portions of the other five hydrologic units that lie within Rappahannock County, adding other factors as we obtain and interpret the data. We will use the net favorable point score to determine the Rural Quality Point total for each subwatershed and to identify highest priority lands for attention in the proposed project.

Task 2. Build new land cover classification map as baseline for assessing future progress

In order to monitor long-term progress towards increasing the forested riparian buffer acreage, we need higher resolution, current map of land cover categories. Our present baseline estimates are based on the National Land Cover Database (NLCD), which is not at sufficient resolution for analyzing accurately small areas such as our county, and which is not current. The County has ordered satellite multi-spectral imagery to be obtained after leaf-out in the summer of 2006. We will use that imagery and image analysis tools to create a new land cover classification for the county, applying the NLCD classification scheme. One of our partners donated \$1500 to purchase a software license for the high school for the ERDAS Imagine software and we will use this to teach students to conduct land cover classification.

Task 3. Engage Agricultural Landowners

The primary point of contact with agricultural landowners is a staff person from the CSWCD/NRCS. Landowners within high priority subwatersheds will be identified to CSWCD staff by RappFLOW. In cases where CREP or other cost sharing programs are insufficient incentive or too restrictive for the landowner, we (the partnership of several conservation groups) will seek additional incentives, such as purchase of riparian easement through private donations or the county PDR program, assistance with cash flow, or combinations

of these.

In addition, “Subwatershed teams” represent stakeholders within a small (10 square mile) area and are focused on local issues of concern in a neighborhood. Landowners who have implemented BMPs on their land within the subwatershed serve as demonstration sites and testimonies to the benefits of these practices. RappFLOW will support these teams through the “My Watershed” section of the web site and by recruiting volunteers to conduct field work such as water quality sampling requested by the subwatershed team.

Task 4. Develop pilot program for stream and pond vegetative buffers on non-agricultural land

On non-agricultural land we intend to create or restore at least 40 acres of forested buffer through a pilot program, and to learn what incentives are most cost effective in getting landowner participation. We will raise funds to pay for trees and shrubs, and recruit volunteers to be trained and supervised by CSWCD and VA DOF in site preparation and planting. We will hold workshops for landowners who do not qualify for agricultural BMP cost-sharing programs to learn why and how to preserve or restore vegetative cover to land adjacent to streams and ponds. The Biodiversity Task Force of RLEP will take charge of the pond management aspects of the research, publications, technical assistance and workshops. For interested landowners whose situations rank highest on a set of criteria for project selection, we will follow up with CSWCD and DOF assistance in design and implementation, using native plants, shrubs and trees. Criteria for site selection include site suitability, landowner cost sharing, educational value of the location, wildlife corridors, impaired streams, and subwatershed vulnerability. Landowners who desire public recognition will be: - provided with a sign acknowledging their stewardship, - showcased in articles in the local press and - used as sites for other workshops. If this approach is successful, we will have a sustainable program to educate and assist “suburban” landowners in creating riparian buffers and effective pond management.

Task 5. Identify the most cost effective incentives

For effective watershed management planning, we must understand what combinations of incentives are most cost effective in helping landowners to make and implement land management decisions resulting in vegetative riparian buffers. We are applying to the Virginia Water Resources Research Center for graduate students to serve here as summer interns. They will conduct structured, in-depth interviews with landowners at different stages in this process (awareness, education, site survey, decision making, implementation, maintenance) to ascertain what are the cultural, conceptual, economic, environmental and other factors that are affecting their decisionmaking at that stage. Analysis of these (anonymous) interviews, along with interpretation of the results of the landowner/resident survey, will be provided to the Planning Commission and made available on the rappflow web site.

Task 6. Strengthen Riparian Buffer Protection Capability in Rappahannock County Government

To help implement policies of the County’s Comprehensive Plan, the partners will work with the Planning Commission, Farmland Preservation Program, and the Water Quality Advisory Committee to develop a proposed overlay district or riparian buffer ordinance that would apply to future development. We will invite representatives of neighboring counties that have implemented similar capabilities to speak at meetings of the commission or committee. We will undertake this task in conjunction with other ordinance review activities planned by the County for 2006-2007 as part of the Water Quality Improvement Fund project.

E. Dissemination

Our target audiences include the general public, county government and community leaders, volunteers, landowners, financial contributors, organizations we partner and coordinate with, and civic groups such as scouts, 4-H, garden clubs, and regional groups interested in our model. Our methods for reaching these groups include the following:

Local Newspaper: Upcoming Events notices weekly; contributed articles and photos monthly on water issues, special interest features and assessment findings.

Web site: news, upcoming events, schedules, reports, maps, press, resources, partners, photos of volunteers.

Partner Organization Activities: CSWCD, Board of Realtors, RCCA, RLEP, Cooperative Extension will assist in dissemination and outreach as part of their regular activities.

Workshops: at least three on the subject of riparian buffers and pond management.

Meetings: Quarterly update reports at meetings of the Board of Supervisors, Planning Commission, Water

Quality Advisory Committee; public hearings;

Printed materials: Volunteer packets; brochures on pond management and riparian buffers; special interest posters; fundraising letters and promotional materials; workshop books and worksheets; maps; field worksheets; record-keeping forms; technical reports; survey instruments. In collaboration with the Board of Realtors, we will prepare materials to be provided to new and prospective purchasers of property to assist them in preserving and restoring forested buffers on their land.

DVD slide show: photos of exemplary practices; interviews with concerned citizens

Meetings: quarterly updates of progress to the Board of Supervisors; status reports at meetings of the Water Quality Advisory Committee (RappFLOW is a member); CSWCD Board meetings; presentations at civic organizations, regional groups. Regional and state watershed and conservation meetings.

Field events: training in stream observation protocol, water quality testing, site preparation, planting.

Artistic exhibits: participatory exhibits for purpose of building awareness of basic concepts such as the functions of riparian vegetation.

Fund Raising events: tree sales; donor luncheons; BMP site tours.

Demonstration Sites: Landowners who have implemented BMPs host groups to learn from their sites.

Public Resource Library: We are joining with two other nonprofit organizations to establish a public access place in Sperryville where RappFLOW will house and maintain a library of resource materials on watershed protection, sustainable agriculture, sustainable forestry, and related topics.

F. Partner Justification and Community Involvement

RappFLOW as a volunteer organization and Rappahannock County as a local government are conducting their first watershed management planning effort. Not explained above are additional plans and programs the County government will undertake with support from the VA Water Quality Improvement Fund's capacity-building fund for local governments, CSWCD, and RappFLOW.

Beverly Hunter will serve as Project Director for the proposed project. She has served in leadership roles in RappFLOW since it's founding in 2002. She is a graduate of the Virginia Natural Resources Leadership Institute (2005) and was awarded a Professional Certificate in GIS from George Mason University in 2004. She has over 30 years of experience in directing large research and development projects for government, industry, and academic institutions.

This project plan was developed in collaboration with, and reviewed by, the individuals and organizations shown in the table below. **Please see letters of support in Attachment A**

Partner/Collaborator	Commitments/ Cost Sharing
County of Rappahannock (John McCarthy)	Fiscal agent; cost sharing ; satellite imagery; WQAC
Culpeper Soil and Water Conservation District (Greg Wichelns, Monira Rifaat, Cliff Miller) and NRCS	peer review, CREP and BMP consultation and implementation, education and outreach, and consultation for leadership and direction
Hal Hunter (contributor)	Cash: \$2900; volunteer time
Krebser Fund (Sarah Gannon)	Coordination for conservation easements
Mount Vernon Farm (Cliff Miller)	Venue for field training, CREP & farm demos
Piedmont Environmental Council (PEC) (S Gannon, C Miller)	conservation specialist staff
Piedmont Research Institute (Beverly Hunter)	Project Director; mapping, GIS assessment and analysis, reporting
Rappahannock Board of Realtors (Philip Strange, Kaye Kohler)	Public education/outreach
Rapp. County Conservation Alliance (RCCA)* (Sharon Pierce)	Public education, dissemination; coordination with easements
Rappahannock County Health Department (Medge Carter)	involvement in events related to public health, volunteer support
Rappahannock County High School (Roger Mello)	GIS class participation in project; GIS lab; field trips
Rappahannock League for Environmental Protection (RLEP) (Paul Farmer, Pam Owen)	Cash: \$1500. pond management; core volunteers, event planning. Outreach and publicity.
Rappahannock Nonprofit support center (Bridget Chisholm)	Share office/meeting space; nonprofit support
Rappahannock-Rapidan Regional Commission (Jeff Walker)	technical assistance
Virginia Cooperative Extension (local office) (Kenner Love)	guidance on targeted landowner outreach, particularly in agriculture
Virginia DCR (Matt Criblez)	Technical assistance; strategic planning
Virginia Department of Forestry (Mike Santucci)	Technical assistance; educational materials; volunteer training
Volunteer Coordinator (Jean Pfefferkorn)	Volunteer and outreach coordinator

Other organizations also provide technical assistance and data on an as-needed basis e.g. VA DEQ (especially Jim Beckley), Shenandoah National Park (Dan Hurlbert), Health Department (Medge Carter), VA Outdoors Foundation (Jeff Matthews), the County Water Quality Advisory Committee. We plan to build new collaborations with additional groups such as the Farm Bureau, Master Gardeners Assn, VA Native Plant Society, Rural Madison.

Volunteers. At least 70 persons have contributed time and expertise thus far to the Phase II (current) project in the Upper Thornton River watershed. Expertise of key participants has included (for example) cattle farming, site design for low impact development, conservation planning, GIS analysis and mapping, photo interpretation, erosion and sediment control permitting, hydrological modeling, wetlands biology, BMP and CREP implementation, forest management, large-scale watershed management, conservation easements, horticulture, environmental law, photography, journalism, water quality monitoring, environmental education, and accounting. While the collective talents are amazing, it has been challenging to coordinate the availability of a specific needed volunteer's skill with scheduled activities. Last November we recruited a professional volunteer and outreach coordinator with extensive local connections and experience. The coordinator is establishing a volunteer management system. It includes: policies and procedures, defined volunteer positions, interviewing and screening, recruitment, training and incentives, volunteer database, record keeping, and publications and media presentations for recruitment, outreach and education. An orientation will help new volunteers understand the mission of RappFLOW and their role in it. Volunteers will receive an information package with details of project plan, maps, job descriptions and expectations, contact information, and forms for record keeping. Volunteers will complete an application to provide information about their interests, experience, watershed concerns and contact information. Landowners who are new to the county are typically supportive of conservation goals but unfamiliar with the means of implementing such goals.

III. Evaluation

A) Evaluation Logic Framework. Please see page 10.

B.) Potential Negative Impacts

We will not know whether the pilot program of special incentives for landowners can or should be sustained until after the pilot program is tested and evaluated. There is the risk that after the pilot program has ended, landowners who did not participate in the pilot program will feel that they should receive such incentives in order to implement similar practices on their land.

C) Transferability

- To our knowledge, our subwatershed assessment model is uniquely appropriate for and can be adapted by other rural communities. We modified this model from one used by the CWP that relies heavily on the factor of impermeable surfaces, which are less relevant for a rural county.
- The five-county Board of Directors of the CSWCD has endorsed this project, reflecting their belief that our work will be useful in the other counties of our SWCD.
- Our approach to watershed management planning processes emphasizes proactive efforts to “hear all voices.” Techniques we use to accomplish this, such as our interest survey, can easily be used in similar jurisdictions. Our findings for most cost-effective incentives will be useful for other rural areas.
- We rely heavily on GIS technology that would be difficult to use if a community did not have access to this technology; however the technology is becoming more widespread and the georeferenced data layers are increasingly available for all jurisdictions.

D) External Effects

If Federal funding for CREP is reduced for FY 2007, this will reduce our ability to increase acres of agricultural riparian buffers.

EVALUATION LOGIC FRAMEWORK

Project Name: People, Land and Water in Rappahannock County

Organization: RappFLOW

Activities →	Project Outputs →	Post-Project Outcomes →	Indicator →	Baseline →	Projected Project Output →	Projected Post-Project Outcome
Coordinate among SWCD / NRCS program staff, RappFLOW volunteers, county agencies. Identify highest priority ag & forest land for assistance based on subwatershed vulnerability assessments.	Individual landowner discussions, technical assistance, land management plans, and cost sharing agreements.	Reductions in nutrients, erosion, sedimentation, and bacterial impairments of streams and ponds by protecting and restoring forested buffers and fencing out livestock. Improved habitat for fish, wildlife, recreation.	Acres forested in streamside buffers Agricultural and Forestry BMPs	972	1069	1,704 (Trib Strategy Goal for 2010)
Activities →	Project Outputs →	Post-Project Outcomes →	Indicator →	Baseline →	Projected Project Output →	Projected Post-Project Outcome
Hold workshops for non-ag (suburban) landowners. Provide assistance in design and implementation of veg. buffers for ponds and streams. Publicize model buffers.	Sustainable program to educate and assist suburban landowners in creating riparian buffers.	Model vegetative buffers on non-agricultural lands. Increased public awareness, action, in managing streamside and pond-side vegetation.	Acres forested in streamside buffers Suburban/mixed-open BMPs	36 landowners with streams, ponds, and no forested buffer	Subset of the 36 landowners creating 40 acres forested buffer	908 (Trib Strategy Goal for 2010)
Activities →	Project Outputs →	Post-Project Outcomes →	Indicator →	Baseline →	Projected Project Output →	Projected Post-Project Outcome
Obtain 5-meter resolution multispectral imagery of county. Apply image analysis to classify land cover using NLCD schema.	5-meter resolution land cover classification map for 2006.	Increased accuracy of analysis of riparian buffer vegetative cover by subwatershed, and monitoring progress. Field data collection for ground truthing of map.	Locations of acres forested in streamside buffers	NLCD at 30 meter several years old	Local land cover database at 5 meter as of 2006	Local land cover database in 2010 for comparing progress.