PRETTYBOY WATERSHED

SOURCE WATER ISSUES REPORT

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INTRODUCTION

The Prettyboy Source Water Issues Report was originally designed as a tool to guide discussion at the November 2002 Source Water Analysis Workshop. After the Workshop, we reviewed, revised, and finalized the report with feedback from the local committee. Our goal was to develop a report that presents a realistic and agreed-upon analysis of local source water issues and recommendations to assist the Stewardship Exchange Team and the community as they develop implementation strategies for land protection and restoration in the Prettyboy Watershed.

Specifically, the purpose of the Report is to:

1. Provide background and context on the watershed and the jurisdictions within it for the Stewardship Exchange Team's visit in early April 2003,
2. Outline the primary drinking water protection issues in the watershed, based on existing research and the knowledge of local professionals,
3. Identify how growth management, land protection, forest management and restoration can be used to address those issues,
4. Identify the most viable funding sources for both protection and restoration; and,
5. Present maps that can be used as part of a 'family of maps' that identify potential priority areas for protection and restoration.

The Source Water Issues Report presents the analysis and observations of the project partners, based on feedback from our initial kickoff meeting, and existing research – including surveys, one-on-one discussions with local committee members, and review of the documents identified below:

- Baltimore County Integrated Watershed Management Program Website – Department of Environmental Protection and Resource Management
- Baltimore County Master Plan 2010
- Carroll County: Master Plan for the Future: Adopted December 20, 2000
- Feedback from committee members on the Draft Source Water Issues Report December, 2002
- Funding Analysis, conducted by TPL's Conservation Finance Department
- Reservoir Watershed Protection 1994 Public Awareness Survey. January 1995. Prepared for the Reservoir Watershed Protection Program by The Schaefer Center for Public Policy and the Baltimore Metropolitan Council.
- Reservoir Water Quality Assessment for Loch Raven, Prettyboy, and Liberty Reservoirs – Interim Report September 25, 2000
- Source Water Assessment Plans for the Towns of Hampstead and Manchester in Carroll County, MD Prepared by Maryland Department of Environment's Water Supply Program October 2002
- Summary notes from the Source Water Stewardship Project Kick-off Meeting
- Surveys conducted by TPL with Jim Slater & Bill Powell (Carroll County), Joe Heffner (York County), Wally Lippincott & Bill Stack (Baltimore County), Gould Charsee (Baltimore Metropolitan Council), Charlie Conklin (Gunpowder Valley Conservancy) and Julie Enger (TPL-MD)
- The Baltimore County Conservation Easement Program. Prepared by Promoting Preservation
- Watershed Modeling, conducted by the University of Massachusetts
- Watershed Restoration for Reservoirs in the Gunpowder: USFS Clean Water Action Plan Focus Funding Proposal. Prepared by MD DNR Forest Service. Jim Mallow November 22, 1999.
- 2000 Action Report for the Reservoir Watersheds by the Reservoir Watershed Protection Committee and the Baltimore Metropolitan Council

SUMMARY OF FINDINGS

THE WATERSHED

The Prettyboy Watershed, an 80 square-mile watershed with its headwaters in York County, Pennsylvania, stretches into Carroll County, Maryland and on into Baltimore County where it feeds the Prettyboy Reservoir. The Prettyboy Reservoir is one of three reservoirs in the Baltimore Metropolitan System that collectively provides water to 1.8 million consumers in Baltimore City and surrounding areas. Within the Prettyboy Watershed, there are also two public water systems in Carroll County that supply groundwater to residents in Manchester and Hampstead. In the York County portion of the watershed, there are no community water systems.

In general, most of the watershed has rolling terrain with steeply incised stream valleys. Steeper slopes occur in the ridge and valley section of the headwaters. The entire watershed is within the Piedmont province. Current land use reflects more than three centuries of social, economic, and demographic change. At present, the watershed has about 15 percent developed land, 47 percent agricultural land (dominated by cropland at 37%), and 38 percent forests, wetlands, and water (dominated by forests at 34%).[1] The largest contiguous block of forest borders the Prettyboy Reservoir; the remainder is fragmented into patches by agricultural and low-density residential land use.

Current land use in the Prettyboy Watershed: [2]

Developed	Cropland	Other Agriculture	Forests	Wetlands & Water
15%	37%	10%	34%	4%

The proportion of the watershed that is developed land is principally low density residential, with high levels of impervious surfaces and, therefore, challenges for stormwater management. The fragmentation of forestland in the watershed lessens the ability of forests to offset higher stormwater runoff and nonpoint source pollution.

It is often difficult to appreciate the net effect of unplanned development on source water quality, public health, and quality of life, as changes in land and resource use are incremental. The patterns and trends described in this report should communicate a sense of urgency around the need for source water protection. They should also project a sense of optimism about the expected benefits and results of proactive watershed management and land conservation. "The glass is (still) at least half full."

[1] Maryland Department of Natural Resources (2000), Pennsylvania Gap Analysis Project (1999), and York County Planning Commission.

[2] Maryland Department of Natural Resources (2000), Pennsylvania Gap Analysis Project (1999), and York County Planning Commission.

ECONOMIC USE OF LAND

Agriculture is the driving economic use of land in the Prettyboy Watershed. Baltimore County has a very diverse agricultural economy with large-scale grain farming, equine operations, dairies, and beef cattle as the primary farming activities, with grain farming being the primary land use.[3] Although agriculture continues to be the primary land use in Baltimore County, the number of farms decreased almost 15 percent from 1987 to 1997.[4] During that same time, the total market value of agricultural products in the County decreased almost 9 percent, according to the 1997 Maryland Farming Census.

In Carroll County, agriculture has also been the predominant land use historically and continues to be an important industry today. Between 9,000 and 10,000 people are directly employed in farming, with additional jobs generated in the agribusiness sector, which supports the farming industry.[5] Carroll County has a diverse grain and livestock agricultural mix. Of the grain crops, the county is ranked third in oats and fourth in corn, in the state. It also ranked third in milk production in 2000. According to Carroll County's Agricultural Census, land in farms decreased about four percent from 1987 to 1997[6] and the number of farms dropped by 47 percent between 1960 and 1992.[7] However, the 1997 Maryland Farming Census showed an increased market value for agricultural products in Carroll County, up to $71 million from $55 million in 1987.

In York County, the Prettyboy watershed covers land in five townships. Land use within the watershed is mostly farmland, like much of the rest of the County. As is the case in Baltimore and Carroll Counties, farming has been the primary economic use of land, but agriculture has been in decline in recent decades. The number of farms in York County has decreased 43 percent since 1969, from 2,978 to 1,698 in 1997, and acres in farmland has decreased 20 percent, from 325,330 in 1969 to 261,164 in 1997. York County's primary crops continue to be corn, wheat, soybean and hay.[8]

Over the last 30 years, there has been a steady decline in the acreage devoted to farming throughout the watershed and agriculture has been overshadowed by the non-agricultural economy, which employs the majority of residents. However, maintaining the viability of agriculture continues to be important to the local economy, culture, and quality of life. According to the Baltimore and Carroll County Master Plans, in order to maintain a viable agriculture industry, productive farmland must be retained in large contiguous blocks to maintain the critical mass which is required by most commercial agricultural operations.[9] [10] The grain industry, which operates most efficiently on a large scale and is the largest agriculture industry on the basis of acreage, depends on the availability of lease-able land to survive. In fact, the ratio of land leased to land owned is 3:1 (in Baltimore County). Tax incentives have thus far made it attractive for owners of large amounts of productive land to lease lands to grain farmers and other legitimate farm operations.[11]

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[3] Baltimore County Master Plan, p. 220-221. Agriculture contributes more than $400 million to the County's economy. However, the County's non-agricultural economy with 365,000 jobs, overshadows agriculture.
[4] 2001 Agricultural Profile - Maryland Agricultural Statistics Service.
[5] Carroll County: Master Plan for the Future, Chapter 6: Agriculture.
[6] Maryland Agricultural Statistics Service, County Profiles (Carroll County) (1997).
[7] Carroll County: Master Plan for the Future. Chapter 2: Past Present, and Future Trends
[8] Pam Shellenberger, Issues Report Review Comments, November 20, 2002.
[9] Baltimore County Master Plan, p. 221.
[10] Carroll County: Master Plan for the Future. Chapter 2: Past, Present, & Future Trends.
[11] Baltimore County Master Plan, p. 221.

LAND USE TRENDS AND GROWTH MANAGEMENT[12]

As is the case in many rural areas around the country, residential growth is quickly encroaching on both farm and forest land in the watershed, particularly in Carroll and York Counties. In Baltimore County, although new houses continue to be built, the rate of development is decreasing as a result of down-zoning in recent years.[13] Although communities in all three counties have increased efforts to manage and coordinate growth through land use regulations, the success of these efforts varies from county to county and from community to community.

Baltimore County has the most restrictive zoning laws in the watershed and has been the most proactive about managing growth and protecting water resources. York County does not have a standard approach to growth management, because of the unique government structure in Pennsylvania; however, the local governments in the portion of York County within the watershed were the first in the county to implement progressive agricultural preservation techniques and the first to participate in regional comprehensive planning efforts. Of the three Counties in the watershed, Carroll County has grown at the fastest rate over the past two decades and has the highest growth projections for the next two decades.

Baltimore, Carroll, and York Counties have an array of land use regulations to protect water quality including stormwater management controls, sedimentation and erosion ordinances, and well and septic system standards. Baltimore County has a range of conservation zoning categories which name 'watershed protection' as a goal. Carroll County has agriculture and conservation zoning, with much of the land in the Prettyboy Watershed overlaid with agricultural zoning.

Representatives from each county, when interviewed, cited the difficulty of achieving coordinated planning at all levels of government with so many plans and ordinances operating independently. The most telling comment from the county representatives was that though a good regulatory framework exists in each county, it is difficult to tell how these regulations are collectively mitigating the impact of growing development and poor land management.

Though general information for Baltimore, Carroll and York Counties is available from county masterplans and other existing reports, no analysis regarding growth and development is available for the Prettyboy Watershed as a whole; and no integrated data sets exist for the watershed to help with this analysis.

[12] Much of the information in this section came from telephone interviews with Wally Lippincott (Baltimore County), Jim Slater (Carroll County), Gould Charsee (Baltimore Metropolitan Council), Joe Heffner (York County) and Bill Powel (Carroll County).

[13] Conversation with Don Outen, Baltimore County (November, 2002)

County	Percent of County in Watershed	Percent of Agriculture in Watershed	Percent of Forest in the Watershed	Percent of Developed Land in the Watershed
Baltimore[14]	6%	43 %	48 %	8 %
Carroll [15]	7 %	41 %	25 %	25%
York [16]	< 1%	69 %	N/A[17]	28 %

Note: The previous percentages are estimates provided by the respective county governments. Because each counties' categorization of land use is slightly different and at varying levels of completion, it is difficult to make exact comparisons between the three counties.

County	Percent of Population in Watershed	Current County Population	Population Growth from 1980-2000	Projected growth from 2000-2020
Baltimore[18]	<1%	755,000	15%	3%
Carroll	6.1%	151,000	56%	28%
York[19]	< 1%	382,000	22%	9%

As development continues to increase, residents' awareness of water quality issues grows. Based on a 1994 Public Awareness Survey, prepared by the Baltimore Metropolitan Council, survey respondents in Carroll and Baltimore Counties were aware that nonpoint sources of pollution was the greatest threat to water quality in the reservoirs, identifying home lawn and garden fertilizers and pesticides as the greatest cause of impairment.20

Carroll County

Carroll County is one of the top six counties in the state of Maryland with the least protective zoning for agriculture.[21] The high intensity of development pressures, combined with the least protective zoning, has contributed to agricultural land clearing, forest fragmentation, road and utility line creation and smaller parcel-by-parcel timber harvests. Keeping agricultural areas intact and limiting residential subdivisions in the watershed is a first step towards protecting water resources.

Carroll County has Conservation Zones, which are intended to maintain a maximum density of houses on lands that are critical for protecting natural resources; however, Carroll's Conservation

[14] Don Outen, Baltimore County DEPRM, March 2003 data.
[15] Jim Slater, Carroll County, March 2003 data.
[16] Pam Shellenberger, York County Planning Commission, March 2003 data.
[17] As of March 2003, "forested land" is yet not a land use category in York County, PA. At this time, forest land is lumped together with "Agriculture."
[18] Census 2000 – Maryland Department of Planning. Carroll County population grew from 96,356 in 1980 to 150,897 in 2000, and is expected to reach 192,700 by 2020. Baltimore County population grew from 655,615 in 1980 to 754,292 in 2000 and is expected to reach 797,900 by 2020.
[19] Pam Shellenberger, York County Planning Commission. York County population grew from 312,963 in 1980 to 381,751 in 2000 and is projected to increase to 415,000 by 2020.
[20] Baltimore Metropolitan Council, Reservoir Watershed Protection 1994 Public Awareness Survey, prepared for the Reservoir Watershed Protection Program by The Schaefer Center for Public Policy and The Baltimore Metropolitan Council, January 1995.
[21] Maryland Agricultural Land Preservation Foundation Task Force Report. August 21, 2001.

Zone allows one house per three acres. Carroll County's Conservation Zone density has yet to be updated and reduced, as the Agricultural zoning density has been to one clustered lot for each 20 acres.[22]

One of the issues that complicates growth management in Carroll County is the size and multi-jurisdictional nature of the Community Planning Areas (CPA), where most new growth is targeted. The CPAs are defined by the county and, although CPAs are centered around existing towns where town zoning applies, they extend well beyond town boundaries, where the county controls land use. Much of the growth that has taken place in the CPAs has been on county land. This has led to conflicts between the county and the towns over land use planning and growth management. [23]

Another growth management issue in Carroll County is the proliferation of low-density housing in designated growth areas. Although 71 percent of new houses in the county were built in the CPA's, the remaining developable land is quickly diminishing as a result of low-density development patterns. Slightly less than half of all the estimated remaining zoning capacity is in the CPAs. This leaves approximately 10,000 units to be developed in the rural parts of the County which is contrary to the goal of agricultural preservation.[24]

Although Carroll County Commissioners have been more pro-growth in recent decades, two of the three County Commissioners were voted out in the Fall of 2002 due to their pro-growth strategies. The newly elected commissioners take a more moderate approach to growth management.[25] The primary concern among the electorate has been rampant growth without sufficient infrastructure to support it, which has strained roads, schools and water resources, particularly in the southern part of the county. [26]

As a result of these concerns, eight Carroll County towns, along with two town citizen councils, signed a six-point plan in the Summer of 2002 to ensure that the county will approve no new residential growth without the facilities to support it and endorsed a proposal to form a county-wide council of towns to work with the county on growth control, land use, transportation and other regional issues. At a public hearing before the Fall elections, residents urged commissioners to rescind permits in congested areas, raise impact fees, and use zoning to protect farmland. [27]

It is unclear at this point how the new Commissioners will approach growth management and what strategies will resonate with the public; however, it is clear that a change in county leadership and increased public awareness and concern about growth have created an excellent opportunity for promoting policies that better protect water resources, and there is interest in trying to find ways to collaborate on regulatory and voluntary tools that can cooperatively protect land in the watershed.

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[22] Bill Powel, Issues Report Review Comments, November 12, 2002.
[23] "Carroll County Commissioners Feel Pressure from Towns to Coordinate Planning and Zoning," *Baltimore Sun*, July 19, 2002.
[24] Carroll County: Master Plan for the Future, Chapter 8: Development.
[25] "Voters Choose Moderates in Growth-Dominated Carroll County Commission Primary," *Baltimore Sun*, September 11, 2002.
[26] "Water Treatment Plant is Likely Casualty of Carroll County Election," *Baltimore Sun*, September 15, 2002.
[27] "Carroll County Towns Want Countywide Council to Work on Regional Growth Issues," *Baltimore Sun*, August 22, 2002.

Baltimore County

Baltimore County has the most restrictive land use regulations in the watershed, with over 12,648 acres of land in the watershed zoned for Agriculture (R.C.2) , with parcel sizes of 1:50 acres; another 12,418 acres of land zoned for Watershed Protection (R.C.4), with parcel sizes of 1:5 acres and clustering requirements for parcels greater than 10 acres; and another 383 acres zoned Rural Residential (R.C.5), with parcel sizes less than one acre. Approximately half of the land zoned for Watershed Protection (R.C. 4) is publicly-owned land (City of Baltimore) surrounding the Prettyboy Reservoir. Of the land zoned Rural Residential (R.C. 5) the tax record data indicate there are only 11 parcels, totaling 15 acres, that have yet to be developed. Given the trend of down-zoning in recent years, increased levels of development in the Baltimore County portion of the watershed is low.[28]

York County

York County has 72 municipalities, five of which are in the Prettyboy Watershed. All municipalities in the county have full authority for land use decision-making, which complicates efforts for inter-jurisdictional resource protection efforts. There is a county plan, but planning in individual jurisdictions is not required to be consistent with the county. Three of the five local governments in the watershed have achieved consistency with the county plan by establishing Growth and Rural Areas (most are rural), and the watershed communities of Cordorus and Shrewsbury are participants in the county's agricultural protection zone. Although all of the towns have implemented zoning and subdivision ordinances, those ordinances do not necessarily reflect county-wide objectives and do not necessarily provide protection for water resources.

Growth and rural zoning designation in York County does not include density restrictions; rather, it encourages the adoption of agricultural best management and soil conservation practices. The majority of the land within the watershed in York County is zoned for agricultural, conservation and natural resource protection; however, densities range from one lot per three acres to one lot per 5 acres – much more dense than similar zoning designations in Baltimore County.[29] The conservation and natural resource zoned lands primarily consist of stream valleys, flood plains, wetlands, steep slopes, and woodlands. In York County, land use regulations for the protection of water quality such as buffers, zoning, targeted development areas, stormwater management, etc., are used to some degree, but unfortunately, there is not one standard approach and the intensity of implementation varies throughout the County.

[28] Don Outen, Issues Report Review Comments, November, 2002.
[29] Pam Shellenberger, Issues Report Review Comments, November 20, 2002.

PRIMARY THREATS TO WATER RESOURCES

Based on an analysis of available data and research, interviews with local professionals, and discussions from committee brainstorming sessions, the following challenges and strategies have been identified as high priority for protecting source water in the Prettyboy Watershed. This analysis is a framework to guide discussion during the stewardship exchange and is not intended as final recommendations. After the stewardship exchange, the exchange team will submit a report to the community that outlines challenges, recommended strategies and action steps for the communities in the watershed.

BACKGROUND

Within the Prettyboy Watershed, there are three primary public water sources: the Prettyboy Reservoir, which provides surface water to Baltimore City residents as part of a three reservoir system; the Town of Manchester Water Supply System, which consists of twelve wells and three springs with five of those wells and one spring in the Prettyboy Watershed; and the Town of Hampstead Water Supply System, which consists of fourteen wells with no more than four wells in the Prettyboy Watershed. Surface water that drains to the Prettyboy Reservoir is threatened by different sources and contaminants than the ground water supplies in Hampstead and Manchester.

The State of Maryland has completed final Source Water Assessment Plans (SWAP) for both the Towns of Hampstead and Manchester in Carroll County. The SWAP for the Prettyboy Reservoir (expected completion date Spring 2004) will provide further detail regarding the drinking water supply, including detail on current threats. It is our intent to incorporate this information into the planning and GIS analysis for the Prettyboy Watershed as it becomes available. No SWAPs are available for York County's portion of the Prettyboy Watershed because there are no community water supplies in that area.

SURFACE WATER

Of Baltimore County's three reservoirs, the Prettyboy Reservoir is the most impaired and has the highest algae levels. Dissolved phosphorus is suspected of being a primary contributor to excessive algae growth in the Prettyboy Reservoir. Phosphorous samples equaled or exceeded the standards set by the Reservoir Watershed Management Program 55 percent of the time.[30] The exact sources of high phosphorous loads to Prettyboy Reservoir have not been identified; however, phosphorous is likely coming from sediment erosion from farms, roads and construction sites, fertilizers on crops, home lawns and gardens, and wastewater treatment plants. In the Prettyboy Watershed, phosphorus from wastewater treatment plants has declined; however, phosphorus from nonpoint sources, which account for 70 to 90 percent of the phosphorus that reaches the reservoir, has remained high.

High phosphorous loads have caused oxygen levels in the reservoir to decline (eutrophication), which results in the growth of excessive algae. High Algae levels cause taste and odor problems and make drinking water more difficult and expensive to treat. In the past, scientists believed that phosphorous could be controlled by proper soil management because it binds to soil. Contemporary science is showing that when the upper 1 to 2 inches of soil are heavily saturated

[30] Reservoir Water Quality Assessment for Loch Raven, Prettyboy and Liberty Reservoirs, Interim Report, September 25, 2000, C-14.

with phosphorus, it can generate dissolved phosphorus, which moves with surface runoff, even when there is no soil erosion. Therefore, soil conservation strategies will not be sufficient to curb phosphorous runoff if they are not implemented with other best management practices, such as nutrient management and buffers.

In addition to high phosphorous levels, watershed managers are also very concerned about increasing chloride concentrations, although they are currently below EPA-recommended guidelines. Chloride concentrations continue to be increasing in the tributaries and reservoirs.[31] Chloride levels are most closely correlated with miles of streets and highways and commercial/industrial land uses. Road salt and de-icing of parking lots are probably the main causes. Conventional water treatment does not fully remove these chlorides and some industrial water users are incurring additional costs to separately treat for chlorides.[32]

GROUND WATER

Over the past four years, Baltimore County has participated with the Maryland and U.S. Geological Surveys in a comprehensive study of groundwater quality in the county. Overall, groundwater was found to be of high drinking water quality.

The primary threats to ground water supplies in Carroll and York Counties are nitrates (fertilizers), synthetic organic compounds (pesticides and fertilizers), and volatile organic compounds (benzene and other gasoline derivatives, such as MTBE). Nitrates and synthetic organic compounds come from fertilizers on crops and home lawns and gardens. Volatile organic compounds can come from multiple sources, such as historic or current commercial activity and underground storage tanks. Although we know that groundwater is also impacted by individual septic systems, the full extent of this impact will not be clear until the Source Water Assessments have been completed. [33]

[31] Ibid., C-28. Johns Hopkins first cited trend in 1978 study.
[32] 2000 Action Report for the Reservoir Watersheds, by the Reservoir Watershed Protection Committee, Baltimore Metropolitan Council, p. 64 – 69.
[33] Source Water Assessments from Manchester and Hampstead and Pam Shellenberger, York County Planning Commission

CHALLENGES TO PROTECTING GROUND AND SURFACE WATER

1. Inter-jurisdictional Planning and Watershed Management

The Prettyboy Watershed spans three counties and two states, and is used primarily as a drinking water source for the City of Baltimore, a separate jurisdiction outside the watershed. As a result of this geography, inter-jurisdictional planning and watershed management is critical to protecting water resources.

In 1979, the first Reservoir Management Agreement was signed by Carroll County, Baltimore City, Baltimore County, and numerous agencies as a mechanism to coordinate efforts to mitigate emerging pollution problems in the Prettyboy, Loch Raven and Liberty Reservoirs. In 1984, 1990 and again in 2003, local jurisdictions reaffirmed their support of the agreement by signing updated and strengthened declarations. Over the last two decades, cooperative implementation of the strategies outlined in the agreement has resulted in measurable improvements, such as a decline in algal levels.

Although the Reservoir Management Agreement and the inter-jurisdictional Watershed Technical Committee have encouraged cooperation among jurisdictions regarding management of point sources of pollution, such as wastewater discharge, there continues to be a need for coordinated management and prevention of nonpoint sources of pollution, such as residential and agricultural runoff.

2. Conservation of Forests and Farmland

In Prettyboy Watershed's high growth areas, forests and farms are quickly being lost to new residential development. The fragmentation and loss of forest land, particularly in riparian zones, and the development of agricultural areas in the headwaters, likely contributes to increased stormwater runoff, the degradation of streambank stability, and high sediment levels. The proliferation of housing may also be contributing to high phosphorous levels.

Agricultural preservation programs, although very active, have not been able to keep up with demand from landowners' or with the counties' goals for preservation.[34] Although agricultural land is most often used for new housing, forests are also being cleared and highly fragmented by development. (Historically, most of the forests have been cleared for agriculture; however, residential development is currently the greatest threat.)

3. Improved Land Management

Agricultural runoff is a likely source of high phosphorous and sediment levels in surface waters throughout the watershed, although the exact sources of these pollutants are not currently known. Gaps in riparian forests, combined with extensive cropland, lead to agricultural runoff and erosion of stream banks. Easement purchases on agricultural land has helped to curb development, but have not always led to the implementation of best management practices and the reduction of agricultural runoff.

[34] Baltimore and Carroll County Master Plans

More extensive implementation of agricultural best management practices, such as nutrient management and the restoration of riparian forests or grassed buffers, will be needed to mitigate agricultural runoff and protect stream corridors.

Both publicly and privately-owned forests are not being managed consistently for long-term sustainability. Based on research by the Maryland Department of Natural Resources Forest Service, a lack of active management of the city-owned forest surrounding the Prettyboy Reservoir, coupled with excessive recreational use, has threatened the sustainability of these forests and the quality of reservoir waters. Excessive deer populations (10 times historic levels) have cleared tree seedlings, leaving forests with no regenerating ability and vulnerable to catastrophic loss should something happen to the over-story. Over 84 percent of plots have no seedlings, when there should be several thousand seedlings per acre. Recreational use is higher than had ever been expected, contributing to increasing fecal coliform and sediment levels.

Research is currently underway on private lands, where heavy deer populations are contributing to a lack of regeneration on 80 percent of private forests. Woodlots are being divided into smaller and smaller parcels and owners are increasingly from urban areas, having little knowledge of forest management. Tenure of ownership has also decreased, contributing to lower levels of active management and a tendency to manage for short-term economic values rather than long-term sustainability. Currently, there is insufficient education of landowners on sustainable forestry practices and little monitoring or oversight of private forest management to insure that it adheres to state guidelines.

4. Landowner Outreach

Although surveys indicate that many residents in the watershed recognize that there is a link between land management and water quality, fewer landowners have the technical or financial resources necessary to improve land management practices and many do not understand the incentives available for conservation. In order to accomplish conservation goals and to improve management practices on farm and forest land, local program staff need to reach out to landowners and educate them on conservation and management options and funding sources, such as tax incentive programs.

5. Creation of Watershed Identity

As is the case in many watersheds, the Prettyboy watershed is not seen as a shared and interconnected resource by those who live in the watershed, those who drink the water – both ground and surface – and those who work on and manage the land.[35] Groundwater supplies in the headwaters are seen as a separate resource from surface water supplies in the reservoirs and activities in the headwaters are often not planned with downstream impacts in mind. Also, those who drink reservoir water do not live in the watershed and have very little sense of the threats to their source water.

Currently, there are very few organizational structures in place to support watershed-wide education, outreach and on-the-ground action. There is no watershed association, or equivalent organization, whose mission is to coordinate the protection of this resource throughout the watershed.

[35] Based on comments from local committee members, particularly grassroots and nonprofit organizations.

STRATEGIES FOR ADDRESSING THREATS

INTER-JURISDICTIONAL PLANNING AND WATERSHED MANAGEMENT

Developing a consistent regulatory framework and voluntary/market-based strategies to manage land and changing land uses will be critical to protect the reservoirs and groundwater sources from nonpoint source pollution. Currently, approaches to land management vary widely from jurisdiction to jurisdiction. Although land use regulations will continue to differ in each jurisdiction, there needs to be agreement on critical threats from nonpoint source pollution and coordination of regulatory and voluntary strategies to address those threats.

Strategies:

- **Use the Reservoir Agreement, reaffirmed in 2003, as a high profile tool to get local jurisdictions to cooperatively reassess threats to water resources throughout the watershed**, commit to goals for improvement and develop coordinated strategies to address agreed upon challenges. The agreement can also be a tool for building stronger support from state agencies as well as stronger local leadership for regional initiatives. The Reservoir Agreement should be expanded to include York County.

- **Consider using water quality goals of the Reservoir Agreement as a means to promote coordinated growth management throughout the watershed**. This will require analyzing development potential in the watershed and evaluating whether current density restrictions are low enough and whether resource-based zoning is targeted to most critical watershed land.

CONSERVATION OF FORESTS AND FARMLAND

Protecting Forests

Forest fragmentation and loss is one of the most critical threats to water quality and biotic integrity in the Prettyboy Watershed. The protection of mature, healthy forests, particularly in contiguous tracts in riparian areas, is needed to protect groundwater infiltration, watershed hydrology, and water quality. Healthy forests, which are becoming highly fragmented throughout the watershed, contribute significantly to maintaining water quality and quantity and the long-term health of water resources.

Over the past century, forests in the headwaters of the Prettyboy Watershed and along many small tributaries have been converted to farmland. This has produced an atypical pattern relative to many surface water supply systems in the northeastern U.S. that have forested headwaters, mixed land use of progressively higher density through the middle reaches, and urbanization in downstream areas.[36] By contrast, the Prettyboy Reservoir is bordered by an island of forest, due to the extensive City-owned reservoir reservation, that is surrounded by a patchwork of farms and residential development, with some of the most densely populated areas around the periphery of the watershed.[37] Fragmentation is not universal throughout the Prettyboy Watershed. Several

[36] Paul Barten, Appendix A Land Conservation, Restoration, and Stormwater Management: Priorities for the Prettyboy Watershed

[37] More than 6,500 acres of 66% of the 9,700 acre "Prettyboy drainage" subwatershed in Baltimore County is forested. Don Outen, Issues Report Review Comments, November 2002.

sub-watersheds adjacent to the reservoir have significant and generally contiguous cover – again, due to extensive city-ownership and management of these lands for water quality protection.[38]

The forest surrounding the watershed in the reservoir reservation cannot offset or mitigate pollutant loading from the middle and headwater reaches; however, its conservation and stewardship are critically important to regional biotic integrity and public health in Baltimore.

The potential influence of agricultural and residential land use in the headwaters, coupled with extensive farmland upstream from forests, suggests a need to protect remaining forested tracts and extend riparian buffers to help filter pollutants (before they reach the streams) and to maintain the integrity of the stream network.[39]

Although most of the forest loss in the Prettyboy Watershed took place earlier this century, according to the Maryland Forestry Task Force, forested land continues to be lost.[40]

County	1986 % Forested Land	1999 % Forested Land
Carroll County	25%	22%
Baltimore County	34%	27%

Outside of the city-owned reservation, much of the forested land in the watershed is owned by private landowners on small-to-mid -sized tracts. In Maryland, statewide figures show that the median privately owned forest tract is less than 10 acres.[41] It is difficult to purchase or protect these lands through existing land protection programs because they do not meet minimum acreage requirements.

Strategies:

- **Evaluate existing land protection programs to identify** (1) whether they provide sufficient incentives to protect forested land, not just agricultural land, (2) if their requirements allow for the protection of small to mid-sized forest tracts, and (3) what level of funding would be required to meet protection goals.
- **Create goals for land conservation activities that are scientifically justified as well as politically and financially feasible**. Conservation goals should incorporate, first, the value of certain kinds of land cover, e.g. forested lands; and secondly, a politically and financially feasible threshold for the number of conservation acres needed to sustain or protect water quality.
- **Use the GIS-based analysis developed by Baltimore County and the University of Massachusetts for this project to identify where land protection and restoration strategies can have the greatest impact in reducing pollutants**, particularly fertilizers, pesticides, chlorides and gasoline derivatives, from reaching source water. Because consistent data is not available across jurisdictions, a family of maps from different sources will be used for this project. In the future, local jurisdictions should look to develop an agreed upon set of data that is similar across county boundaries, so that an integrated set of maps can be used to analyze existing conditions and guide water resource protection activities.

[38] Don Outen, Issues Report Review Comments, November 2002.
[39] Specific data on the watershed had not been analyzed at the time of this report because it had not yet been made available.
[40] "Guiding Maryland's Forest Community into the 21st Century," MD Forestry Task Force
[41] Forests for the Bay, Environmental Land Institute (2000), p. 3.

- **Identify areas where natural resource protection goals overlap with recreation goals**. Increased recreational use of the public land surrounding the Prettyboy Reservoir is now straining those natural resources and clearly shows the need for additional recreation land.[42] Carroll County's "Greenways, Bicycle and Pedestrian Facilities Technical Report" outlines county goals for trail and passive recreation development, and Baltimore County's Master Plan identifies the need to delineate and coordinate the public use of resource preservation areas for added recreational benefits. York County is currently in the process of developing an Open Space and Greenways Plan that will be adopted as an element of the County Comprehensive Plan. Natural resource protection is a goal of the York County Plan and water quality issues have been raised as an important consideration.[43] When possible, areas identified by the Counties as high priority for recreation use should be overlapped with areas identified as key for water quality protection, so that both goals can be met simultaneously.

Protecting Farms

All jurisdictions within the watershed recognize the importance of protecting farmland in order to maintain the viability of the agricultural industry and to preserve the rural character and quality of life in their communities. As a result, agricultural land preservation programs have been successfully implemented throughout the watershed over the last 20 years. Through July of 2000, 37,454 acres of agricultural land had been preserved in Carroll County and 33,635 acres in Baltimore County. Through October 2002, more than 24,000 acres of farmland have been preserved through the York County Agricultural Land Preservation Program. An additional 4,000 acres, including farmland, woodlands, and open space, have been preserved through the Farm & Natural Lands Trust of York County, a voluntary easement program.

Although significant investments have been made in agricultural preservation, the purchase of easements has not kept up with demand. According to recent calculations, the current rate of preservation will not be sufficient to meet goals in either Baltimore or Carroll Counties.

In Baltimore County, preservation is barely keeping pace with development. Since 1982, approximately 1,000 acres per year of agricultural land have been protected, while approximately 1,000 acres per year have been converted to nonagricultural use. "If working farms continue to disappear at the current rate, there eventually will be insufficient agricultural resources available to continue to support the industry, and the rural landscape will be dramatically altered."[44] Conditions in the watershed are better due to down-zoning in Baltimore County and growth pressures in Carroll County steering away from watershed lands, but demand for agricultural preservation dollars still outstrips supply.

Baltimore County's goal is to target at least 80,000 acres for permanent preservation, which will require increasing the funding for agricultural preservation programs that permanently protect productive lands, and improving the existing easement programs to expedite easement purchases.[45]

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[42] "Comprehensive Forest Conservation Plan for the Baltimore Reservoirs," Appendix: City of Baltimore Reservoir Outdoor Recreation user Study Summary Report, by Robert Robertson and Jodi Michaud, p. 1.1.
[43] Pam Shellenberger, Issues Report Review Comments, November 2002.
[44] Baltimore County Master Plan, p. 238-240.
[45] Baltimore County Master Plan, p. 222.

Carroll County faces similar challenges. Between 1982 and 1992, agricultural lands in the County were converted to other uses at a rate of 1,800 acres per year. In 1996, the County increased funding allowing the preservation of 2,000 acres per year; however, the County estimates that it needs to preserve 3,750 acres per year to meet its goal of preserving 100,000 acres of tillable agricultural land. At the current funding level and easement value per acre, only 73,000 acres will be permanently preserved.

Strategy:

- **Increase public investment in agricultural land preservation programs**. The counties need to explore creative financing programs to increase the rate of easement purchase but also to prioritize lands in order to have greater collective impact in key areas in the watershed. Local funding options are offered below in the next section. Carroll County has had limits on the size of parcels allowable for the program. Dropping this requirement from 100 acres to 50 acres should also allow opportunities to focus in key areas with landowners ready to make commitments. The counties should explore how local funding sources could be strengthened and leveraged with state and federal sources. Programs to create stronger tax incentives, including tax credits, should also be explored in partnership with state research efforts.

IMPROVED LAND MANAGEMENT

Agricultural Best Management Practices

In addition to the challenge of increasing the rate of farmland protection, communities in the watershed also face the challenge of protecting water supplies from agricultural runoff, particularly phosphorous, sediment, nitrates and synthetic organic compounds, the primary threats to both groundwater and surface water. Although agricultural use of the land is clearly better for the environment than paving it for development, the County must assist the agricultural industry in implementing soil conservation, water quality and nutrient management plans that protect the soil and water resources of the county.[46]

The preservation of agricultural land is a high priority throughout the watershed and has led to extensive public investments in easements. Participating farmers are required to submit a resource conservation plan that should outline strategies to protect water quality and conserve soils; however, it is unclear how broadly these plans are being implemented and how effective they are at protecting water quality. The state's nutrient management program was created to address part of this problem, yet because it is a new program, implementation has not been as effective as originally hoped, and enforcement is limited.

Strategies:

- **Use public investments in agricultural preservation to more effectively protect water resources**. In addition to monitoring and evaluating existing plans more closely, strategies should be explored to create incentives for farmers to implement practices that better protect water resources without discouraging them from participating in the program.

[46] Baltimore County Master Plan, p. 224.

- **Restore and protect riparian areas in contiguous tracts in the headwaters.** Scientifically-grounded, politically and financially feasible goals should be set for restoration of riparian areas. High priority areas for restoration should be identified through maps and on-the-ground inspections.

- **Explore strategies to improve outreach and technical assistance to landowners to increase voluntary implementation of BMPs and participation in cost-share programs**

Forestry Best Management Practices

The Maryland DNR has developed a management plan for the publicly-owned lands immediately surrounding the reservoirs, and is currently evaluating privately owned forests in the remainder of the watershed, particularly the headwaters.

Much of the forested land in the watershed is owned by private landowners on small-to-mid-sized tracts. In Maryland, statewide figures show that the median privately owned forest tract is less than 10 acres. There are very few mechanisms for encouraging or requiring appropriate stewardship of forests on privately owned land.

The Maryland State Forest Conservation Act and local zoning can effectively minimize the amount of forest cleared for new development, but they do not protect the forest from individual landowner harvesting. State forest laws, which define allowed practices on private forestlands, do not provide sufficient protection. The law does not prevent a landowner from clear cutting most of his property, and although buffers and BMPs are required, they may be insufficient to protect water quality and may not be adequately monitored or enforced. County forest harvest data were collected by DNR for preparation of a forest conservation plan for the reservoir watersheds and could provide a means to evaluate this issue.

In York County, Pennsylvania, Shrewsbury Township is currently developing an ordinance to protect woodlands. At issue is a provision recently added to the Pennsylvania Municipalities Planning Code that requires that forestry be permitted as a use by right in all zoning districts. Municipalities are struggling to determine how this provision impacts the ability to protect woodlands on development lots.[47]

Strategies:

- **Identify high priority forest land and create incentive for protection and management of those forests.** Counties should build on existing forest management plans and explore incentives and technical assistance that prevents parcelization and encourages landowners to retain larger land holdings, identifying those landowners whose properties have the most potential for improving or maintaining water quality.

- **Improve private forest management practices.** Local jurisdictions in the watershed should define what management practices and minimal basal area would more effectively protect water quality and explore how to encourage these practices through technical assistance, financial incentives, or regulations either at the local or state level.

[47] Pam Shellenberger, York County Planning, Draft Issues Report Comments.

LANDOWNER OUTREACH

Many private agricultural and forestry landowners are not fully aware of the ecological value of their land and the value of managing the land for water quality benefits. One indication of this is the small number of forestry management plans that exist; Maryland estimates 7000 plans for non-industrial private forest landowners.[48] Forest management plans are often a requirement for landowner participation in cost-share and assistance programs. Increased knowledge from this project and from ongoing work in the watershed can provide a database of information to help target those properties where protection and restoration can have the greatest benefit. Technical assistance can take the form of helping landowners complete management plans, sharing information on cost-sharing programs, providing information on tax incentives, and offering information on acquisition programs where landowners are interested in selling their property.

A number of existing programs at the state level and new programs at the federal level – in particular the federal farm bill – offer an increasing number of well-funded landowner assistance programs. Outreach by Natural Resource and Conservation Service staff, in partnership with counties, to targeted landowners may help address conservation and restoration strategies with key and willing landowners. TPL, in partnership with local steering committee members, can also help with outreach to landowners regarding conservation alternatives.

Strategies:

- **Create an annual goal for targeted outreach**. Counties should use their GIS-based information and other information to identify key landowners – with larger properties that can be of strategic importance for protection – and work with those landowners on a longer term strategy for protection, restoration or management best practices.

- **Revisit current extension/outreach technologies.** Use the stewardship exchange process to seek out best practices and new ideas regarding landowner outreach that meets growing differentiation of landowner type and need.

CREATION OF A WATERSHED IDENTITY

Currently, there are very few organizational structures in place to support watershed-wide education, outreach and on-the-ground action. There is no watershed association, or equivalent organization, whose mission is to coordinate the protection of this resource throughout the watershed. The Reservoir Technical Committee is an excellent organizational tool for coordinating inter-jurisdictional planning, but it does not have in its mission the education of residents or the coordination of nonprofit or grassroots efforts. As a result, there is not a strong sense of a watershed identity, like the Chesapeake Bay or the Nashua River Watershed, where residents, organizations and governments all recognize their connection to a shared resource and the value of planning for the protection of that resource.

Strategy:

- **Create an organizational structure, either government or nonprofit driven, to promote watershed-wide issues, coordinate partnerships, educate the public and implement activities**.

[48] Forests for the Bay, Environmental Law Institute (2000), p. 43-44.

PAYING FOR PROTECTION: FUNDING STRATEGIES

A full financial analysis is in the Land Conservation Funding Options Report in Appendix B. Below is a summary of the Report's recommendations.

LAND ACQUISITION

If the effort to protect land within the Prettyboy Watershed is to be successful, it is essential to move beyond assessing priorities to actually protecting land. The following options have been identified as feasible for consideration in a "funding quilt" that will sustain land acquisitions in the near term and over the long term. The specific recommendations listed here draw upon a combination of local, state, and federal funding to protect land in the Prettyboy Watershed.

Local Funding

- **Broaden the scope of local conservation efforts beyond agricultural land easements**. Both Carroll and Baltimore Counties have been very successful in targeting their efforts to protect agricultural land from development. The demonstrated creativity and commitment toward protecting farmland needs to be directed toward protecting natural areas, stream corridors and forested lands in the Prettyboy Watershed from further development that will degrade the quality of drinking water. One option would be to augment their farmland preservation program to include a Woodland Preservation Program, as is done in Anne Arundel County.

- **Create new local sources of land conservation funding**: In an era of constrained state finances, local governments in Maryland must create local alternatives to offset current, and potentially future, declines in state funding (POS, Rural Legacy and MALPF). If the promise of newly enacted legislation (HB 1131) is fulfilled, the state will create matching funds to provide an incentive for counties to establish their own funding source for land conservation. This report focuses on two primary ways to increase local funding for land conservation in the Prettyboy Watershed: 1) Installment Purchase Agreements, backed by a dedicated revenue stream (recordation tax or property tax), and 2) Issuing General Obligation Bonds.

Both Baltimore and Carroll Counties already have extensive farmland protection programs that are considered among the most successful in the country. Through a combination of state and local funding sources, Baltimore and Carroll Counties have protected more than 33,000 and 37,000 acres, respectively. Baltimore County has used voter-approved general obligation bonds and agricultural transfer tax revenues as primary funding sources. Carroll County has combined the agricultural transfer tax with general fund property taxes and also non-voted bond proceeds.

These existing farmland preservation programs should be the first option for protecting land within the Prettyboy Watershed, if there are farms within the watershed that meet the standards of the respective county programs. Each county may also consider augmenting its existing program to include a Woodland Preservation Program, which would protect forested through conservation easement.

Regardless of the program used to protect land within the Prettyboy Watershed, it is fairly certain that additional local funding will be necessary (given strong demand for current programs and

significant cuts in state funding). There are two primary ways outlined in the report to raise these funds - an installment purchase agreement, backed by a dedicated funding stream and a general obligation bond. (A water utility fee and a stormwater utility are discussed in the report, but omitted here since they are long shots).

Installment purchase agreements (IPAs) are used by a number of Maryland counties --Anne Arundel, Frederick, Harford, and Howard Counties. Under an IPA, payments to the landowner for a permanent conservation easement are spread out over 20-30 years, with the landowner receiving semiannual, tax-exempt interest payments, and a final lump-sum principal payment. Payment of this annual interest requires the establishment of a dedicated revenue stream. The recordation tax and the property tax are the two options presented in this report. In Baltimore County, a 50-cent increase in the recordation tax would raise $3.2 million per year; in Carroll County, a 50-cent increase in the recordation tax would raise $800,000 per year. Baltimore County could raise $1 million per year via the property tax at an average cost per household of $3.22. In Carroll County, it would be possible to raise $1 million in property tax revenues at a cost of $20 per household.

General obligation bonds are an alternative means to fund land conservation in the Prettyboy Watershed. Both Baltimore and Carroll counties have used bonds to finance land conservation. In Baltimore County, bond issues require voter approval, whereas in Carroll County, approval by the state legislature is required. Both counties have ample debt issuing capacity under their legal debt margin – Baltimore County has nearly $4 billion, Carroll County, $380 million. In Baltimore County, a $35 million bond would require just over $3 million annually in debt service and cost the average homeowner $10 per year. In Carroll County, a $10 million bond would require $872,000 per year in debt service and cost the average homeowner $18 per year.

State Funding

- **Innovate using Maryland WQSRF:** Both revolving funds offer the promise of substantial funding for land acquisition, but this has not been realized. Given the flexibility of the WQSRF, the State of Maryland might choose to create a pilot program for the Prettyboy Watershed along the lines of the Ohio EPA's program to pair wastewater treatment projects with land conservation/restoration projects. Alternatively, a set-aside program under WQSRF could be used for land acquisition around the state, including the Prettyboy Watershed.

- **Establish Land Acquisition as DWSRF Priority:** Maryland might follow the lead of Maine by explicitly including land acquisition as a goal of its DWSRF, and by setting aside funding for this purpose. Such moves might stimulate demand for land acquisition loans, if coupled with a public education effort on the value of land conservation as a source water protection strategy.

- **Support restoration of full funding for Program Open Space and other programs.** Many programs have taken a financial hit in order to balance the State of Maryland's books in fiscal 2003 and 2004. However, supporters of land conservation in Baltimore and Carroll Counties should join with other like-minded individuals and groups and push for full restoration of POS, ET. al. in 2005. Maryland should not retreat from its long-standing leadership position of strongly funding land conservation at the state level.

The State of Maryland has historically provided generous grants to local governments through a range of programs such as Program Open Space, the Maryland Agricultural Land Preservation Foundation and the Rural Legacy Program. However, since funding for these programs will be

reduced by 50 percent (at least) over the next several years, grants to local governments will also be significantly cut back. Restoration of state land conservation funding will likely be necessary before the state should be seen as a significant source of funding for new initiatives like protection of the Prettyboy Watershed.

Federal Funding

- **Farmland Protection Program:** With the significant increase in available funding available under the newly signed Farm Bill, Baltimore and Carroll Counties should apply for an FPP grant, possibly in conjunction with one of several local land trusts. Since these grants are competitive and require a 50 percent match, the counties might draw upon funds included in anticipated capital improvement plans or hopefully in successful bond measures.

- **EPA 319**: Although there have been no EPA 319 grants for land acquisition awarded in Maryland, there is no reason that an effort should not be mounted. In the past, one of the reasons cited by EPA officials for the lack of EPA 319 grants for land conservation has been the absence of thorough analysis making the link between land conservation and reduction of nonpoint pollution. The mapping and scientific analysis being conducted as part of the Prettyboy project should address these shortcomings and smooth the way to a successful EPA 319 grant seeking effort.

At the federal level, there are two distinct types of funding for land conservation: 1) State directed programs, in which states receive grants from the federal government, but are given broad discretion to allocate funds (subject to federal program rules); and 2) direct federal programs, in which the federal government makes direct grants to local recipients, usually local governments. Of these two categories, the direct grants seem to hold more promise for Georgia.

State directed federal grants include the Clean Water State Revolving Fund (CWSRF), and the Drinking Water State Revolving Fund (DWSRF). The Maryland Water Quality Finance Administration administers these federal grants. The CWSRF, know in Maryland as the Water Quality State Revolving Fund (WQSRF) provides loans for water quality improvements, most commonly wastewater treatment plants. While in recent years, some states have used CWSRF funds for land conservation; Maryland has not followed this route.

Since the WQSRF offers great flexibility to states, Maryland might choose to emulate Ohio EPA's program to pair wastewater treatment projects with land conservation/restoration projects. Under such an arrangement, municipalities pay a reduced interest rate for wastewater treatment projects if they pair up with a non-profit conservation partner on a land conservation project. Maryland could consider the Prettyboy as a demonstration pilot project for such an initiative. The DWSRF makes loans to improve public drinking water systems, with funding often used for water treatment plants. States have the ability to set aside up to 10 percent of their annual federal grant for source water land conservation. Maryland has not set aside any DWSRF funds for land conservation. With Maryland receiving an average or $8 million per year, setting aside 10 percent per year would total $800,000 annually statewide. In order to stimulate demand for DWSRF loans for land conservation, Maryland might explicitly list land acquisition in its Intended Use Plan.

Another source of federal funding is EPA Section 319's non-point source pollution grant program. While Section 319 grants are not primarily used for land conservation, fifteen projects in the southeastern states were approved between 1995 and 1999 for land conservation. There have

been no grants made under Section 319 in Maryland, however. Use of Section 319 for land conservation has lagged, partially due to the absence of thorough analysis linking land conservation with the reduction of nonpoint source pollution. However, since this type of analysis is being conducted as part of the overall Prettyboy Watershed effort, Section 319 may prove to be a viable funding option.

As for direct federal grants, the Farmland Protection Program (FPP) offers the most promise. The FPP recently received a boost from the 2002 Farm Bill, which has made $600 million available over the next five years for the purchase of development rights (PDRs), or conservation easements, on productive agricultural land. Grants for fifty percent of the cost of a permanent conservation easement (PDRs) are awarded on a competitive basis.

RESTORATION AND STEWARDSHIP

Among other sources for funding, the 2002 Federal Farm Bill will increase current baseline spending for USDA conservation programs by 80 percent. Existing programs are being expanded and some new ones have been created, that in partnership with states, will create the bulk of opportunity for funding restoration and stewardship. The Farm Bill provides greater access to the programs by making more farmers and ranchers eligible for participation. The most significant programs are listed below, with more details to be found in the appendix. These programs, not unlike the land acquisition funding programs cited above, can also be threaded together in a 'funding quilt.' The Natural Resources Conservation Service (NRCS), with state and local offices across the country, including in Carroll County, administers the following programs and can provide assistance to landowners seeking funding:

Environmental Quality Incentives Program (EQIP): EQIP is a voluntary conservation program for farmers and ranchers to treat identified soil, water and related natural resource concerns on eligible land with technical and financial assistance. Reauthorizes the program through 2007 with greater funding resources. Provides an overall payment limitation of $450,000 per producer. Sixty percent is available for animal operators. Non-industrial foresters are now eligible for funding with a heavy focus on water quality protection. Federal funding must be matched in a 75%-25% formula, but allows up to 90 percent cost-share for beginning or limited resource farmers and ranchers.

Conservation Security Program (CSP): A new national incentive payment program for fiscal years 2003 through 2007 to reward stewardship and provide an incentive for addressing resource concerns on farm and ranch properties, estimated at $2 billion over ten years.

Conservation Reserve Program (CRP): Provides funding for long-term conservation easements at a funding level of $1.5 billion over ten years. States must enroll in the program and landowners apply for funding through states. State funding support, in addition to federal, can transition "term" easements to permanent.

Wildlife Habitat Incentives Program (WHIP): WHIP is a voluntary program that encourages
protection of wildlife habitats. Provides for up to 15 percent of annual WHIP funds for increased cost-share payments to producers to protect and restore essential plant and animal habitat using agreements with a duration of at least 15 years. States administer this program with a ranking system and there is typically less competition for funding here than in the EQIP program.

Wetlands Reserve Program (WRP): Reauthorizes the program through 2007 while increasing acreage cap for project eligibility. This program provides technical and financial assistance to eligible landowners to restore, enhance, and protect wetlands. Landowners have the option of enrolling eligible lands through permanent easements, 30-years easements or restoration cost-share agreements.

Also through the USDA, two forestry programs provide limited funding for stewardship. These programs are offered in partnership between the U.S. Forest Service and the State Forester:

Forest Stewardship Program (FSP): Provides professional natural resource management expertise to non-industrial private forest landowners to help them develop a management plan for their forested land. Brings the expertise of State service foresters, biologists, and private consultants to private landowners. Generally, FSP participants own less than 1,000 acres. There is no maximum acreage restriction, but some States do establish a minimum acreage. Participation is open to individuals and non-commercial landowners who agree to maintain the land as outlined in their management plan for at least 10 years. FSP is not a cost-share program. Instead, it provides technical and planning guidance.

Forest Land Enhancement Program (FLEP): Authorized in the 2002 Farm Bill, FLEP will provide $20 million per year over the next 5 years. Through FLEP, State forestry agencies can provide incentives to achieve a wide array of objectives including forest stewardship plan preparation, afforestation and reforestation, forest stand improvement, agroforestry implementation, water quality improvement and watershed protection, fish and wildlife protection, forest health and protection, invasive species control, and wildlife related practices. Currently, guidelines are being prepared for implementation of this program, with initial start up in early 2003.