CLINTON COUNTY

Chesapeake Bay Program
District Implementation Plan
February 2005

MISSION STATEMENT

The Clinton County Conservation District provides quality leadership, education and service for the stewardship and conservation of the county's natural resources.

11/3/2005

Table of Contents

The Clinton County Conservation District has developed a plan devoted to the evaluation of water quality issues in the county and the development of an action plan to remediate the issues set forth herein.

A. County Description

General Information:
Clinton County encompasses 570,240 acres (891 square miles), all of which lie within the Chesapeake Bay Watershed. The acreage in Clinton County considered to be farmed (or farmstead/pasture, cropland) accounts for 7.7%(or 44,000 acres) of the total county acreage. The West Branch of the Susquehanna River bisects the county diagonally with six main watershed tributaries draining into the River.

Culture:
Cultural Diversity is limited to some extent in Clinton County. The population is comprised of Caucasian, African Americans, American Indians, Asians, Pacific Islanders, and others listed from most to least populous. Caucasians account for 98% of the population based on US Census Bureau Data from the Year 2000 Census. The median age in the county is 37.9 years old. More than 53% of the population is over 35 years old. There are averages of 2.42 people per household. Approximately 73% of Clinton County residents are homeowners. There are 42.6 people for every square mile in the county.

Industry:
Clinton County is located nearly in the center of Pennsylvania, with exits at mile markers 197,185,178,and 171 off of Interstate 80. Clinton County has 37,914 residents (based on 2000 Census). Of these, 17,200 people are employed.
Retail Trade is the largest employment sector employing over 2780 people. Manufacturing is the second largest business sector with over 1960 employed. The Largest employers are Lock Haven University and Keystone Central School District. First Quality Products is the largest manufacturing employer and Wal-Mart is the largest retail sector employer. Median annual household income is $31,064.

Geography:
The land use in the county consists of three main regions; Northern Half, Southern Half, and South Central River Corridor (which includes the city of Lock Haven). The Northern Half consists primarily of forestland along the Allegheny Plateau. The Southern Half consists primarily of farmland in the ridge and valleys. The South Central River Corridor consists of the manufacturing and business districts along with residential areas including the city of Lock Haven, Mill Hall, Castanea, Flemington, McElhattan, and Avis. There are 29 municipalities in the County, encompassing the regions noted in Table 1 and Figure 1.

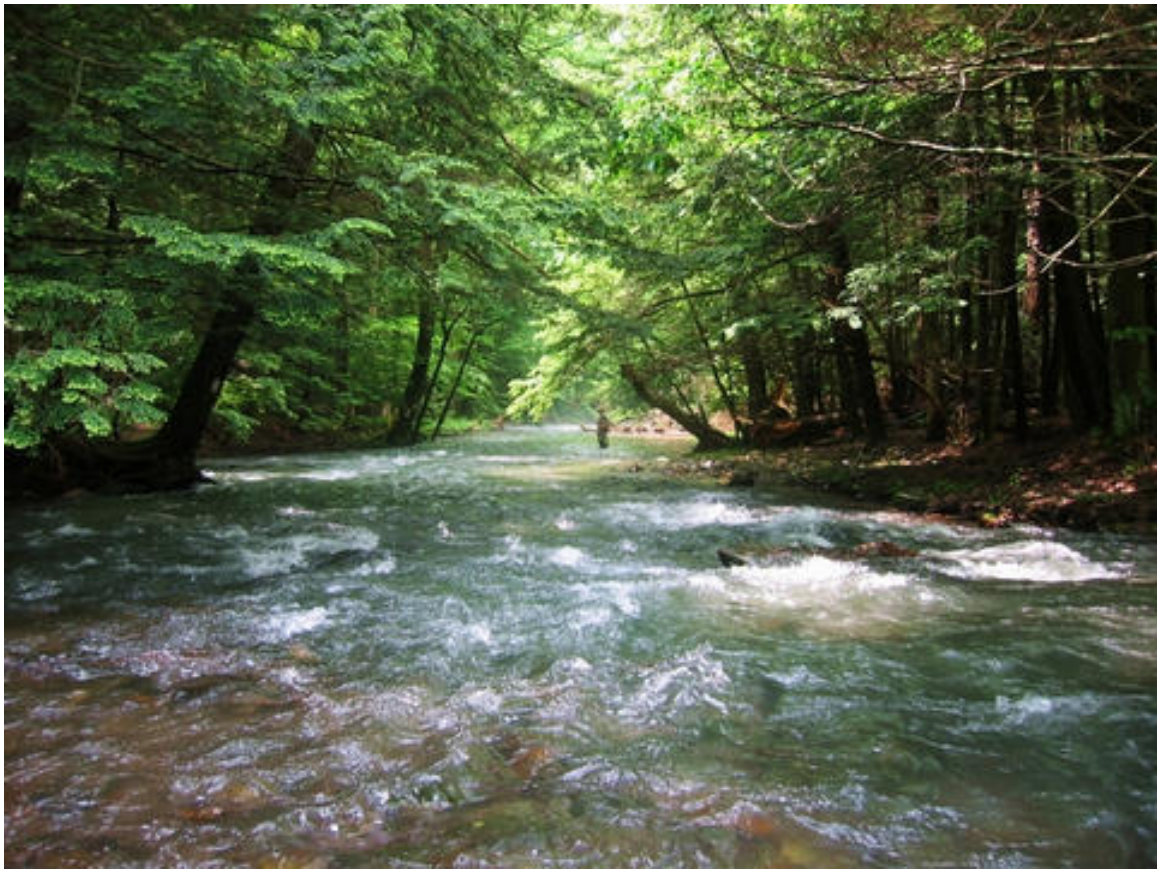
Land Use:
Land use differs in the three geographic regions of the county. In the Northern Half many streams are polluted with Acid Mine Drainage. The Northern Half is also extensively forested and provides recreational opportunity and wildlife habitat. The Southern half is primarily farmland in the valleys and forested in the ridges. Nutrient Pollution and sedimentation is our principal concern in this region. The South Central River Corridor is a combination of suburban and urban interface, interspersed with prime farmland along the River and Bald Eagle Creek floodplains. Water Quality issues in this region of the county include urban stormwater, nutrient pollution, and

sedimentation. The prime farmland in this region is considered non-highly erodible, considering this nutrient leaching is our main concern in this portion of the county.

Agriculture:

Farm operations have increased since 1997. Today approximately 420 farms operate within the confines of the County, compared to 350 that operated 20 years ago. Average farm size is 128 acres, up from 123 average acres in 1997. Dairy farms are by far the predominate operation in the county. Beef, veal, chickens, and hogs follow behind in descending order. Commercial veal, chicken, and hog operations are all operated by Amish landowners in Clinton County.

B. Water Resources/Quality



Water Resources

Clinton County contains streams and water bodies of various classifications, including the highest ranked Exceptional Value (EV) mountain streams, High Quality (HQ) freestone mountain and valley creeks, Cold Water Fisheries (CWF), and Warm Water Fisheries (WWF) in Bald Eagle Creek and West Branch of the Susquehanna's main stem. (See Table 2)

Water Quality issues include Acid Mine Drainage, Agricultural Siltation, Wastewater Nutrients, Streambank Degradation (siltation) and Metal Pollution. Acid Mine Drainage is being addressed through Growing Greener and 319 grants sponsored by the Conservation District, along with additional grants administered through Trout Unlimited, DEP Bureau of Abandoned Mines, and the Rocky Mountain Elk foundation. Also, the Kettle Creek Watershed Association and the Beech Creek Watershed Association are administering grants to improve the water quality in these two watersheds. Assessments done by the Sugar Valley and Kettle Creek Watershed Associations have found similar findings to those described above in table 3. **See also attachment A for TMDL information**

District staff reviewed The "DEP 305 B Impaired Streams List" to determine the current state of those streams. (See Table 3) We concur with the data identifying the impairment on Fishing Creek. This Watershed lies in the Southern half of the county, and includes over 27,000 acres of cropland. Nutrient pollution and sedimentation have been listed as the source for impairment. This also concurs with the recent assessment of Fishing Creek completed by Rettew Associates for the Sugar Valley Watershed Association.

Big Plum Run, a tributary of Chatham Run and the Susquehanna River, was identified by the 305 B list as impaired due to crop related siltation. District staff reviewed this watershed for possible impairment, and found production agriculture in the Plum Run watershed has significantly declined. Some of the cropland has been enrolled in the Conservation Reserve Enhancement Program (CREP). We have concluded that Plum Run Watershed impairments related to crop siltation should be considered for removal from the 305 B list.

Considering that all of Clinton County drains to the Susquehanna River and ultimately to the Chesapeake Bay, these findings are significant. In order for Clinton County to be proactive in offering solutions and assistance with these problems we have to be aware they exist and be willing to lobby for federal, state, and local funds. If we do our part in Clinton County we can improve the water quality here, as well as, downstream to help the Bay regain its once vibrant fishery.

C. Trends of Significance to Water Quality

I. Agriculture Related Trends
II. Agricultural Trends for Water Quality Improvement
III. Other Water Quality Improvement Trends

I. Agricultural Related Trends

Overview/Animals

Animal agriculture has seen strong growth. Poultry numbers have grown from 50,000 birds to 100,000 birds over the last 5 years. Swine production has stayed flat at 1200 head. Dairy Cattle numbers are up to 6700 head from 5000 head in 1999. Total cattle are also up 28% since 1999, from 12,000 to 15,400 head. 90% of the animals credited to Clinton County reside in the Fishing Creek Watershed. Many Concentrated Animal Operations (CAO's) as well as two Concentrated Animal Feeding Operations (CAFO) currently operate in the Fishing Creek Watershed. These operations are required to operate in accordance with their Nutrient Management Plan.

Nearly every animal operation in the Fishing Creek watershed has a liquid manure impoundment of some nature. Pen pack manure is the exception rather than the rule. Concrete is primarily the storage of choice although a few earthen and "Slurrystore" structures exist. One problem frequently associated with liquid storage is that the operators often neglect to analyze the manure in order to balance their manure application on the nutrients available from their manure. The Fishing Creek Watershed has over 60 liquid manure storage structures of which only 12 are part of a nutrient management plan. Bald Eagle Valley has seen a reduction in animal agriculture operations over the last 10 years, crop acres have also dropped off to what they had been 10 years ago. Only one liquid manure structure exists in Bald Eagle Valley and that operation no longer has an active animal enterprise. Animal Concentration areas are also worth noting in this study of water quality issues in Clinton County. It has been noted that within the county along main stem streams animal concentration areas are generally greater than 100 feet from the stream. We have discovered that in the tributaries of these main streams that animal concentration areas are generally less than fifty feet to the stream and often times include the stream as part of the concentration area. This being known, we can determine that much of the Ag related nutrient pollution is due to the concentration areas along the tribs. In order to reduce the amount of nutrient runoff we will be addressing the issues of barnyard stabilization, roof runoff controls, manure storage facilities, and Nutrient Management Plans.

Crops:

Crop acres have stayed relatively constant, but more animals have been added. A few operations have implemented grazing systems, some are totally using notill, but by far the corn alfalfa rotation with conventional tillage is followed in 65 percent of the Fishing Creek Watershed. Some cropland has been lost to development, but relatively small amounts. Vegetable production is limited to a few hundred acres each of potatoes, tomatoes, pumpkins, and green beans. There are some roadside farm markets that grow a wide variety of vegetables, but are limited to a few acres near each market. Tobacco is grown on a few hundred acres as a cash crop in the Fishing Creek Watershed. The following table identifies the crop and acres grown in the county and net gain or loss in crop acres of each (based on 1997 & 2002 Census data). Based on the information found in Table 4, it has been determined that crop production in the county is increasing. Soybeans, Tobacco, and Corn Silage acres have grow considerably in the last five years, noting that these crops leave a minimal residue at

harvest. It was not indicated in the 2002 Census of Agriculture how many acres are cover-cropped or no-tilled.

Agricultural Infrastructure:
Field access lanes are a significant contributor to degradation of water quality. The Natural Resource Conservation Service (NRCS) has done a fine job of treating conservation strips in highly erodible land, but they have hot addressed field access lanes. Typically strips run along the contours, while access road run perpendicular to the contours. Considering that water runs down hill and streams typically flow at the lowest point of a valley, it goes without saying that a tremendous amount of sediment leaving access lanes ends up in the waters of this county. This issue will need to be addressed and best management practices need to be installed to stabilize these driving surfaces and keep clean water clean.

Cultural/Management:
Data has been collected through Clinton County's Geographic Information System (GIS) program to determine cropland acres in the agriculturally intense areas of the county. The Fishing Creek Watershed's 27,071 acres account for 67% of the total cropland in the county. 17,596 cropland acres in the Fishing Creek Watershed are under the management of Amish operators. (See Table 5)This is a significant finding in that of the farm operators in Clinton County, the Amish by far utilize conventional tillage and fall plowing more than any other sect in the county. Considering that these acres are Highly Erodible Cropland in a High Quality Watershed and that the typical cropping sequence consists of silage corn and alfalfa with conventional tillage, we have determined there is **significant potential** for water quality improvement and soil conservation through the implementation of a covercrop/notill program in the county.

II. Water Quality Improvement Trends for Agricultural

CoverCrop/Notill:
We are seeing an increase in the use of custom operators for cereal seedings on the English farm operations. Currently the Amish are not permitted to use custom operators, due to religious reasons as indicated by the church bishops. We feel there is an opportunity to increase the use of covercrops in the Amish community with an appropriate program, that will accommodate their religious restrictions.(Discussed further in Remaining & Future needs).

Streambank fencing:
We have completed streambank fencing projects on thirteen operations in the county. Landowners are interested in doing more, but due to a DEP funding shortage, this won't be possible at the present time. We anticipate that five more operations could be fenced in the next two years, if funds were available. We feel more work could be done in this area, by possibly offering off-stream watering systems rather than crossings. Also, if crossings are already installed, there is potential to use them for crossing only and adding off-stream watering to these pasture systems.

Streambank Protection:
In the past five years we have seen a significant sedimentation reduction in Cedar Run (a subwatershed of Fishing Creek) largely due to the installation of streambank stabilization practices, rocklined waterways, streambank stabilization, and stabilized Agricultural crossings have been very effective in treating this watershed. We intend to continue with this trend of stream corridor restoration.

Farm Access Lane Stabilization:
Farm lanes have been a continuous problem in Clinton County. We have planned conservation practices on many acres and have strips on many farms. However, as strips run along the contours, field lanes typically run up and down the slope; often with a diversion, waterway, or stream at the bottom of the slope. This has been a significant contributor to sediment in our waterways. We could accomplish a great deal for water quality improvement, if there were funds available to treat this issue.

Barnyard Stabilization:
Although the Bay Program no longer supports the implementation of Best Management Practices relating to barnyards, we have been unable to treat all the barnyards in Clinton County. Some operators are not interested in some of our programs, yet some are very willing and interested in cooperating with the district on a water quality improvement project relating to barnyard stabilization. These untreated barnyards are a significant contributor to nutrient pollution.

III. Other Water Quality Improvement Trends

Watershed Groups:
Watershed associations have been created from local people dedicated to improving the health of the watershed in their neighborhood. There are presently three active watershed associations in the County, with the potential for more - Beech Creek Watershed Association, Kettle Creek Watershed Association, and Sugar Valley Watershed Association. These groups have actively worked to clean up their watersheds, by pursuing grants for water quality improvement projects, and increasing awareness on how to improve the watershed.

Infrastructure Improvements:
Recent trends to improve infrastructure relating to water quality within the county have included the installation of a public sewer system in the Nittany Valley portion of the Fishing Creek Watershed. Improvements to the Loganton Borough Wastewater Treatment Plant have also been completed. Installation of a million-gallon excess capacity tank at the Lock Haven wastewater treatment plant has been finished. Another one million-gallon excess capacity tank is also planned for the Mill Hall Borough Sewer System.

Acid Mine Drainage:

Acid Mine Drainage Remediation projects have been installed in several watersheds in the County. These passive treatment system projects include: Tangascootack Creek, Kettle Creek, Big Run of Beech Creek, Drury Run, and Cooks Run watersheds. Although active mining has become nonexistent in our County, there are still tracts of land that maintain their bonds. Some of the areas in Tangascootack and Kettle Creek have also been treated with Biosolids to encourage vegetative growth to reclaim the barren mined lands. Several of these treatment systems are able to increase pH and decrease the metal loadings to these streams. Through testing and sampling several stream miles have shown improvements in chemical and biological results.

Erosion and Sediment Pollution Control:

Proper erosion control practices is a vital part of reducing sediment pollution in our area. New building lots continue to increase due to the good economics of the area. This is evidenced by the number of erosion control plan reviews done in the last few years (3 year average of over 300 plans) and the number of township zoning and building permits issued. Erosion and sediment pollution control plans on all construction sites with the county continue to be effective in reducing accelerated erosion and sedimentation in our waterways. Also, with the new National Pollutant Discharge Elimination System Permits (NPDES), many more earth disturbance sites are affected. We have sponsored a number of public workshops for local residents and contractors to keep them updated on erosion control regulations.

Forest Land and Timber Harvest Operations

Clinton County is considered to be 60-70% forested. This land is owned both by State Forest and private landowners. Timber harvesting is still an active operation in our county, mostly in the north – northwestern portion of the county. Encouraging environmentally sensitive forest timber harvest operations through use of conservation best management practices and development of erosion control plans and forest management plans, is a goal that the county conservation district has always practiced through education of local timber harvesters.

D. Sediment and Nutrient Source Reductions

The Clinton County Conservation District incorporates many programs through many different agencies to improve water quality and conserve soil. We cooperate with the Department of Environmental Protection via a delegation agreement to administer the Chapter 102 and 105 programs. We are contracted to administer the Chesapeake Bay, Nutrient Management, and Watershed Specialist programs. We offer Environmental Education Programs to school age students and adults.

A. **Current Programs**:
There are several natural resource programs administered by the Conservation District and its partners.

- Chesapeake Bay technical and financial assistance;
  Over 23 contracted farms
  ***161** BMP's installed since 1995*

- Nutrient Management Act 6;
  ***31** Nutrient Management Plans implemented*

- Chapter 102 Erosion & Sediment Pollution Control;
  ***989** Erosion Control Plans since 2002*

- Chapter 105 Stream Encroachment Permits;-
  ***138** General and SPP since 2002*

- National Pollutant Discharge Elimination System Permits;
  ***27** NPDES since 2002*

- Dirt and Gravel Roads Program
  84,370 feet of Dirt and Gravel Road practices installed

- Fishing Creek Watershed Protection Program
  Over $200,000 invested in sediment reducing practices in the Fishing Creek Watershed
  1. 4650 feet of stabilized access lanes
  2. 2180 feet of streambank stabilized
  3. 1238 feet of diversions installed
  4. 672 feet of streambank fencing completed
  5. 5 stabilized stream crossings installed

- Conservation Education
  Soil survey maps and information, school visits; public displays; poster contests; tree seedling sale; county Envirothon; conservation summer camp; workshops for LHU pre-service teachers, contractors, engineers, and municipalities; 6th grade conservation field days; school booklets & seedlings to schools; Farm-city Banquet;

- Stormwater Management
  The Conservation District was the lead county agency in the development and implementation of two Act 167 Stormwater Management (SWM) Plans in the County – Fishing Creek and Chatham Run. The Chatham Run SWM Plan is currently being updated. Since the update done to the County Soil Survey, many of the hydrologic groupings for those soils have changed, and will be incorporated into the new models for the Plan. Several Townships have developed their own SWM ordinances, that deal with regulating new building projects in their townships.

- Acid Mine Drainage Abatement Programs
  At least 10 Acid Mine Drainage Treatment projects have been installed or are in the design phase in the following watersheds: Tangascootack Creek, Kettle Creek, Big Run of Beech Creek, Drury Run, and Cooks Run watersheds

- Conservation Reserve Enhancement Program
  One option for landowners willing to idle cropland is the Conservation Reserve Enhancement Program. Acreage enrolled in the program are seeded to either cool or warm season grasses as a means of conservation cover and wildlife habitat. Tree planting can also take place on some of these operations that have enrolled in CREP.

- Watershed Association Assistance and Collaboration:
  Clinton County has three very active watershed groups – Beech Creek Watershed Association, Kettle Creek Watershed Association, and Sugar Valley Watershed Association. The Conservation District was instrumental in the formation of these watershed associations by sponsoring grants to assist with their start-up and grants to perform various special projects. Two of the Watershed Associations are dealing with AMD issues, while two of them are dealing with habitat and stream maintenance issues.

B. Remaining and Future Needs:

Clinton County waterways (and the Chesapeake Bay) could benefit from:

- An increase in cover crop/no-till farming,
- More implemented nutrient management and conservation plans,
- Best Management Practices installed on construction sites,
- Streambank stabilization and protection
- Streambank fencing,
- Improved stormwater management (agricultural & urban),
- Barnyard stabilization projects,
- Improvements to farm access lanes to reduce sedimentation in Waterways.

- Acid Mine Drainage treatment systems

C. Most effective approaches to address these needs.

Most county residents have shown an interest in participating in programs that will assist them technically and financially with watershed management issues, sedimentation reduction, and nutrient management.

The county sponsored a 319 Grant in 2002-2003 to assist landowners with installation of best management practices in the Fishing Creek watershed. Over $200,000 in grant funds were spent on streambank stabilization, water controls, diversions, and waterways. We had a waiting list of those who wanted assistance, but we could not help because we used all of the grant funds. The grant funded only 90% of the costs, with the landowner providing the other 10%. That project has shown that there are landowners willing to participate in a program to assist them technically and financially with installation of best management practices.

The Dirt & Gravel Roads program for municipalities has proven that there is more assistance needed than we can provide. Each year we get application totaling over $100,000 in requests, but we can only provide $20,000 in projects. These projects have gone a long way to preventing sedimentation, especially in our High Quality watersheds.

E. County Bay Tributary Strategy

Clinton County is dedicated to achieving the goals of the Chesapeake Bay Tributary Strategy. We will pool all available resources to make this program a success. Considering the diminishing amount of cost share dollars available through the Bay Program we have three special projects to propose for 2005-2006 funding. These will be described later.

The District developed a Strategic Plan three years ago. Following are the County's critical issues identified in that plan, as well as our goals and objectives to address them. Included are excerpts of the mode of action for the District's Strategic Plan.

Five Critical Natural Resource Issues:
(based on the District's Strategic Plan of 2002)

1. CRITICAL NATURAL RESOURCE ISSUE: SEDIMENTATION & EROSION CONTROL FOR WATER QUALITY

A.) By December 31st, 2004, 5% of farms will have new Conservation Plans, updated Conservation Plans or Erosion & Sediment Pollution Control Plans (E&SPC), in which, Best Management Practices will be implemented.

Objective: To have 5% of farms in Clinton County create or update plans and to implement those plans.

Strategy: To make contact with farmers. To have plans reviewed.
Some USDA programs require the development of Conservation Plans in order to participate. E&SPC Plans are required for any new construction.

Outcome: To have 60 farms with plans by 2004 and to reduce erosion on farm fields and sedimentation to our local waterways.

B.) By December 31st, 2002, three landowners and/or farms will have riparian buffers installed.

Objective: To get at least three landowners to participate.

Strategy: Contact landowners about having riparian buffers installed and sign up three landowners**.**

Outcome: Riparian buffers installed to protect stream banks and reduce erosion.

2. CRITICAL NATURAL RESOURCE ISSUE: ENVIRONMENTAL EDUCATION & AWARENESS

A.). By December 31st, 2003, we will offer two workshops for teachers and pre-service teachers relating to the new environment and ecology education standards; also we will offer two public workshops for new NPDES erosion and sedimentation regulations.

Objective: To involve as many people as possible through workshops so they will be more informed about the new erosion & sediment pollution control regulations and environmental education standards.

Strategy: To publicize the workshops through schools, Lock Haven University, and media sources. To develop a power point presentation by AmeriCorps Vista Volunteer for use at these workshops.

Outcome: To have a better informed professional and public awareness about environmental education standards and erosion control regulations.

B.). By Spring 2003, we will make a decision on whether to produce a 30 minute video documenting the Clinton County Conservation District and its main programs.

Objective: To make the public aware of the CCCD. Plan to show video on education channel to inform the public about the CCCD's statements of intent relating to critical issues.

Strategy: 1st Step – To produce a power point presentation to supplement as a public awareness tool while video is being investigated and produced. Also, to update web page, to be used as an outreach tool. 2nd Step – To investigate the possibility of producing a video by a professional or by a college student. To find out the cost factor involved, the equipment needed and the time the CCCD staff will have to spend. To investigate applying for a grant for funding. 3rd Step - To make Board decision on whether to produce video.

Outcome: More public awareness

3. CRITICAL NATURAL RESOURCE ISSUE: NUTRIENT POLLUTION

A.). By December 31st, 2004, 10 farms will have Nutrient Management Plans developed and implemented.

Objective: To inform farmers on proper nutrient use.

Strategy: To make contacts with farmers in Clinton County. Public outreach, newsletters, and media.

Some farms may be required by state and federal regulations to have a plan.

Outcome: Better utilization of nutrients on farms and reduced nutrient runoff through the implementation of plans.

4. CRITICAL NATURAL RESOURCE ISSUE: ACID MINE DRANAGE

A.) By December 31st, 2004, we will assist watershed associations and other groups with developing comprehensive watershed restoration plans for 50% of the watersheds impacted by Acid Mine Drainage.

Objective: To develop restoration plans to improve Acid Mine Drainage impacts on county watersheds (Beech Creek Watershed Association – applied, Kettle Creek Watershed Association & Tangascootack have plans).

Strategy: To assist watershed groups with applying for grants to develop plans and to assist with the implementation of those plans. To give technical assistance to watershed groups.

Outcome: Completed plans for the remediation of Acid Mine Drainage in Clinton County.

5. CRITICAL NATURAL RESOURCE ISSUE: STORMWATER MANAGEMENT

A.) By December 31st, 2003, we will continue our cooperation with municipal officials who have adopted Act 167 Stormwater Management plans and continue to be the leading county agency for developing Act 167 plans.

Objective: To be administratively involved in Act 167 projects and to continue to be the lead agency.

Strategy: To work with the municipal engineers in the development of Act 167 plans and to assist the municipalities in the review of Stormwater Management Plans.

Outcome: To assist municipalities within the county whose watersheds have a completed Act 167 Stormwater Management Plan, and to encourage other to develop and adopt a plan.

With Clinton County Conservation District determining through a very intensive planning process that there were five critical natural resource issues that should be addressed, we have also based our Chesapeake Bay Tributary Strategy and Implementation Plan on these issues:

1. SEDIMENTATION & EROSION CONTROL FOR WATER QUALITY
2. ENVIRONMENTAL EDUCATION & AWARENESS
3. NUTRIENT POLLUTION
4. ACID MINE DRAINAGE IMPACTS
5. STORMWATER MANAGEMENT

- Past Performance

The Conservation District has helped to improved water quality through grants and partnerships with other organizations. Clinton County has a proven track record of getting conservation on the ground. Through the past years the Chesapeake Bay Program cost shared many water quality improvement projects on farms throughout the county. Our only regret is that requests for funding always was greater than funds received. Many viable projects could not be installed due to the lack of funding. A Federal 319 grant was received for water quality improvement projects in the Fishing Creek watershed. This grant had applications for over 60 projects. We funded projects on over 30 properties, and transferred engineering funds to construction, making it possible to fund three more projects. The Dirt and Gravel Road Program has always had more requests than funding for very viable water quality and infrastructure improvements. Clinton County has always been successful in their efforts to treat critical areas where sedimentation has a very influential effect on impairing exceptional value or high quality water.

In order to fill the gap that the Chesapeake Bay Program has left, we will roll our barnyard stabilization projects to NRCS for potential EQIP funding. Landowners that qualify for Act 6 funding we will gladly assist them in completing their applications and project cost estimates. CREP may be a possible alternative for Streambank fencing and buffer plantings. Grazing projects we will work through Project Grass to complete more intensive grazing projects. If a landowner is averse to receiving a cost share program will we will work to utilize the Agri-Link loan program as an interest assistance program to these operators. We anticipate a Growing Greener or 319 grant to address the farm access lane problem. We will address Acid Mine Drainage and Mercury pollution by working with our Watershed Specialist and Watershed Associations to secure funding to remediate these problems.

Special Projects have been developed to offer an efficient (based on DEP supplied BMP efficiencies) low cost way of improving water quality in the Bay. Each of these special projects will be addressing agricultural linked problems of nutrient and sediment pollution.

- **Covercrop/Notill Program:**

Research from Penn State and NRCS has show that cover crops and notill reduce sediment and nutrient runoff from cropland. D.E.P also considers this practice 80% efficient. Considering that custom operator use is increasing, yet many farms do not utilize due to religious reasons or location restrictions. We see this as an opportunity for increasing cover crop/notill practices among Amish and the smaller English operators. We intend to increase the awareness of the benefits of covercrop and notill seeding. We feel that encouraging small farm operators to covercrops and use notill that sedimentation in our waterways will be reduced. We also are confident that better stormwater infiltration will occur in the cover cropped/notilled cropland, this will have a multiplier effect in that it will reduce storm water runoff and increase ground water recharge, and at the same time reduce sediment leaving the farm. Since nutrients stick to soil particles, a reduction in soil loss will also reduce our nutrient loss. We will work closely with Penn State Cooperative Extension to provide educational resources to enhance the covercrop/notill program. Extension will be a valuable resource for providing seeding information, research demonstrating soil quality and health of notill, and weed control solutions.

- **Streambank Fencing:**

We have two streambank fencing projects that could be completed in the near future if funding would be available. We feel that this program could be enhanced with some off stream watering. This could include spring developments, nose pumps, water rams, and other methods of offstream watering. We propose to partner with NRCS to design and install these systems, and apply for special project cost/share to implementing these practices.

- **Barnyard Stabilization and Roof Runoff Controls:**

Barnyard stabilization will be completed through cooperative efforts of the Environmental Quality Improvement Program, Nutrient Management Act 6 grant program, and the Conservation District. We plan to expedite the design process by using our Chesapeake Bay Regional Engineering Assistance. Working to complete inventory and evaluations along with designs and construction inspection will provide engineering assistance to operations in a much more timely manner. Being able to provide this service will allow for an expedited implementation process compared to the years it takes to get an EQIP project on the ground now. It will also save thousands of dollars on engineering expense to operators applying for Act 6 cost share, while insuring structures of integrity, compared to the fine print contracts of consulting engineers and the problems associated with such.

- **Farm Access Lane Stabilization:**

A proposal is currently being prepared for submission to Growing Greener for a grant program to address the sediment pollution coming from unstabilized access lanes. This proposal will implement the Dirt and Gravel Roads standards for application to farm access lanes. In order for the program to be effective we will be addressing, culverts, waterways, diversions, and buffer strips to control the runoff on these surfaces. Technical design will be completed with assistance from the Conservation District staff and input from the Center for Dirt and Gravel Roads.

- **Acid Mine Drainage Abatement Program:**

Considering that Acid Mine Drainage is the most significant water quality issue in Clinton County. Acid Mine Issues in Clinton County will be address through the assistance of our watershed specialist. Application for Grants and possible pilot projects will be submitted to the appropriate entities. Once funding is secure we will proceed with projects as funding permits. We will partner with many groups to conquer the monumentous task of treating the streams affected by Acid Mine Drainage. Possible partners may include the Rocky Mountain Elk Foundation, Trout Unlimited, NRCS, BAMR, Kettle Creek and Beech Creek Watershed Associations, and others.

- **Stormwater Management:**

The County continues to develop with residential areas and industrial zones. Increased impervious surface will produce more stormwater. We feel it is critical to develop a stormwater management plans to provide public policy on future development. We will work with the municipal engineers in the development of Act 167 plans and to assist the municipalities in the review of Stormwater Management Plans. We will also assist municipalities within the county whose watersheds have a completed Act 167 Stormwater Management Plan, and to encourage other to develop and adopt a plan.

F. Plan Development Process

The Clinton County Conservation District has developed this plan with much consideration, thought , and input from our District's Chesapeake Bay Subcommittee, that has existed for 10 years. This planning process followed our County's Strategic Plan developed in 2002, as mentioned before. We also studied and tried to fashion it based on the information provided to us by the DEP Central office. This plan will serve to guide our District in choosing projects to be implemented in the future. We realize that this plan could be a changing document, in response to any changes that may occur in our County. At this time we feel it will direct us for the next 3-5 years.

Because of the shortage of funds available now through the Chesapeake Bay Program, we will no longer be able to completely evaluate a farm operation and develop a comprehensive plan of action to address all sediment and nutrient problems on that particular farms. Instead, we hope to be able to focus on certain areas of our county's watersheds that have shown either a water quality impairment or are known to be causing nonpoint source pollution. In these areas we will try to introduce best management practices to a group of landowners that will make a difference in preventing further pollution to that waterway. Obviously, with the amount of funds available it will take more years to address all of the sources of pollution.

Based on our already identified critical issues in this County, it would take billions of dollars to address all sources. Using the efficiency table of best management practices, we will try to focus on those that will give us more reductions in sediment and nutrient pollution for the amount of money requested.

The Clinton County Conservation District developed this plan along with cooperation from the Natural Resources Conservation Service, Sugar Valley and Kettle Creek Watershed Associations, Clinton County Farm operators, Clinton County Conservation District Board of Directors, Clinton County Commissioners, Brotherhood of Amish Agriculturists, Clinton County Planning Commission, National Agricultural Statistics Service, USDA Farm Service Agency, and many others too numerous to mention who helped to document the current status and needs of the county.

We appreciate the time and effort donated to the District by these Board members Larry Butler, Paul Courter, Ralph Harnishfeger, and Don Woodring. We appreciate the directional steering from the DEP North Central Office of Water Management, and the opportunity given us to determine the water quality issues of Clinton County. We hope that we have produced a sound document that will allow the Central Office to realize the needs of Clinton County and respond to the issues set forth herein.

Table I

Municipality	Residents	Region
Beech Creek Borough	717	
Beech Creek Township	1010	
Chapman Township	993	
Colebrook Township	179	
Gallagher Township	340	
East Keating Township	24	
Leidy Township	229	
Grugan Township	52	
Noyes Township	419	Northern Half
Renovo Borough	1318	
South Renovo Borough	557	
West Keating Township	42	
Total	**5880**	**.**
Crawford Township	848	
Greene Township	1464	
Lamar Township	2450	Southern Half
Logan Township	773	
Loganton Borough	435	
Porter Township	1419	
Total	**7389**	**.**
Allison Township	198	
Avis Borough	1492	
Bald Eagle Township	1898	
Castanea Township	1233	
Dunnstable Township	945	South Central River Corridor
Flemington Borough	1319	
Pine Creek Township	3184	
Mill Hall Borough	1568	
Lock Haven City	9149	
Wayne Township	1363	
Woodward Township	2296	
Total	**24645**	.

Table 2

Clinton County Streams List

Stream	Drainage Area acres	Length miles	Slope ft/mile	Tributary to	Chapter 93
Cooks Run	16384	11.6	83.3	West Branch Susquehanna River	EV
Hammersley Fork	20928	8.6	88.3	Kettle Creek	EV
Kettle Creek	157440	46.5	20.3	West Branch Susquehanna River	EV
Young Womans Creek-Left Br	22976	11.2	92.6	Young Womans Creek	HQ
Young Womans Creek	56256	15.8	79.7	West Branch Susquehanna River	HQ
Hyner Run	18560	8.8	135	West Branch Susquehanna River	HQ
Baker Run	22592	9.4	164	West Branch Susquehanna River	HQ
Tangascootac Creek	23424	11.3	65.3	West Branch Susquehanna River	CWF
Lick Run	24384	16.3	89.3	West Branch Susquehanna River	EV
Big Run	22080	16.7	69.6	Beech Creek	CWF
Beech Creek	110080	35.1	27.3	Bald Eagle Creek	CWF
Little Fishing Creek	26944	15.8	66.9	Fishing Creek	HQ
Long Run	15616	13.3	106	Fishing Creek	HQ
Fishing Creek	115840	42	20.4	Bald Eagle Creek	HQ
Bald Eagle Creek	493440	56.1	10	West Branch Susquehanna River	CWF

Adapted from Bulletin No.16, Pennsylvania Gazetter of Streams Part II, June 1984

Table 3

Impaired Streams List

Watershed	Township	Attaining	Pollutant	Location
Fishing Creek	Greene	Y		East of Loganton Borough
Fishing Creek	Greene/Loganton Boro	N	Ag Silt/WW	Mill Run West to Logan Mills
Fishing Creek	Logan	N	Ag Silt	Tylersville Bridge to Cherry Run
Fishing Creek	Porter/Lamar	Y		Nittany Valley
Long Run	Lamar/Greene	Y		Nittany/Sugar Valley
Cedar Run	Porter/Lamar	Y		Nittany Valley
Bald Eagle Creek	Bald Eagle/Beech Creek	Y		Bald Eagle Valley
Sugar Run	Bald Eagle	N	Bank Modifications/ Small Residential Runoff (Siltation)	Sugar Run Valley
Tangascootack	Bald Eagle/Beech Creek/ Colebrook	N	AMD	Scootack Headwaters/River
Beech Creek(Big Run)	Beech Creek	N	AMD	Headwaters to Bald Eagle Creek
Birch Island Run	West Keating	N	AMD	Birch Island Run/ River
Sinnemahoning Creek	East Keating	N	Mercury	1.84 miles from River
Sinnemahoning Creek	East Keating	N	Mercury	From Round Island Run Upstream to County Line
Cooks Run	East Keating/ Noyes	N	AMD	Headwaters to River
Milligan Run	Noyes	N	AMD	Headwaters to River
Two Mile Run/Kettle Creek	Noyes/Leidy	N	AMD/Mercury	Headwaters to River
Drurys Run/Stoney Run	Noyes/Leidy	N	AMD	Headwaters to River
Big Plum Run	Dunnstable	N	Crop Related/Small Residential/Siltation	Headwaters to River
Little Plum Run	Dunnstable	N	Small Residential Siltation	Headwaters to River

Data Based on DEP 305B List
(www.emappa.dep.state.pa.us/emappa/viewer.htm)
All other Streams in Clinton County are currently attaining its designation or have not been assessed

Table 4

Net Change in Crop Acres

Crop Acres	2002	1997	net gain/loss
Corn Grain	5931	6413	-482
Wheat	1099	856	243
Barley	25	58	-33
Buckwheat	32	0	32
Oats	367	713	-346
Rye	64	41	23
Tobacco	169	105	64
Soybeans	2415	2089	326
Vegetables	315	447	-132
Hay	9636	0	9636
Alfalfa	6021	5166	855
Other Hay	3067	3042	25
Wild Hay	272	293	-21
Haylage	4584	2273	2311
Corn Silage	3862	0	3862
Total	**37859**	**21496**	**16363**

Data Compiled from National Ag Statistics Survey
2002 Pennsylvania Agricultural Statistics

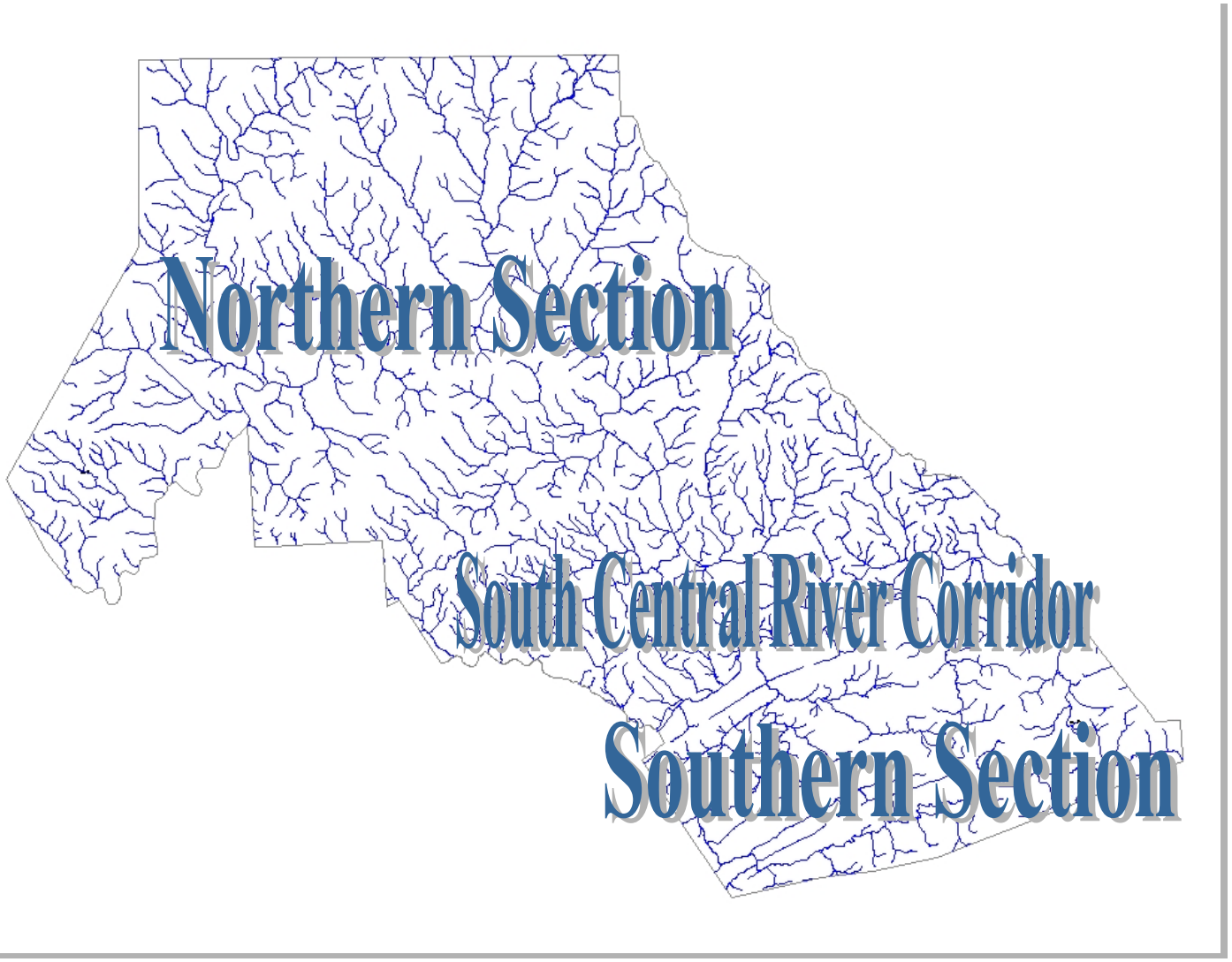
Table 5

Cropland per Watershed

(Percentage under Amish Operation)

Clinton County Location	Farmland Watershed	Acres	
Sugar Valley	Fishing Creek	10,931	
Rosecrans	Fishing Creek	1940	
Nittany Valley	Fishing Creek	14200	
Nippenose Valley	Antes Creek	3128	
Bald Eagle	Bald Eagle Creek	5600	
Lock Haven to Pine Creek	Susquehanna River	4642	
		40,441	**Total Active**
other	various	3559	
Total Cropland in Fishing Creek		**27,071**	**67%**
Cropped by Amish (Fishing Ck)		**17,571**	**65%**

Figure 1


Northern Section
South Central River Corridor
Southern Section