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## **I. COUNTY DESCRIPTION**

Clearfield County is located just west of the center of Pennsylvania on the western slope of the Allegheny Mountains. The county is 37 miles from north to south and 40 miles from east to west. With an area of 1,143.5 square miles, 86.9% of which are in the Chesapeake Bay Watershed, Clearfield County is the fourth largest county in the state.

The topography of Clearfield County is steeply rolling to hilly. The county has no distinct mountain ranges, but there are ridges and hills broken by valleys and streams. The West Branch of the Susquehanna River leaves Clearfield County in Karthaus Township in the northeast corner of the County at an elevation of 798 feet, which is the lowest point in the County. As the West Branch enters the County in Burnside Township its elevation is 1,364 feet, meaning the river's elevation drops 566 as it winds through Clearfield County.

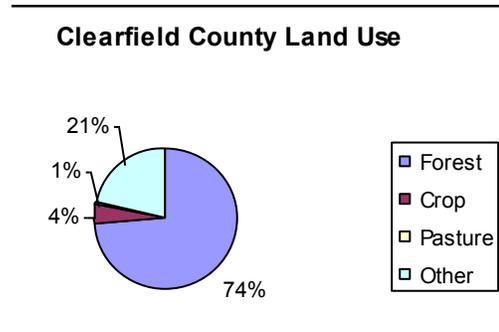
Soils in the region have a moderate to high erodibility. Rayne, Allegheny, and Clymer soils are among the most productive for agricultural use.

The West Branch of the Susquehanna River and tributaries of the West Branch form the principal drainage system for most of the county.

The 2000 census shows Clearfield County's population at 83,382, with a density of 73 persons per square mile. Based on population, we rank 36<sup>th</sup> in the state, and 54.1 percent of our population is considered rural.

We are home to 468 privately owned farms, which encompasses nearly 61,000 acres. The livestock operations are mainly beef, dairy, and veal. There are also crop farms that grow corn, wheat, oats, barley, hay and soybeans.

With over 74 percent of the acreage in our county that is wooded, timber harvesting is also a large industry. According to Penn State Cooperative Extension data, the lumber and wood product industry is the sixth largest employer in our county. The West Branch Susquehanna watershed is included in Pennsylvania's Lumber Heritage Park.



Clearfield County is the home to two State Parks – Parker Dam and S. B. Elliot. Curwensville Lake and Wopsononock Natural Area are recreation areas operated by the County. We also have an extensive network of Rails to Trails. Hunting, fishing, and other outdoor recreation is a large part of our county's economy.

Clearfield County has a rich history in the coal, farming and lumber industries. For 200 years, these industries were responsible for the growth and prosperity of our county. Now, however, we are dealing with the negative effects left on our environment. The Clearfield County Conservation District is committed to working to improve and restore our woodlands, fields and waters.

## **II. WATER RESOURCES / QUALITY**

Clearfield County contains a significant portion of the headwater area of the West Branch of the Susquehanna. According to the *West Branch Susquehanna River Non-point Assessment* completed in 1997 the river is considered severely degraded. The main cause of degradation is abandoned mine drainage (AMD). Other causes of degradation include malfunctioning septic systems, sewage treatment plants, timber harvesting, natural gas extraction, agriculture, and storm water run-off. Some of the largest tributaries to the river are Chest Creek, Anderson Creek, Clearfield Creek, and Moshannon Creek which forms the Clearfield and Centre County border.

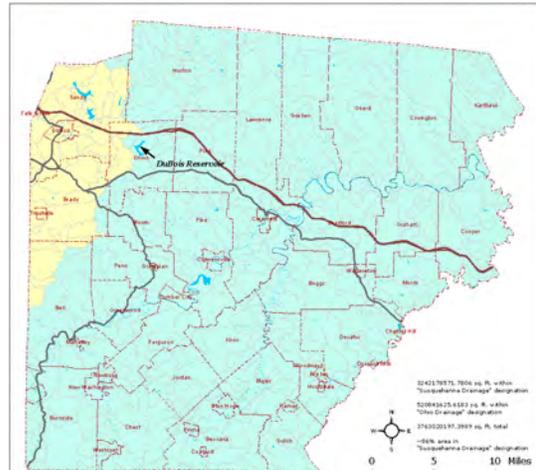
The West Branch of the Susquehanna is impaired when it enters Clearfield County,

mostly by metals and siltation caused by AMD. The river is no longer on the 303(d) list below Burnside. There is great improvement after Chest Creek enters; in fact, the river supports a viable fishery from this point downstream to Clearfield. Sediment pollution is a problem, however. According to US Army Corps of Engineers bathometric survey, the water holding capacity of Curwensville Lake has decreased by 3.5 % over the last 40 years due to siltation. In 2002 the Susquehanna River Basin Commission (SRBC) completed a *West Branch Susquehanna Sub basin Survey*. Areas of study were water quality, benthic macro invertebrates and biological and habitat conditions. When assessing the aquatic habitat, embeddedness and sediment deposition are both parameters that indicate a siltation problem. Likely causes of siltation are be due to AMD, farming practices and timbering just to name a few. Low numbers on the habitat evaluation form can indicate a problem. Sites sampled from Clearfield to Karthaus all showed siltation was an issue although not on the 303(d) list for this parameter. A portion of the West Branch downstream of Clearfield is on the 303(d) list for siltation from road runoff and nutrients from an upstream impoundment. Downstream after the influence of Clearfield Creek the river is impaired by metals from AMD. At Shawville, the West Branch is on the 303(d) list not only because of AMD but also for thermal modifications from the Shawville Power Plant. A few miles downstream it again can support fish although it continues to be impaired. Moshannon Creek enters the river near Karthaus contributing copious amounts of metals from AMD.

Chest Creek is the first large tributary to enter the West Branch and the Chest Creek Watershed has a drainage area of 129 square miles. The land use of the watershed is primarily forested with some surface mining and farms. Its headwaters are located in Cambria County and flows north until its mouth near Mahaffey. Chest Creek is largely the reason why the West Branch is cleaner at this point. It is protected as a Cold Water Fishery. Rogues Harbor Run, a tributary near Westover, is classified as exceptional value and is considered a Wilderness Trout Stream by the Fish and Boat Commission. Pine Run, north of Westover was recently upgraded to a high quality fishery. Many tributaries in Cambria County are on the 303 (d) list for siltation due to agriculture. Although not considered impaired in Clearfield County, Chest Creek has no lack of problems. North Camp Run recently had a TMDL completed due to impairment by AMD. Also, the study completed by SRBC shows high levels of embeddedness

and sediment deposition at their site located near Westover. The situation improves near the confluence with the West Branch, but siltation still appears to be a problem.

Anderson Creek enters the West Branch near Curwensville. It has a drainage area of 77.8 square miles. From its headwaters to the City of DuBois Reservoir the mainstream along with its tributaries are protected as a high quality fishery. It flows south and creates the City of DuBois Reservoir. This is the main water source for the city of DuBois and a few smaller, surrounding communities. The reservoir itself has been filling



*Blue area indicates Chesapeake Bay Watershed;  
Yellow area indicates Ohio River Watershed*

in with silt for quite some time decreasing storage capacity. The sources of this siltation are most likely due to timbering, dirt roads and agriculture. During times of drought the situation is quite serious. From this point to the mouth Anderson Creek basin has coldwater fishery protection except for Bear Run, which is a high quality stream. Below the reservoir Little Anderson Creek enters the watershed. It is on the 303(d) list for AMD and siltation due to grazing related agriculture. One of its tributaries, Rock Run, is listed impaired due to siltation caused by improper grazing activities. Further downstream enters Kratzer Run that is on the 303(d) list for AMD and nutrients from on site wastewater problems. One of its tributaries, Bilger Run is on the 303(d) list for the same reasons as Kratzer Run.

A TMDL has been completed for the Anderson Creek Watershed. In order to meet the sediment TMD, a 23 % reduction is needed in sediment loading from agriculture and developed lands along with a 67% reduction for disturbed/abandoned mine lands. Phosphorus was also considered a problem. In order to meet the TMDL levels phosphorus needs to be reduced by 69% from hay/pastureland, 85% from cropland, 62% from developed land and 76% from disturbed/abandoned mine lands. Recommendations for the watershed include reclamation of abandoned mine lands and incorporation of Ag BMP's such as streambank fencing and riparian buffer strips.

Clearfield Creek has a drainage area of 393 square miles and is the fourth largest

tributary to the West Branch. The stream itself has a warm water classification and its tributaries are all coldwater fisheries. Two exceptions are Little Clearfield Creek and Little Muddy Run , both of which are high quality watersheds. Many of the streams in the Clearfield Creek watershed are on the 303(d) list due to metals from AMD. Several of them such as Sanborn Run, North Branch of Upper Morgan Run and Little Muddy Run have had TMDL’s completed. There is also a problem with raw sewage entering the watershed at and around Madera. This situation may be corrected in the future due to plans to build a sewage treatment facility at Madera.

Moshannon Creek is the fifth largest tributary entering the West Branch. The watershed is 269 square miles and the stream itself forms the boundary between Clearfield and Centre County. Land use in the watershed is mostly forest with extensive coal and clay mining. The headwaters of Moshannon Creek are protected as a high quality fishery. From Roup Run downstream the entire watershed is seriously affected by AMD and is only protected as a trout stocked fishery. In fact locals refer to the stream as the “Red Moshannon” due to high amounts of iron precipitate on the streambed. The tributaries are considered coldwater fisheries. Most of the pollution from AMD enters from Clearfield County. However several watersheds in Centre County contribute to the problem. Streams in Centre County such as Six Mile Run, Black Moshannon, Mountain Branch, the upper reaches of Trout Run and Cold Stream are all protected as high quality fisheries. Ames Run is the only Clearfield County tributary that is protected as a high quality fishery. Sewage is also a problem in Moshannon Creek. The town of Osceola Mills has no sewage treatment facility and raw sewage is discharged into the stream.

SUMMARY BY WATERSHED

There are other large watersheds that enter the West Branch between Clearfield and

<b>TRIBUTARY</b>	<b>DRAINAGE AREA</b>	<b>IMPAIRMENT</b>
Chest Creek	129 sq miles	Siltation AMD
Anderson Creek	77.8 sq miles	Siltation AMD
Clearfield Creek	393 sq miles	AMD Sewage
Moshannon Creek	269 sq miles	AMD Sewage

Karthus. Major watersheds with headwaters in the Moshannon State Forest include Montgomery Run, Moose Creek, Lick Run, Trout Run, Deer Creek and Mosquito Creek. All of these streams have acid deposition problems. Mining and agriculture in these watersheds occur at their lower reaches near the confluence with the West Branch. All of these streams, with the exception of Deer Creek, are protected as high quality. Montgomery Run, Moose Creek, Lick Run and Deer Creek have TMDL's completed or in progress.

Bennett Branch of the Sinnemahoning does not directly affect the West Branch in the county although its headwaters begin here. It is protected as coldwater fishery. The stream itself flows in a northeast direction from Clearfield County through Elk and Cameron Counties until it joins the Driftwood Branch of the Sinnemahoning in Driftwood. Sinnemahoning Creek enters the West Branch at Keating in Clinton County. Unfortunately the watershed does not have great beginnings in Clearfield County. It is on the 303(d) list for siltation from road runoff and from draining and filling. Near Penfield Bennett Branch is on the 303(d) list due to low pH and metals from AMD mainly by contributions from Bark Camp Run, Mill Run and Tyler Run.

### **III. TRENDS OF SIGNIFICANCE TO WATER QUALITY**

#### **A. Ag Profile in Clearfield County**

There are 468 farms in Clearfield County totaling 60,961 acres. The majority of our commercial operations are beef and dairy. There are also several veal production facilities in the county. There are no agricultural concentration areas in the county, rather the operations are spread throughout. One exception is the Chest Creek watershed. Agricultural activities have made a noticeable influence to water quality in this waterway.

There are 40 dairy farms in the county with the average herd size being 50 production animals. This number does not include the young stock (calves and heifers). Many of the dairy farms in the county do not have facilities to store manure. This situation leads to daily spreading of manure. Daily spreading can cause the potential for pollution due to manure being

spread on saturated, frozen or snow covered soil conditions. The steep slopes on county farms add to this problem. Milkhouse waste water from the operations lacking storage facilities is typically surface discharged untreated and ends up in surface or ground water. Another serious erosion and nutrient problem arising from dairy farms in the county is the lack of stabilized loafing and/or exercise areas for the animals. Most operations have a sacrifice lot that is void of vegetation and becomes very muddy a large portion of the time. Since most of the dairy farms are located near some type of watercourse, sediment and nutrients from these lots washes into the waterways. The Clearfield Conservation District has been working with operators to address these lot runoff problems but much work remains to be completed.



There are approximately 100 commercial beef cattle operations in the county with an average herd size of 30 animals. Many of the beef operations pasture the animals a large portion of the year. Typically minimal pasture management is utilized thus the areas become severely overgrazed. Also, beef cattle in the county are generally allowed to spend time outside of the barn all year on a barnyard or feedlot. In most cases the feedlots are unstabilized and become muddy messes most of the year. Often the feedlots are near a stream or other waterway. Runoff from, these unstabilized feedlots can enter waterways during storm and snowmelt events. The conservation district and NRCS has been working with beef producers to improve pasture management and stabilize feedlot areas. Financial and technical assistance has been provided to a number of county beef farms through such programs as Chesapeake Bay, Act 6, Growing Greener, EQIP, AMA and Project Grass. Much work remains to be done. The district has a fairly long list of producers who wish to install BMPs to reduce runoff problems as funding becomes available.

Many of the dairy and beef producers grow corn for silage that is fed to the animals. According to NRCS data for 2004 approximately 2,000 acres of cropland are in corn silage. These corn silage fields are chopped in the fall and typically left all fall and winter with minimal residue and /or vegetative cover. Due to the soil types and slopes in the county this can lead to serious erosion problems. Very few operators plant cover crops to help stabilize the soil over winter. A short growing season is one of the reasons that this practice is not widely accepted in our County. Also, any nitrogen left in the soil from manure or fertilizer applications is susceptible to leaching or volatilization given the bare soil conditions of these silage fields. NRCS survey results list a total of 5,600 acres of corn are grown in the county. Of this total 64% of these acres are conventionally tilled with a moldboard plow. Less than 10% of the corn is no-till planted. Traditional plowing can lead to serious erosion problems due to the exposed nature of the soil. Many farmers plow in the fall if conditions are suitable, thereby leaving the soil exposed all winter. Not only is this an erosion issue, but also all carbon in the soil is lost. Very few farmers in the county own a no-till corn planter. The Clearfield Conservation District owns a no-till forage planter that it leases to farmers to plant forage crops such as hay and oats.

There are three commercial veal production facilities of which we are aware in the county with a total of 800 animals. These veal facilities all have inadequate manure storage facilities. Historically underground fuel storage tanks have been used to store veal manure. These steel tanks are typically undersized and have the potential to develop rust holes and leak. The conservation district is working with the veal producers to ensure that future pollution events from manure spills or leaks do not occur.

There are no large-scale poultry or swine operations in Clearfield County at this time. The *National Agriculture Statistics Service* County Summary for 2002 lists Clearfield County as having 1,182 broiler chickens, 1,189 laying hens, 94 sheep and 483 hogs.

A significant problem in the county is from horses. There are many landowners who have horses that are causing erosion and nutrient problems in our waterways. Often the pastures are poorly managed and severely overgrazed. Many horse owners allow the animals to

have full access to streams within the pasture. Traditional stream fencing programs did not address these horse pastures as they are not considered production animals. According to a Cooperative Extension survey there are approximately 1,500 horses in the county. Many of these horses are kept on limited acreage. A financial and technical assistance program that addressed stream fencing on horse pastures would make a significant difference on sediment and nutrient reductions as well as establishing riparian buffer zones that would benefit terrestrial and aquatic wildlife.

## **B. Other Significant Sediment and Nutrient Sources**

### 1. Forestry in Clearfield County



As mentioned earlier in this report, forests cover 74% of the county, 80% of which is privately owned. Timber harvesting and the forest products industry is a vital part of the economy in Clearfield County. The timber and forest products industry is the 6<sup>th</sup> largest employer in the county employing a total of 1,279 individuals. Annual value of timber harvest alone in Clearfield County exceeds 10

million dollars. The forestry, wood products and paper sector contributes 51 million dollars annually to the economy of the county. In addition to the traditional cutting of trees for lumber, a chipping plant centrally located in the county has increased the demand for pulpwood in recent years. The chips are trucked to paper manufacturing facilities, primarily the Weyerhaeuser Paper Mill in Johnsonburg. The increased demand for pulpwood has led to the cutting of trees that were traditionally not harvested due to poor quality, undesirable species, etc...

The process of harvesting trees can lead to considerable disturbance of the soil. Log landings, skidder trails and haul roads all must be constructed in order to move the trees from the forest to the highway. A total earth disturbance of several acres of bare soil is common on a typical harvest site. Many harvest sites are located in close proximity to waterways. Some of

the most productive forests are in the hollows and valleys in the county. Compounding this problem are the steep slopes and erodible soils that are typical of our forested areas. The conservation district typically receives in excess of 50 logging related erosion complaints each year.

Skidder trails can lead to significant erosion problems as they tend to run perpendicular to the slope and become very unstable from repeatedly dragging logs on them. Skid trails often extend directly downslope to a stream crossing thereby acting as a water conveyance during storm events. Water leaving a timber harvest site may be laden with sediment and the attached nutrients.

Log landings are the central location where the logs are skidded to and stacked for loading onto trucks for transport to the mill or chip plant. Log landings can range in size from several thousand square feet to over an acre depending on the size of the harvest operation. Landings can become very compacted and puddled and are therefore a source of runoff and erosion. Haul roads that log trucks travel from the landing to the nearest public road typically become very compacted and are also a source of significant erosion if not properly managed.

After a timber harvest is complete, it is imperative that water control BMPs are installed and the disturbed soil is revegetated. Many timber harvesters do not take measures to vegetate the exposed soil. In temperate climates like ours, natural regeneration occurs rapidly on recently harvested woodland. However, heavily used areas like landings and roads are very slow to naturally regenerate because equipment removes the organic layer and compacts the soil. The organic soil layer, composed largely of leaf duff, breaks rainfall, absorbs water and reduces overland flow. Exposed mineral soils are very susceptible to erosion. Risk of erosion can be greatly reduced by reseeding sites immediately after completion of the harvest. Reseeding is most effective if the disturbed areas are limed and fertilized before seeding. It is imperative that a layer of hay or straw mulch be applied to protect the seeds and expedite the germination process. Once the roads, trails and landing have well-established vegetation they provide excellent habitat for a number of forest dwelling wildlife. Wild Turkeys, for example, utilize these grassy areas to forage for insects.

The conservation district works with timber harvesters to provide technical assistance for installing BMPs that reduce erosion. However, many timber harvesters fail to properly revegetate the disturbed soil on their sites due to financial constraints, lack of technical guidance or any one of a number of reasons.

## 2. Erosion and Sedimentation in Clearfield County

The rate and magnitude of soil erosion by water in Clearfield County is controlled by the following factors:

### Rainfall Intensity and Runoff

Both rainfall and runoff factors must be considered in assessing a water erosion problem. The impact of raindrops on the soil surface can break down soil aggregates and disperse the aggregate material. Lighter aggregate materials such as very fine sand, silt, clay and organic matter can be easily removed by the raindrop splash and runoff water; greater raindrop energy or runoff amounts might be required to move the larger sand and gravel particles. Clearfield County has a total annual precipitation of 38 inches. Of this, 23 inches, or 60 percent, usually falls in April through September. Thunderstorms occur on about 35 days each year on average. Thunderstorms occur most in the summer months, usually creating heavy rains and resulting in the most severe erosion.

Soil movement by rainfall (raindrop splash) is usually greatest and most noticeable during short-duration, high-intensity thunderstorms. Although the erosion caused by long-lasting and less-intense storms is not as spectacular or noticeable as that produced during thunderstorms, the amount of soil loss can be significant, especially when compounded over time. Runoff can occur whenever there is excess water on a slope that cannot be absorbed into the soil or trapped on the surface. The amount of runoff can be increased if infiltration is reduced due to soil compaction, crusting or freezing. Runoff from the agricultural land may be greatest during spring months when the soils are usually saturated, snow is melting and vegetative cover is minimal.

### Soil Erodibility

Soil erodibility is an estimate of the ability of soils to resist erosion, based on the physical characteristics of each soil. Generally, soils with faster infiltration rates, higher levels of organic matter and improved soil structure have a greater resistance to erosion. Twelve percent of the undisturbed soils in Clearfield County are considered to be an erodible soil with a k factor of  $>0.37$ . An additional thirteen percent of soils is considered disturbed from surface mining, which results in surfaces that have a high erodibility factor.

### Vegetation

Soil erosion potential is increased if the soil has no or very little vegetative cover of plants and/or crop residues. Plant and residue cover protects the soil from raindrop impact and splash, tends to slow down the movement of surface runoff and allows excess surface water to infiltrate.

The erosion-reducing effectiveness of plant and/or residue covers depends on the type, extent and quantity of cover. Vegetation and residue combinations that completely cover the soil, and which intercept all falling raindrops at and close to the surface and the most efficient in controlling soil (e.g. forests, permanent grasses ). Partially incorporated residues and residual roots are also important as these provide channels that allow surface water to move into the soil.

### Conservation Measures for Agriculture

Certain conservation measures can reduce soil erosion by both water and wind. Tillage and cropping practices, as well as land management practices, directly affect the overall soil erosion problem and solutions on a farm. When crop rotations or changing tillage practices are not enough to control erosion on a field, a combination of approaches or more extreme measures might be necessary. For example, contour plowing, strip cropping, or terracing may be considered. The Conservation District continues to work with the USDA, Natural Resource Conservation Service to help farmers develop and implement Conservation Plans. The District responds to complaints from erosion problems occurring on tilled land.

## Education

One of the best ways that we address our erosion and sediment concerns is through education. We hold an annual Contractor's Workshop that is open to any contractor, excavator, or developer who is interested in learning more about rules and regulations pertaining to site development. The conservation technician regularly visits local schools to address conservation issues.

We also participate in the Sustainable Forestry Initiative Workshop offered by the Department of Conservation and Natural Resources. At these workshops, our Conservation Technician explains when an E&S Plan is needed and how to complete and follow an E&S Plan.

## Urban Responsibilities

The District's Urban responsibilities include the review and approval of National Pollution Discharge Elimination Permits for earth disturbances greater than one acre, including associated stormwater management controls. A friendly working relationship with all Townships and Municipalities has been established to help ensure that future development is properly designed to minimize complaints. Although Clearfield County has not experienced the major urban sprawl and new road construction projects that our neighboring counties have, we are still faced with an increase in development.

### 3. Natural Gas Exploration and Extraction

A somewhat recent issue that is contributing to erosion and sediment problems in the county is the exploration for natural gas. The building of roads, drilling sites and transmission lines disturb large amounts of soil. Many gas well roads never become permanently stabilized due to local soil conditions and slope. The well sites typically become stabilized with vegetation after the drilling operation is complete. The conservation is not directly involved with erosion control efforts for the oil and gas industry. However, we acknowledge that this is a significant source of sediment pollution to county waterways.

Pennsylvania is on record pace for new gas well drilling permits. Ten years ago, in 1995, the state issued 467 drilling permits in the DEP southwest region, of which Clearfield County is a part. This year, 2005, the DEP southwest region estimates it will issue nearly 2,200 permits. The increase in drilling is directly related to an increase in gas prices. New techniques enable drillers to get gas that couldn't be recovered decades ago. In Clearfield County, 239 gas wells have drilled in the past two years alone.

#### 4. Malfunctioning Septic Systems and Raw Sewage Discharges

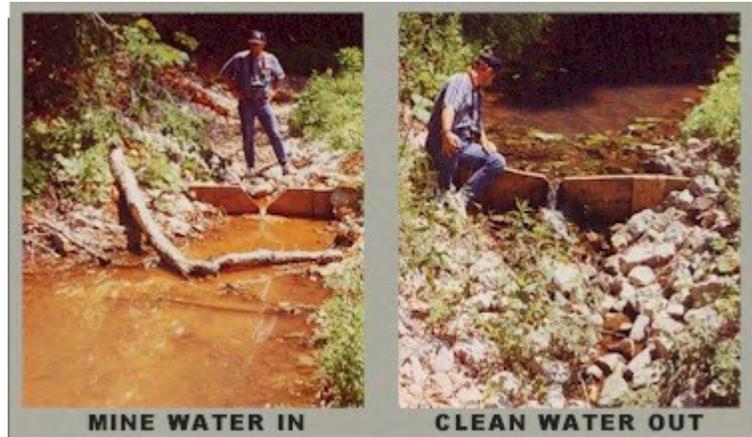
Malfunctioning septic systems and raw sewage discharges are problems in all watersheds in the county. The problem is greater in some streams than it is in others. For example, raw sewage is discharged into Moshannon Creek from the town of Osceola Mills and into Clearfield Creek from the village of Madera. Several communities have problems with increased flow to sewage treatment plants during storm events. This is due to storm water from streets, roofs, leaking pipes, etc... mixing with sewage flows to the plants. The additional flow at times exceeds the capacity of the plant resulting in raw sewage being discharged directly into the stream or river. This situation occurred numerous times in 2004 due to the frequent heavy rainfall events.

There are faulty septic systems from homes and camps all throughout the county. Clay subsoil dominates in the county and is not conducive to traditional septic systems with leach fields. Many septic systems with leach beds were installed before the law required alternative methods such as sand mound systems

#### 5. Abandoned Surface Mine Drainage

Surface mining activities have disturbed 13% of Clearfield County, or approximately 95,000 acres. A large portion of this land consists of abandoned mines that were never properly reclaimed or vegetated. The Clearfield County Soil Survey lists the erosion hazard of the soil on these sites is moderate to very severe. Compounding the problem is the widespread use of

All Terrain Vehicles (ATV's) and motorcycles on these sites. These vehicles further destabilize the top layer of soil and any vegetation that may be present. Also, many ATV trails travel directly up the slope, causing the trails to act as water channels during storm events.



These trails sometimes become immensely eroded gullies. Continued ATV use also hinders natural vegetation from becoming established. Many abandoned surface mines contribute polluted runoff in the form of sediment and metals to streams during every storm event.

Abandoned deep mines contribute a significant amount of pollution in the form of metals and low pH to county waterways. However, since this report is dealing with sediment and nutrient problems, this topic will not be fully discussed.

#### **IV. Sediment and Nutrient / Source Reductions**

##### **A. Current Programs and Accomplishments**

##### **1. Dirt and Gravel Road Program**

In an effort to reduce sediment, the Clearfield County Conservation District works closely with the State Conservation Commission's Dirt and Gravel Road Pollution Prevention Program. Clearfield County was one of the first in Pennsylvania to take advantage of the state's environmental clearance of a new method of maintaining dirt and gravel roadways.



*Before and After  
Photos Where  
Stabilized Driving  
Surface Was  
Applied*

The project's objective is to correct dust and sediment problems connected with the unpaved (dirt & gravel) road systems in a manner that is sensitive to environmental conditions of living plants, animals, waterways, aesthetics and culture of the area.

The primary goal is to reduce the amount of dust and sediment that gets blown and washed from the roadway into the high quality streams, which results in a change in the water composition in the Chesapeake Bay and other estuaries.

There are a total of 140.4 miles of unpaved roads in our county, as identified by the Center for Dirt and Gravel Road Studies. These qualified roads are adjacent to high quality streams. Since the programs inception, 11 local townships in Clearfield County have participated in stabilizing their unpaved roads through the Dirt and Gravel Road Program. These projects include a variety of environmentally sensitive maintenance practices including ditch stabilization, drainage, and vegetative management, as well as applying driving surface aggregate.

In addition to funding projects, we also concentrate on education. The Clearfield County Conservation District has hosted three Environmentally Sensitive Maintenance Workshops, and has also worked individually with local officials to suggest a variety of ways that they can protect our rivers and streams.



*Stream Crossing Problems Corrected by Installation of New, Larger Pipe*

Our major concern is that at our current funding level it will take over 20 years to stabilize all of the identified sites in our county. There are many more unpaved roads that indirectly create sediment in our streams that we cannot currently address.

## 2. Agriculture

The Clearfield County Conservation District and its partners have been working with landowners to install conservation practices that sediment and nutrient pollution from agricultural operations. Financial and technical assistance is provided by a number of sources/ programs including Chesapeake Bay, Act-6, Growing Greener, 319, Project Grass, Chesapeake Bay Foundation, EQIP, AMA and LTA. Following is a summary of practices installed in Clearfield County since 1999.

**Tim Hudish Farm—Beef**

Implementation of rotational grazing plan  
Fencing  
Improvements to water system in paddocks

**Sanview Dairy Farm - Dairy**

Implementation of an Act-6 approved nutrient management plan (NMP)  
Liquid manure store facility  
Waste transfer system to transport milkhouse waste to the storage structure  
Roof runoff management system

**Randy Swope Farm – Beef**

Completion of a rotational grazing plan  
Heavy use area stabilization at winter feeding site  
Stream fencing  
Improvements to watering system for rotational grazing paddocks

**Icehouse Hill Farm – Beef**

Completion of rotational grazing plan  
Installation of fence to implement grazing plan  
Pasture improvements

**Charles Hubler Farm – Beef**

Concrete heavy use area pad with curbs and collection box  
Manure transfer system  
Vegetated filter area  
Roof runoff management system  
Stabilized cattle walkway  
Spring development  
Stream fencing

**Haag's Green Valley Farm - Dairy**

Implementation of an Act- approved NMP  
Liquid manure storage facility  
Waste transfer system to transport milkhouse waste to the storage structure  
Roof runoff management system

**Krasinski Farms – Beef**

Fence installed to implement rotational grazing plan  
Roof runoff management system

**Goss Run Farm – Beef**

Implementation of an Act-6 NMP  
Construction of roofed concrete heavy use area with curbs  
Roof runoff management system  
Stabilized cattle walkway  
Streambank Fencing on two streams

**Modzel Dairy Farm – Dairy**

Fencing to implement rotational grazing system  
Streambank fencing  
Began work on Act-6 NMP  
I & E of sediment and nutrient problems with NRCS and Bay Engineer

**McClarren Farm – Beef**

Implementation of Act-6 NMP  
Concrete heavy use area pad with curbs and collection box  
Manure transfer system  
Vegetated filter area  
Roof runoff management system

**Kirk Dairy Farm - Dairy**

Liquid manure storage structure  
Waste transfer system for manure and milkhouse waste water  
Roof runoff management system  
Stabilized access road

**Kunsman Beef Farm – Beef**

Concrete heavy use area pad with curbs and collection box  
Manure transfer system  
Vegetated filter area  
Roof runoff management system  
Spring Development

**Priselac Dairy Farm -Dairy**

Implementation of Act-6 approved NMP  
Liquid Manure storage structure  
Waste transfer system for manure and milkhouse waste water  
Grassed waterway  
Stabilized access road

**Scott Smeal Farm - Beef**

Implementation of Act-6 approved NMP  
Roofed concrete heavy use area with curbs  
Roof runoff management system  
Stabilized access lane

**Don Foster Farm- Beef**

Fencing to implement rotational grazing plan  
Streambank fencing  
Stream crossing  
Stabilized cattle walkway

**Jon Taylor Farm – Beef**

Fencing to implement rotational grazing plan

**Charlie Rorabaugh Farm -Dairy**

Stabilized heavy use area  
Structure for water control and culvert pipe  
Stabilized access lane  
Grassed waterway

**Roger Young Farm – Beef**

Roof runoff management system  
Streambank Fencing

In addition to these projects and practices the conservation district and NRCS has completed Inventory and Evaluation reports on numerous operations with sediment and nutrient pollution problems. The Chesapeake Bay Program Engineers recently completed designs for conservation practices on two farms. We will continue to seek funding opportunities for agricultural operators to install conservation BMPs. Also, there are a number of farmers interested in installing streambank fencing. Funding for this practice has become very limited in recent years.

We have worked with numerous farmers in laying out contour strip cropping systems. Often there is no cost-share incentives associated with implementation of contour farming.

The district also assists farmers with administrative and technical assistance in the development and implementation of nutrient management plans. Several concentrated animal operations have been identified in the county that the district is working with.

The district has been involved with educating farmers about the proper disposal of dead animals, primarily from veal and dairy operations. Veal producers in particular may have many dead animals each year to dispose. This can lead to water quality problems since a number of complaints have been received regarding dead animals discarded next to streams. We have been working with the Pennsylvania Department of Agriculture (PDA) to educate producers on proper disposal methods for carcasses, composting in particular. The district recently sponsored a carcass-composting workshop in cooperation with NRCS, PDA, SCC, Penn State Cooperative Extension, PACD and DEP. Other topics presented at the workshop included an update on the nutrient management regulations, conservation planning and Farm Bill conservation programs.

The Conservation and NRCS completed work on a Growing Greener Grant that provided financial and technical assistance for farmers in the Chest Creek Watershed to install conservation practices. Chest Creek is listed on the state 303d list as impaired by sediment and nutrients from agricultural runoff. Chest Creek is a stocked trout stream and a popular destination for fishermen. This was a small grant that we used to gauge farmer interest in installing BMPs in the watershed. Three landowners participated in the project—Mike Kunsman, Charlie Rorabaugh and Roger Young. The practices that were implemented on their operations are outlined above.

### 3. Watershed and Volunteer Groups

The Conservation District has worked hard to encourage the support of volunteer groups, and has been instrumental in the formation of many watershed groups. Some of these groups and their activities are highlighted below:

**Anderson Creek Watershed Association** – This watershed group received 319 funding to complete an assessment of the watershed and to develop a restoration plan. They also received 319 funding in partnership with Pike Township for a limestone sanding project on Bilger and Kratzer Run. They have also sponsored trash clean-ups, and are trying to restore Bilger’s Run, the stream that runs by the Bilger’s Rocks recreation area.

**Chest Creek Watershed Alliance** – The Conservation District received a Growing Greener Grant to implement Ag BMP’s on three farms in the watershed. The District continues to monitor sites below the farms to detect differences in water quality.

**Montgomery Run Watershed Association** – The Clearfield Area High School Watershed Club is working with this group and adopted Montgomery Run as a stream they will be monitoring. The group has completed at least three roadside clean-ups. The group has applied for funding to complete an assessment and restoration plan. It also received funding from OSM to hire an intern to help the group with different aspects of formation.

**Lick Run Watershed** – Recently the Allegheny Mountain Chapter of Trout Unlimited received funding from PA Trout to complete a Coldwater Conservation Plan for the watershed from the headwaters to the confluence of Stone Run. Acid Deposition affects this part of the watershed.

**Clearfield Creek Watershed Association** – This is a group based in Cambria County although a lot of work has been done in Clearfield County. Both the Cambria County Conservation District and the Clearfield County Conservation District received Growing Greener Funds to complete an assessment and restoration plan for the entire watershed. The biggest problem in this stream is AMD. From Madera downstream to the confluence of the West Branch it is very secluded with little human influence along the main corridor. An old abandoned rail trail runs along most of the length of this section. Once restored, this watershed would be beautiful for fishing, canoeing and hiking. It is used for those things to some extent now but with improved water quality this watershed could be a very attractive area for tourists.

**Morgan Run Watershed Group** – This watershed is located in the Clearfield Creek Watershed. It is very remote and only has 3 road crossings. Part of the watershed is in State Game Lands. The biggest problem is AMD and it has an effect on Clearfield Creek. Susquehanna River Basin Commission has been using Morgan Run as one of their subbasin studies. They have been sampling Morgan Run for the past year for water quality, macroinvertebrates and fish. With the help of the Conservation District, this group has received funds to start projects in the headwaters to begin to try to clean up the stream.

**West Branch Sportsmen’s Club** – This group has been working to remediate the affects of AMD on Hubler Run. With the help of many other partners, this group installed a passive

treatment system in the headwaters of Hubler Run and hope to receive funding for another one. This should stop most of the AMD entering this small watershed.

**Moshannon Creek Watershed Coalition** – This watershed group has been making great strides not only towards cleaning the watershed but also increasing public awareness. With the assistance of the Conservation District, the group received funding from Growing Greener to complete an Information Clearinghouse and Watershed Snapshot. The goal of this project is to enter all the background information in a database that will be available on the Moshannon Creek website. The Osceola Boy Scouts are working with this group in completing an assessment on the Trout Run watershed. The Philipsburg and Houtzdale Boy Scouts have also been involved in sampling efforts. The Coalition has completed several trash clean-ups and is looking to complete a historical project on the watershed.

**Emigh Run Watershed Association** – This group, along with the West Branch High School Environmental Club, completed an assessment of their watershed.

**Woodduck Chapter Trout Unlimited** – This is a group that has been working on Cold Stream, the tributary that feeds Cold Stream Dam in Philipsburg.

**Clearfield County Senior Environment Corps** – The organization has been in Clearfield County since 2001, and was formed through a partnership with the Conservation District, the County, Canaan Valley Institute and the Retired Senior Volunteer Program. It is comprised of people over the age of 55. With technical assistance from the Conservation District, volunteers monitor Moose Creek, Lick Run, Mosquito Creek, Deer Creek, Bilger Run and Kratzer Run. They also have had several garbage pick-ups and participate in several outreach activities. The biggest outreach project was the Bicentennial booklet “Clearfield County Waters” that is full of stories about our rivers and streams in the past.

**Mosquito Creek Sportsmen Club** – This group has been working in cooperation with Penn State University to reverse the effects of acid deposition in the Mosquito Creek watershed.

**Central Counties Concerned Sportsmen** – The group is comprised of several sportsmen’s groups in the central part of the state. They purchase limestone sands to place in Laurel Run that flows into Parker Dam. Their contribution has made this stream fishable again.

## **V. MOST EFFECTIVE APPROACHES TO SEDIMENT & NUTRIENT PROBLEMS**

1. Continue erosion and sediment control efforts through the Chapter 102 and NPDES Programs. Will work with excavation contractors, consultants, timber harvesters, oil and gas industry and others to develop and implement erosion and sediment control plans. Also will continue to respond to erosion and sediment complaints.
2. Will focus on erosion controls on timber harvest sites. Explore innovative ways to ensure proper re-vegetation of disturbed soil on these sites.
3. Continue working with agricultural producers on a variety of conservation issues:
  - Conservation planning
  - Nutrient management planning
  - Promote rotational grazing
  - Promote no-till farming
  - Encourage the use of cover crops
  - Stream fencing and riparian buffer establishment
  - Engineered BMP's such as heavy use area protection, barnyard runoff controls, manure storage structures, etc...
4. Will work with other agencies, watershed groups, landowners and municipalities to reclaim abandoned surface mines that are contributing sediment to our waterways.
5. Abandoned Mine Drainage from surface and deep mines is the greatest source of water pollution in Clearfield County. We will continue our partnership efforts to reclaim mined lands and install treatment systems to treat polluted water.
6. Expand the Dirt and Gravel Roads Program by conducting a new assessment of county roads. Many roads that are currently not eligible for funding are contributing to the sediment pollution problem in county waterways.
7. Increase our educational efforts to create an improved understanding of water quality concerns in the county and beyond.