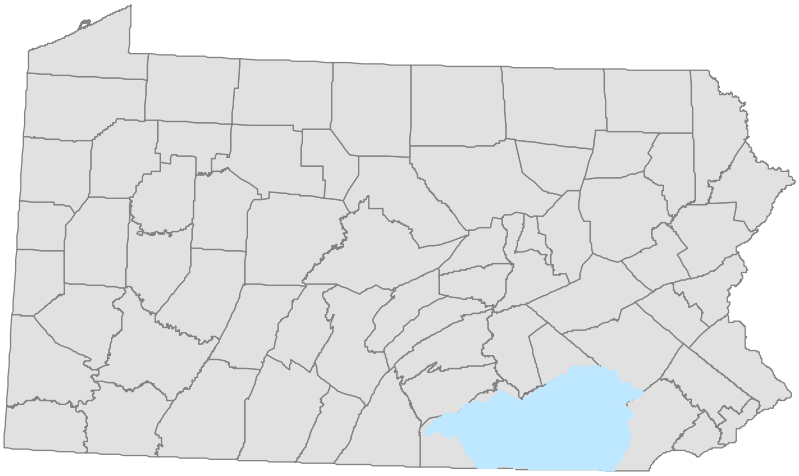


Rapid Watershed Assessment
Lower Susquehanna Watershed

Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help landowners and local leaders set priorities and determine the best actions to achieve their goals.

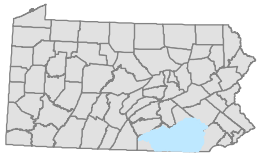


Table of Contents

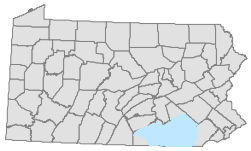
Preface

The Natural Resources Conservation Service (NRCS) is initiating rapid watershed assessments in order to increase the speed and efficiency generating resource information to guide conservation implementation, as well as the speed and efficiency of putting it into the hands of local decision makers. While these rapid assessments provide less detail and analysis than full-blown studies and plans, they do provide a foundation for watershed studies or area planning. In addition, the assessments provide the benefits of NRCS locally-led planning for resource conservation and conservation program implementation in less time and at a reduced cost than more complex studies.

Rapid watershed assessments will be valuable for Farm Bill program delivery, and provide useful information for county, watershed and regional planners. These assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments can help landowners and local leaders set priorities and determine the best actions to achieve their goals.

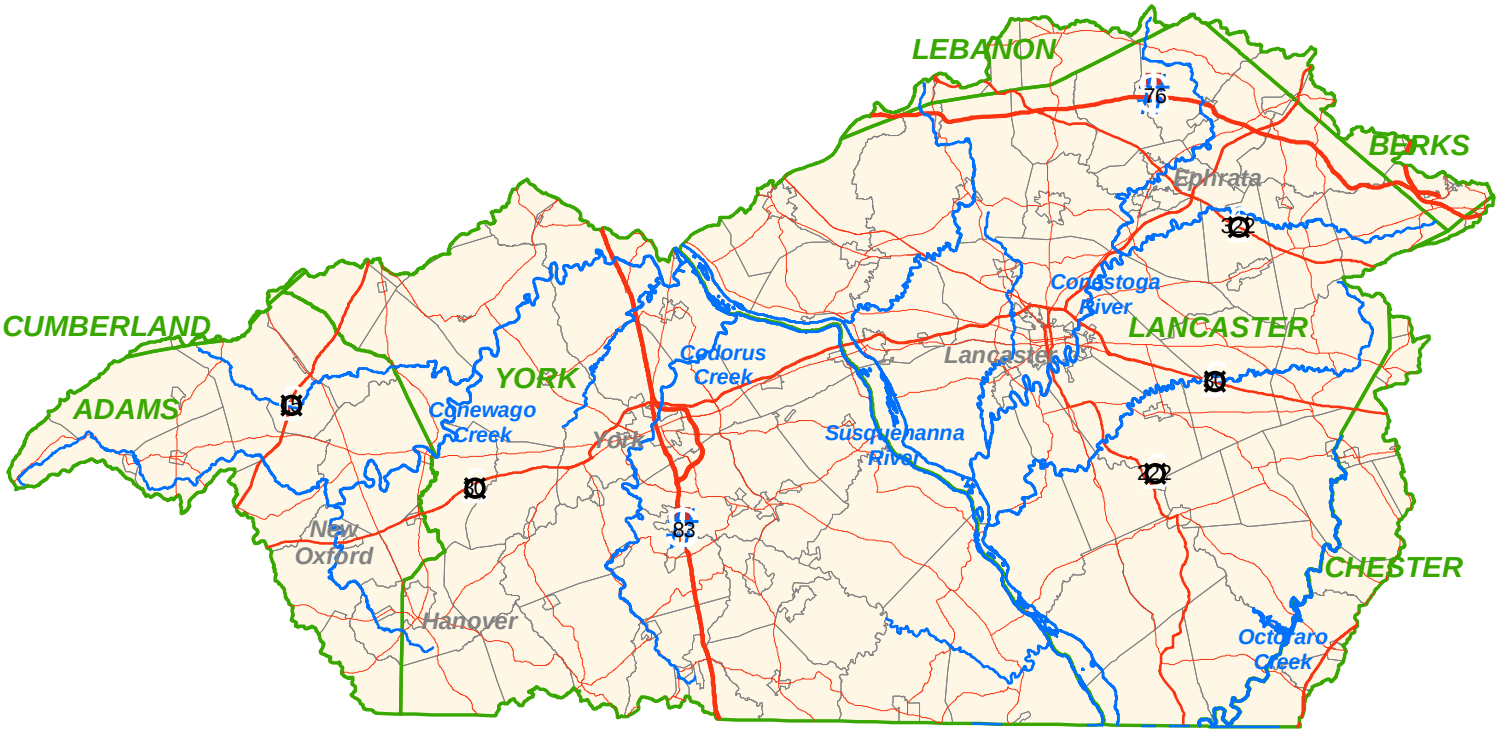
To produce the assessments, quantitative and qualitative data is collected and organized to create a watershed profile using Geographic Information System (GIS) technology. The data is analyzed to allow resource concerns and conditions to become apparent, and to generate maps and information to help people make better decisions about conservation needs and programs.

/s/ Craig R. Derickson
Pennsylvania State Conservationist



Introduction

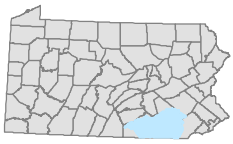
The Lower Susquehanna Watershed is located in southeastern Pennsylvania in portions of Adams, Berks, Chester, Cumberland, Lancaster, Lebanon, and York Counties. The watershed is slightly over 1,410,300 acres in size, of which approximately 866,000 acres is cropland. Seven Service Centers of the Natural Resources Conservation Service, seven County Conservation Districts and parts of the Capital and Southeastern Pennsylvania Resource Conservation and Development Council offices provide assistance to this watershed.



	Acres in HUC	% Acres of HUC
Adams	167,743.4	11.9
Berks	18,699.3	1.3
Chester	50,953.1	3.6
Cumberland	1840.0	.1
Lancaster	618,655.3	43.9
Lebanon	20,994.5	1.5
York	531,241.2	37.7

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Lower Susquehanna Watershed

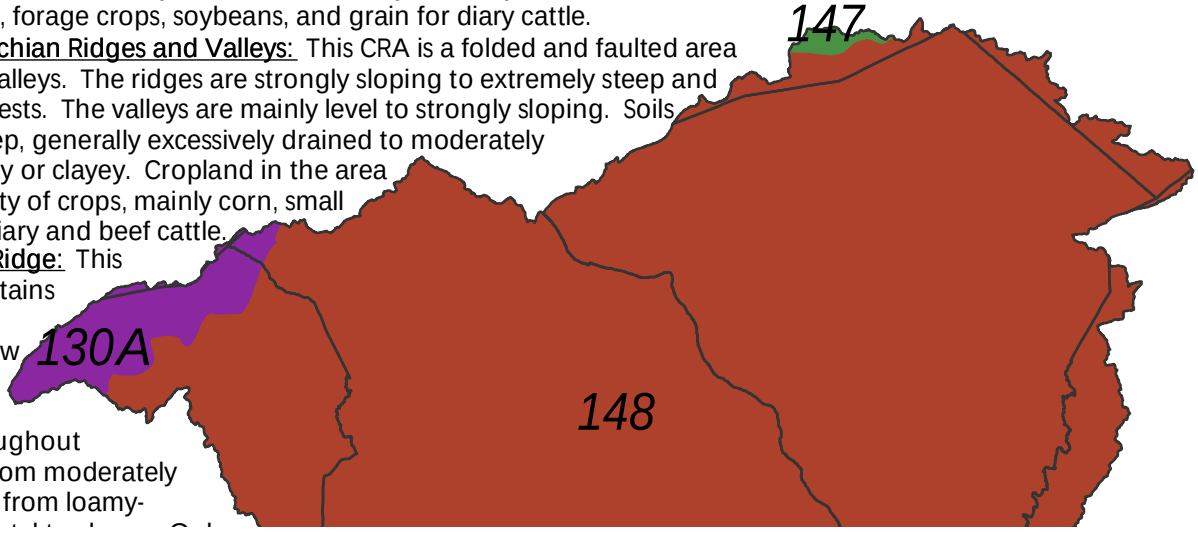


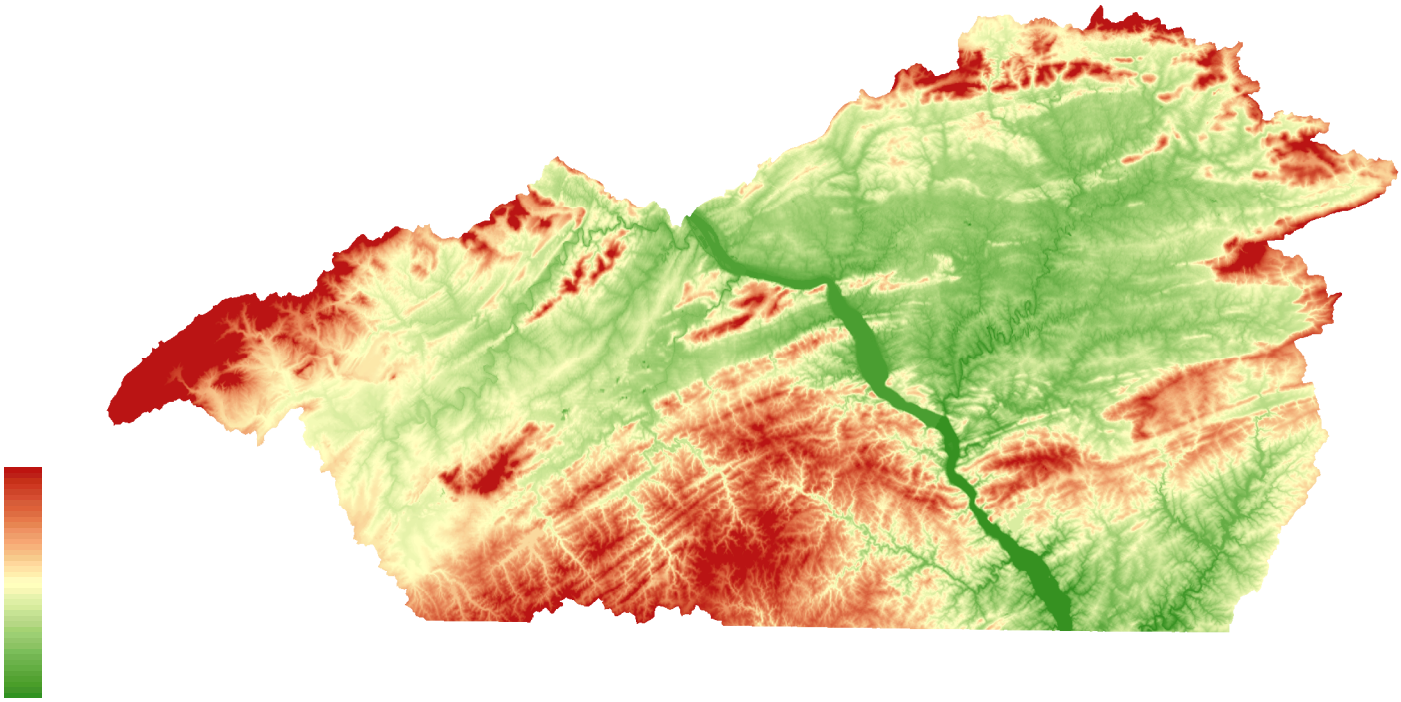
Common Resource Area (CRA)[1]

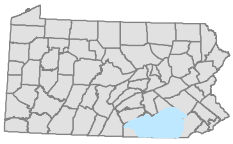
148 - Northern Piedmont: Most of the CRA is an eroded part of the Piedmont Plateau. It is mostly gently sloping or sloping. Intrusive dikes and sills form fairly sharp ridges within the less steep terrain. Soils are moderately deep to very deep, moderately well drained to somewhat excessively drained, and loamy to loamy-skeletal. Farms are mostly crops, forage crops, soybeans, and grain for diary cattle.

147 - Northern Appalachian Ridges and Valleys: This CRA is a folded and faulted area of parallel ridges and valleys. The ridges are strongly sloping to extremely steep and have narrow, rolling crests. The valleys are mainly level to strongly sloping. Soils are shallow to very deep, generally excessively drained to moderately well-drained, and loamy or clayey. Cropland in the area is used for a wide variety of crops, mainly corn, small grain, and forage for diary and beef cattle.

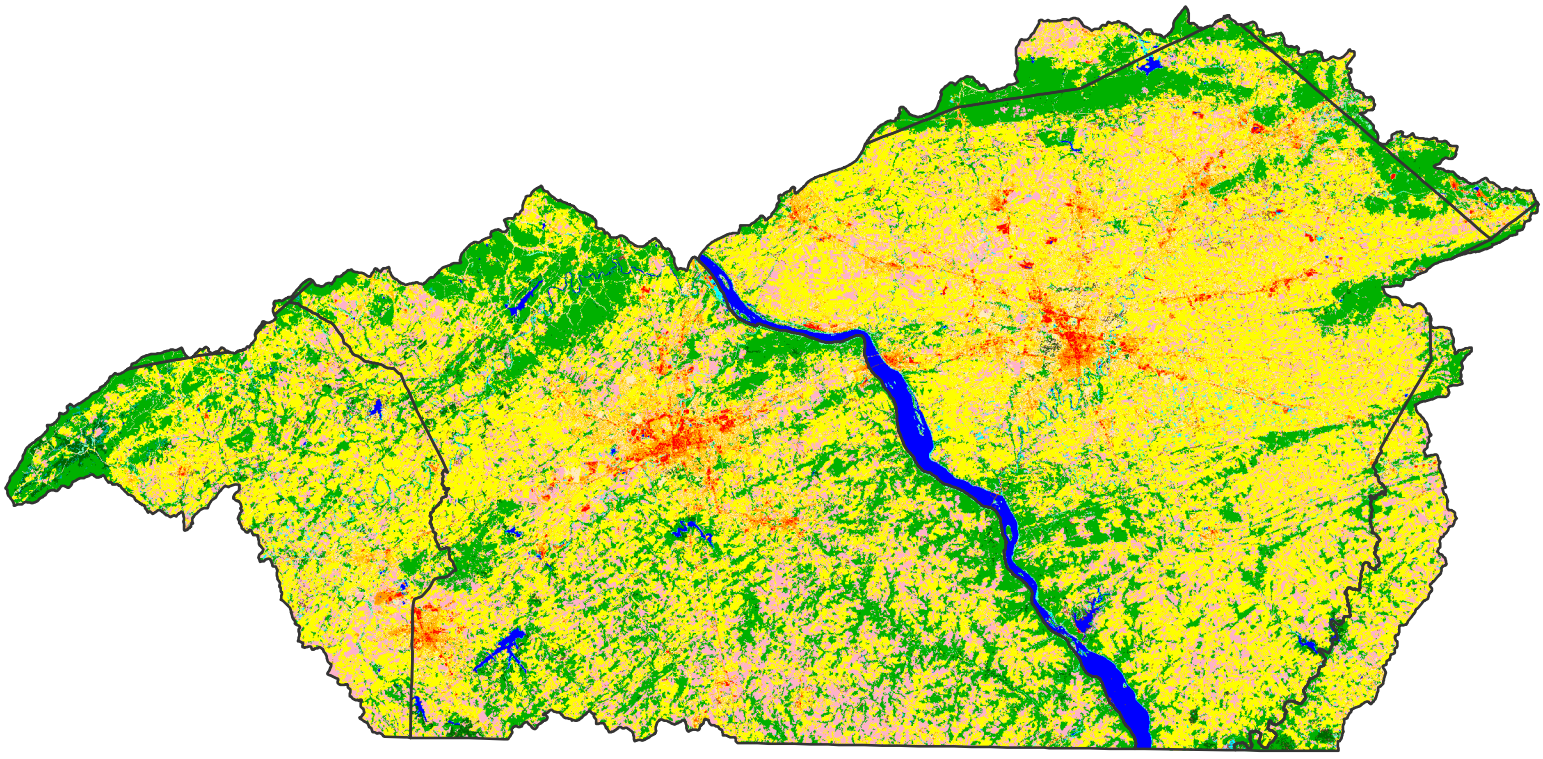
130A - Northern Blue Ridge: This CRA has rugged mountains that have steep slopes, sharp crests, and narrow valleys. Broad valleys and basins and rolling hills are extensive throughout the area. Soils range from moderately deep to very deep and from loamy-skeletal
about
mainly
and ab



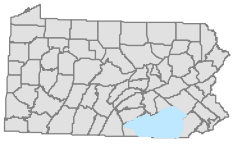




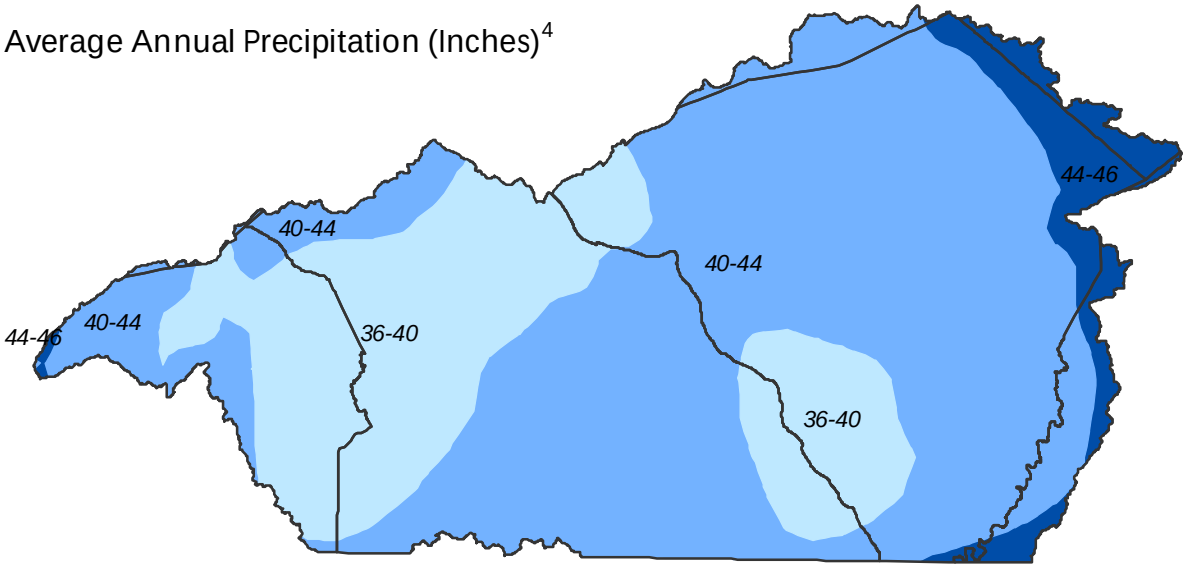
Land Use / Land Cover 2001[3]



	Acres	Percent
Water	25,206.4	1.8
Developed, Open Space	64,595.3	4.6
Developed, Low Intensity	61,290.3	4.3
Developed, Medium Intensity	24,719.7	1.8
Developed, High Intensity	9891.4	.7
Barren Land (Rock, Sand, Clay)	12,822.4	.9
Deciduous Forest	307,921.7	21.8
Evergreen Forest	14,570.6	1.0
Mixed Forest	1628.7	.1
Pasture / Hay	590,315.2	41.9
Cultivated Crops	275,766.0	19.6
Woody Wetlands	14,126.6	1.0
Emergent Herbaceous Wetlands	7374.7	.5
County Boundary		



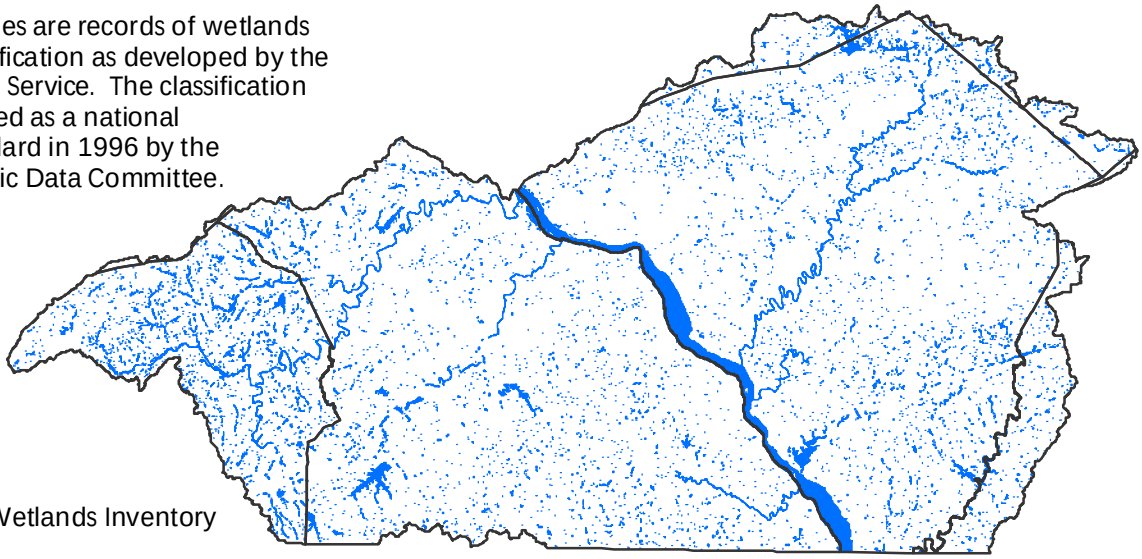
Average Annual Precipitation (Inches)[4]



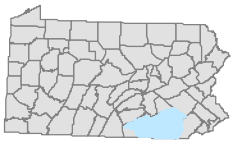
National Wetlands Inventory[5]

Wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface.

NWI digital data files are records of wetlands location and classification as developed by the U.S. Fish & Wildlife Service. The classification system was adopted as a national classification standard in 1996 by the Federal Geographic Data Committee.

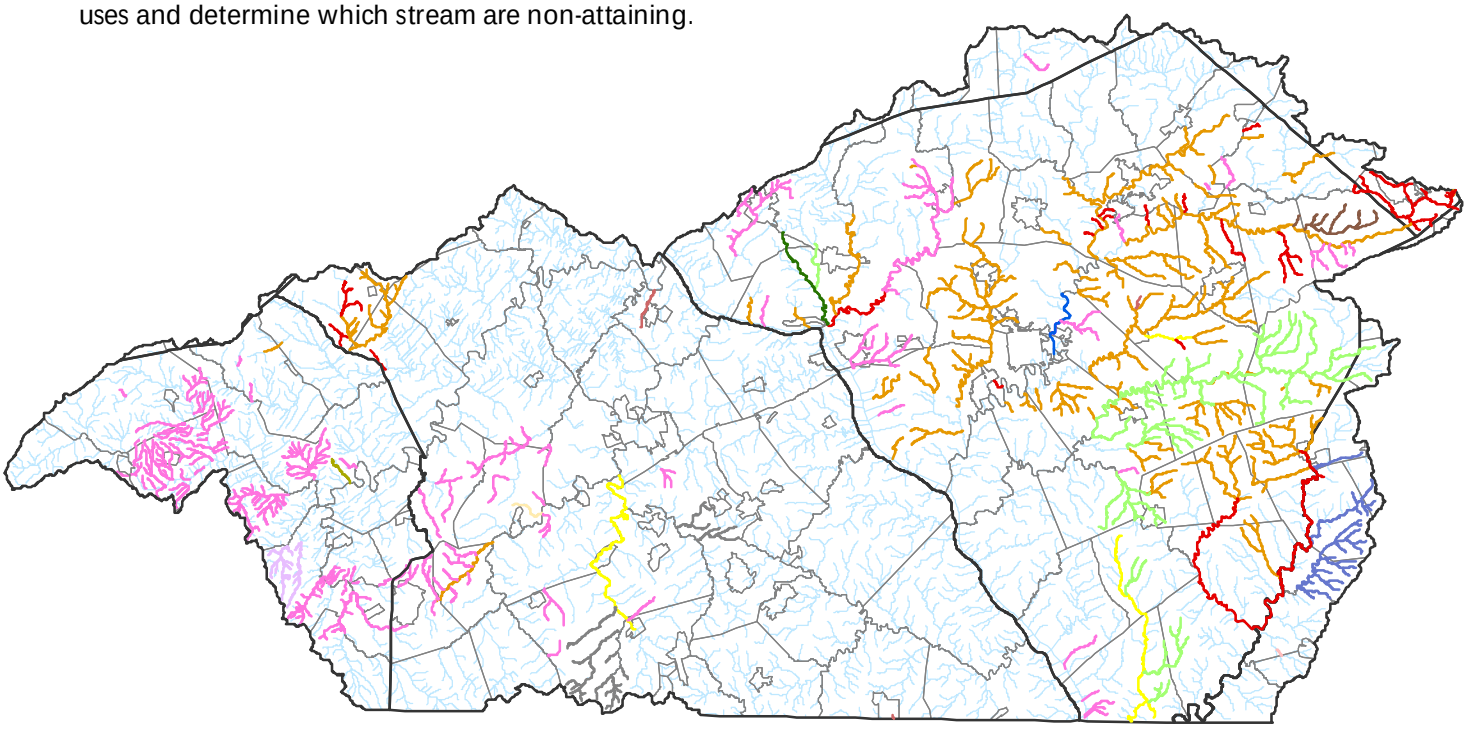


National Wetlands Inventory



Impaired Streams [6]

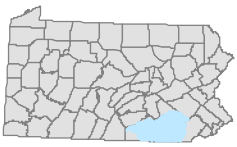
The Streams Integrated List represents stream assessments in an integrated format for the Clean Water Act Section 305(b) reporting and Section 303(d) listing. PA Department of Environmental Protection protects 4 stream water uses: aquatic life, fish consumption, potable water supply, and recreation. The 305(b) layers represents stream segments that have been evaluated for attainment of those uses and determine which stream are non-attaining.



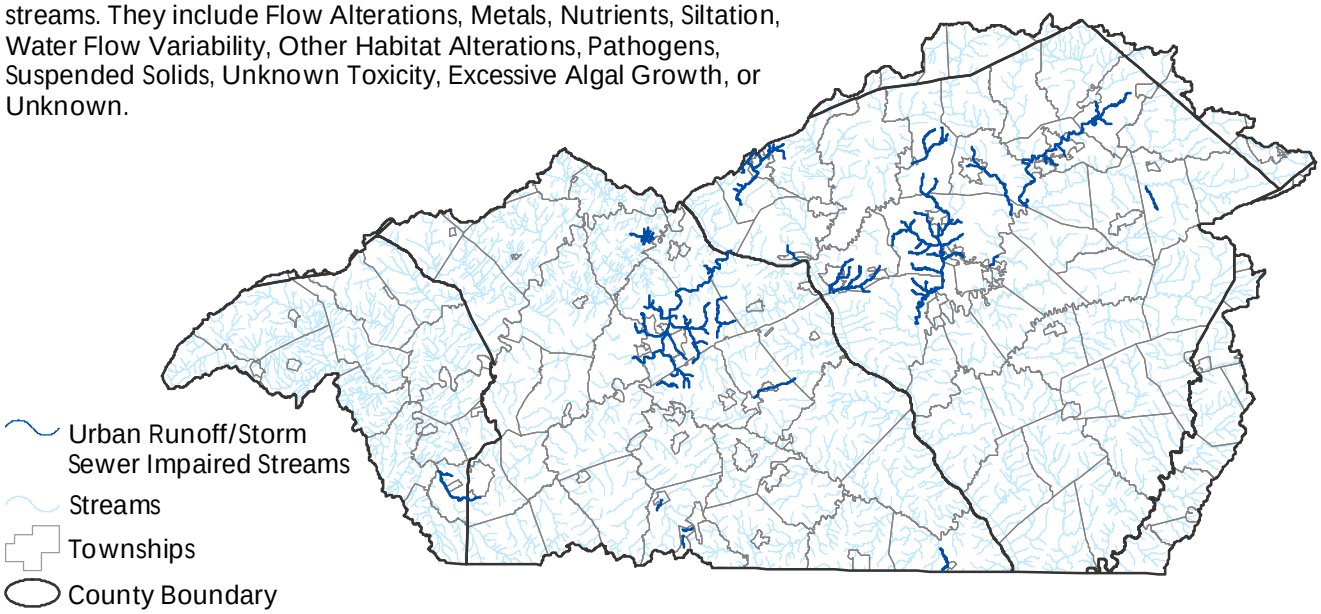
Causes of Agriculturally Impaired Streams:

- Cause Unknown
- Nutrients
- Nutrients and Excessive Algal Growth
- Nutrients and Siltation
- Nutrients and Suspended Solids
- Nutrients, Siltation, and Organic Enrichment/ Low Dissolved Oxygen
- Nutrients, Suspended Solids, and Organic Enrichment/ Low Dissolved Oxygen
- Organic Enrichment/ Low Dissolved Oxygen
- Organic Enrichment/ Low Dissolved Oxygen and Water Flow Variability
- Pathogens
- Siltation
- Siltation and Flow Alterations
- Siltation and Organic Enrichment/ Low Dissolved Oxygen
- Siltation and Other Habitat Alterations
- Suspended Solids
- Water Flow Variability

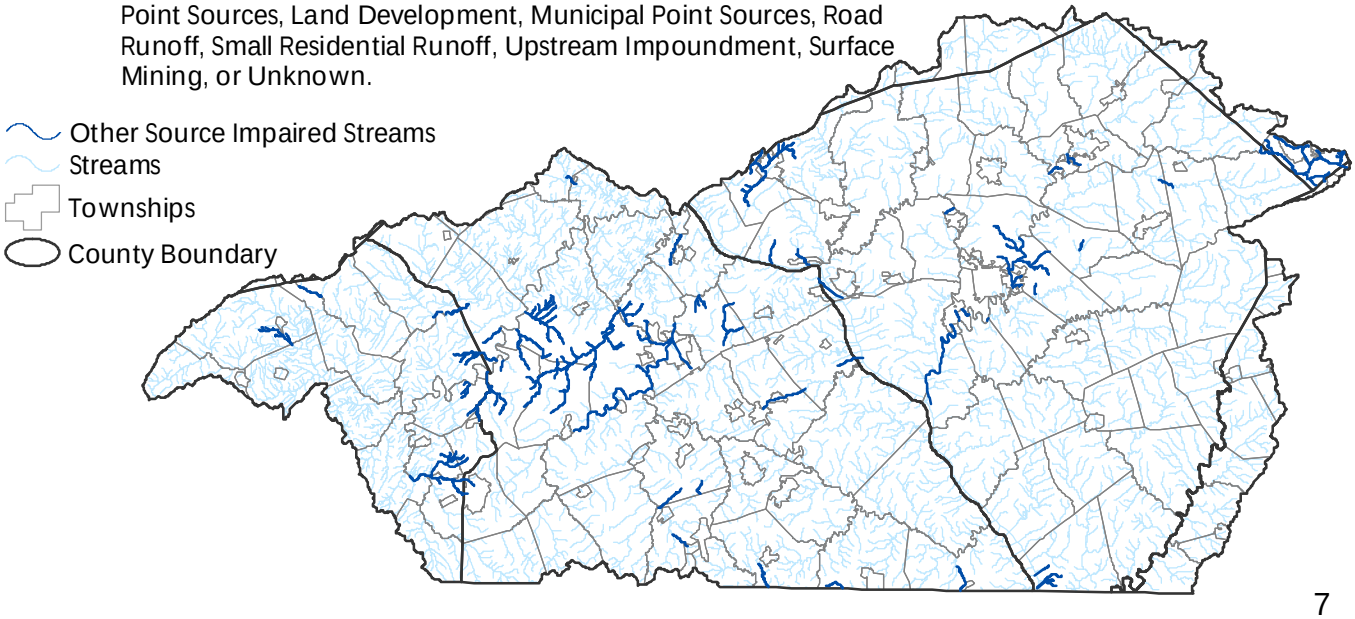
- Streams
- Townships
- County Boundary

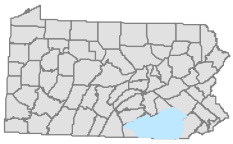


Causes of Urban Runoff/Storm Sewer Impaired Streams:
There are numerous causes of Urban Runoff/Storm Sewer impaired streams. They include Flow Alterations, Metals, Nutrients, Siltation, Water Flow Variability, Other Habitat Alterations, Pathogens, Suspended Solids, Unknown Toxicity, Excessive Algal Growth, or Unknown.



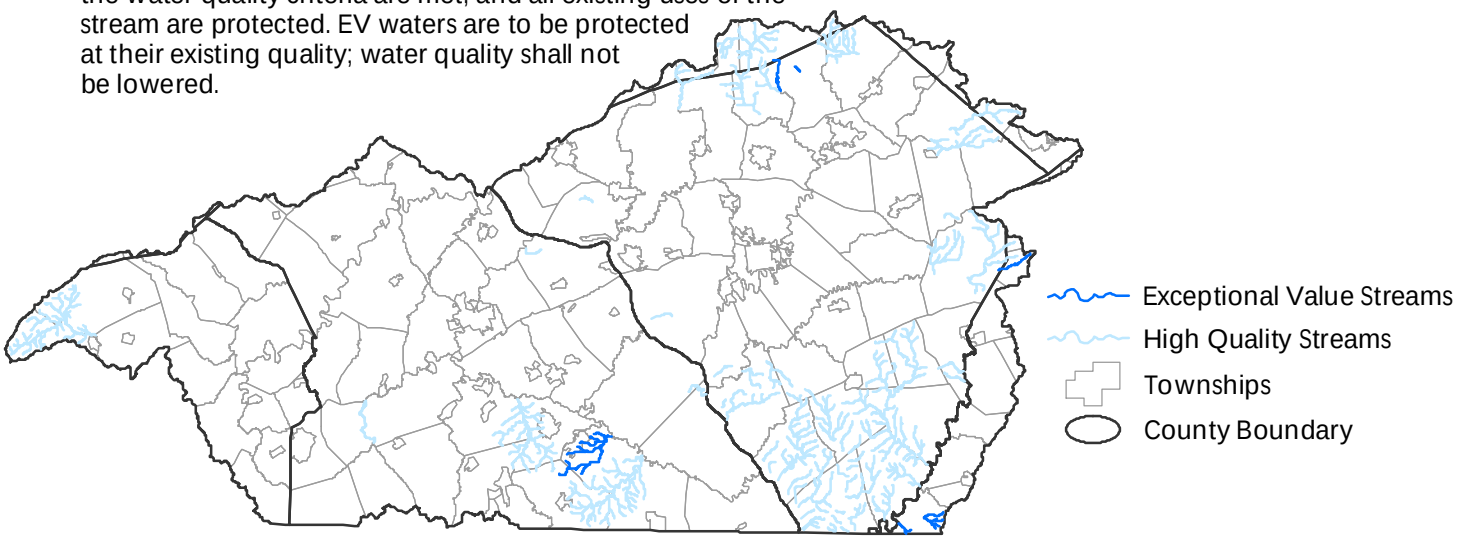
Other Sources of Impairment:
There are numerous other sources of impaired streams. They include Attaining, Channelization, Removal of Vegetation, Erosion from Derelict Land, Flow Regulations or Modifications, Golf Courses, Habitat Modifications, Other, Hydromodifications, Industrial Point Sources, Land Development, Municipal Point Sources, Road Runoff, Small Residential Runoff, Upstream Impoundment, Surface Mining, or Unknown.





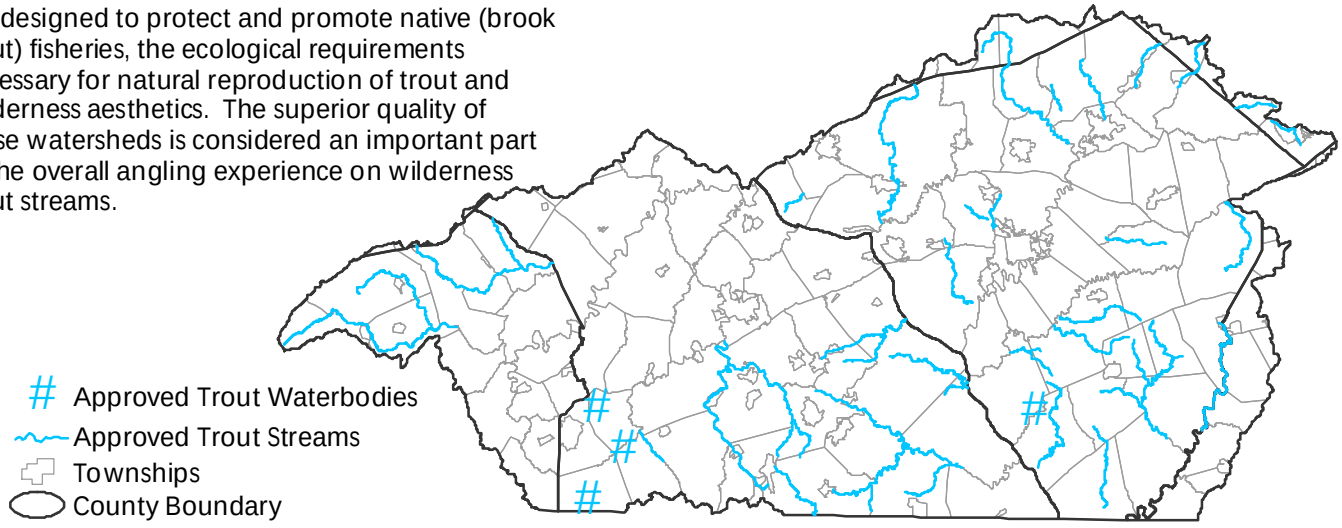
Exceptional Value and High Quality Streams[7]

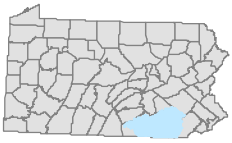
In accordance to Chapter 93 of Pennsylvania Code, streams with excellent water quality may be designated High Quality Waters (HQ) or Exceptional Value Waters (EV). The water quality in an HQ stream can be lowered only if a discharge is the result of necessary social or economic development, the water quality criteria are met, and all existing uses of the stream are protected. EV waters are to be protected at their existing quality; water quality shall not be lowered.



Pennsylvania Trout Waters[8]

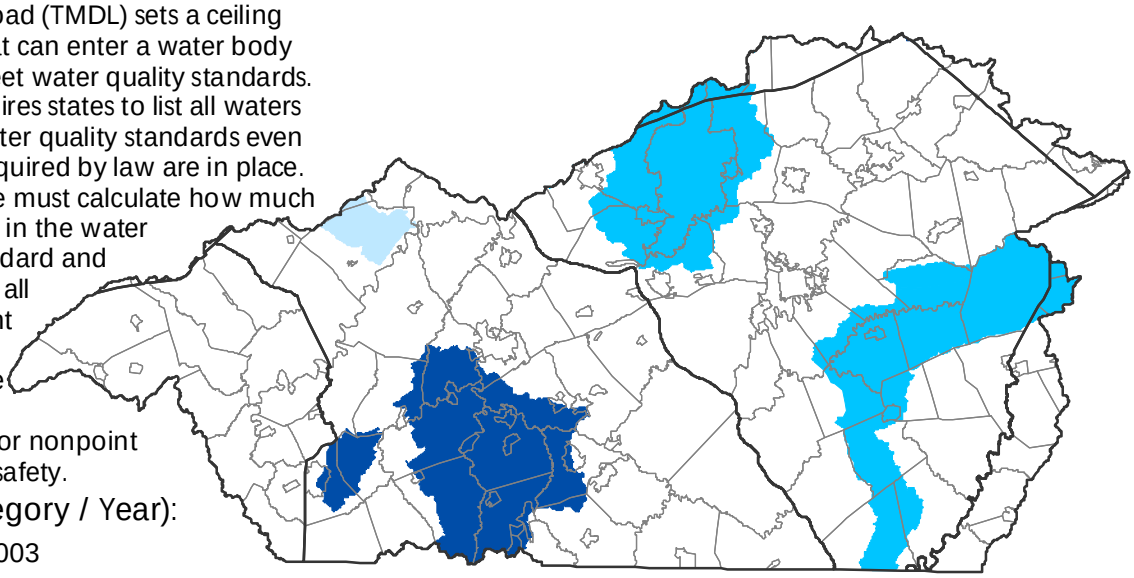
Approved Trout Waterbodies and Approved Trout Streams are waters which contain significant portions that are open to the public for fishing and are stocked with trout. Wilderness Trout Streams are designed to protect and promote native (brook trout) fisheries, the ecological requirements necessary for natural reproduction of trout and wilderness aesthetics. The superior quality of these watersheds is considered an important part of the overall angling experience on wilderness trout streams.





Total Maximum Daily Load [9]

A Total Maximum Daily Load (TMDL) sets a ceiling on the pollutant loads that can enter a water body so the water body will meet water quality standards. The Clean Water Act requires states to list all waters that do not meet their water quality standards even after pollution controls required by law are in place. For these waters, the state must calculate how much of a substance can be put in the water without violating the standard and distribute that quantity to all the sources ofthe pollutant on that water body. A TMDL plan includes waste load allocations for point sources, load allocations for nonpoint sources, and a margin of safety.

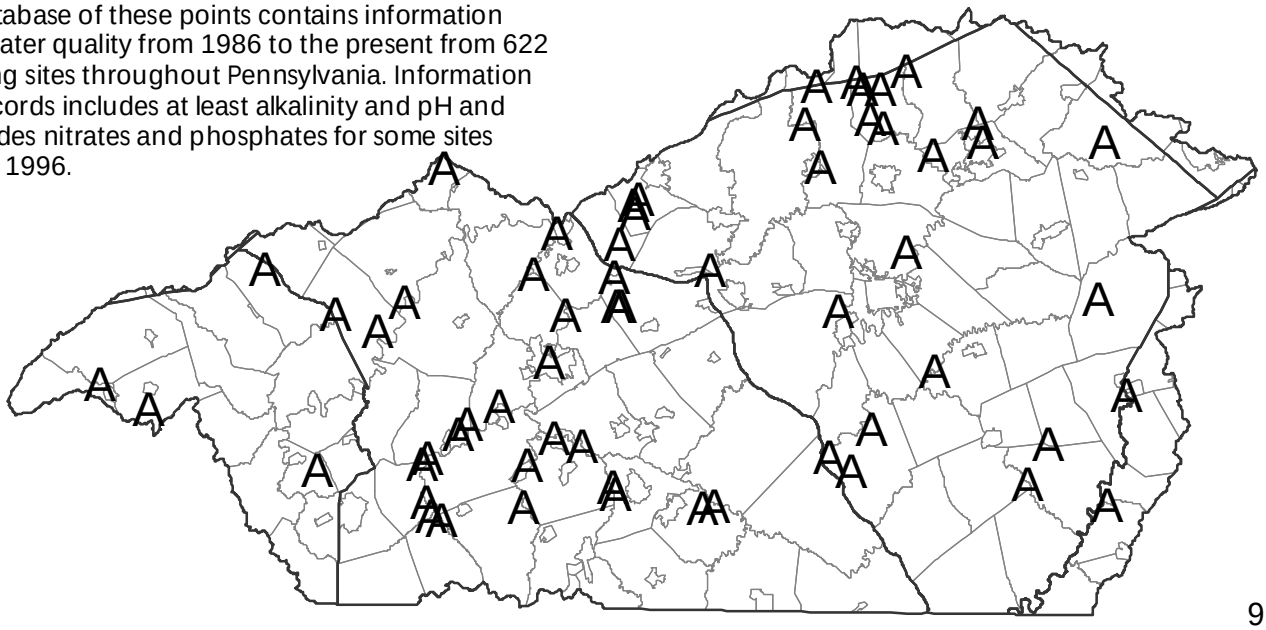


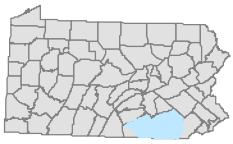
TMDL (Category / Year):

- Lake 2003
- Non-AMD 2001
- Non-AMD 2003
- Townships
- County Boundary

Water Quality Testing Points [10]

The water quality testing points are locations at which the water quality is monitored by volunteers. A database of these points contains information on water quality from 1986 to the present from 622 testing sites throughout Pennsylvania. Information in records includes at least alkalinity and pH and includes nitrates and phosphates for some sites since 1996.





Water Resource Points [11]

A Water Resource is a DEP primary facility type related to the Water Use Planning Program. The sub-facility types related to Water Resources that are included are:

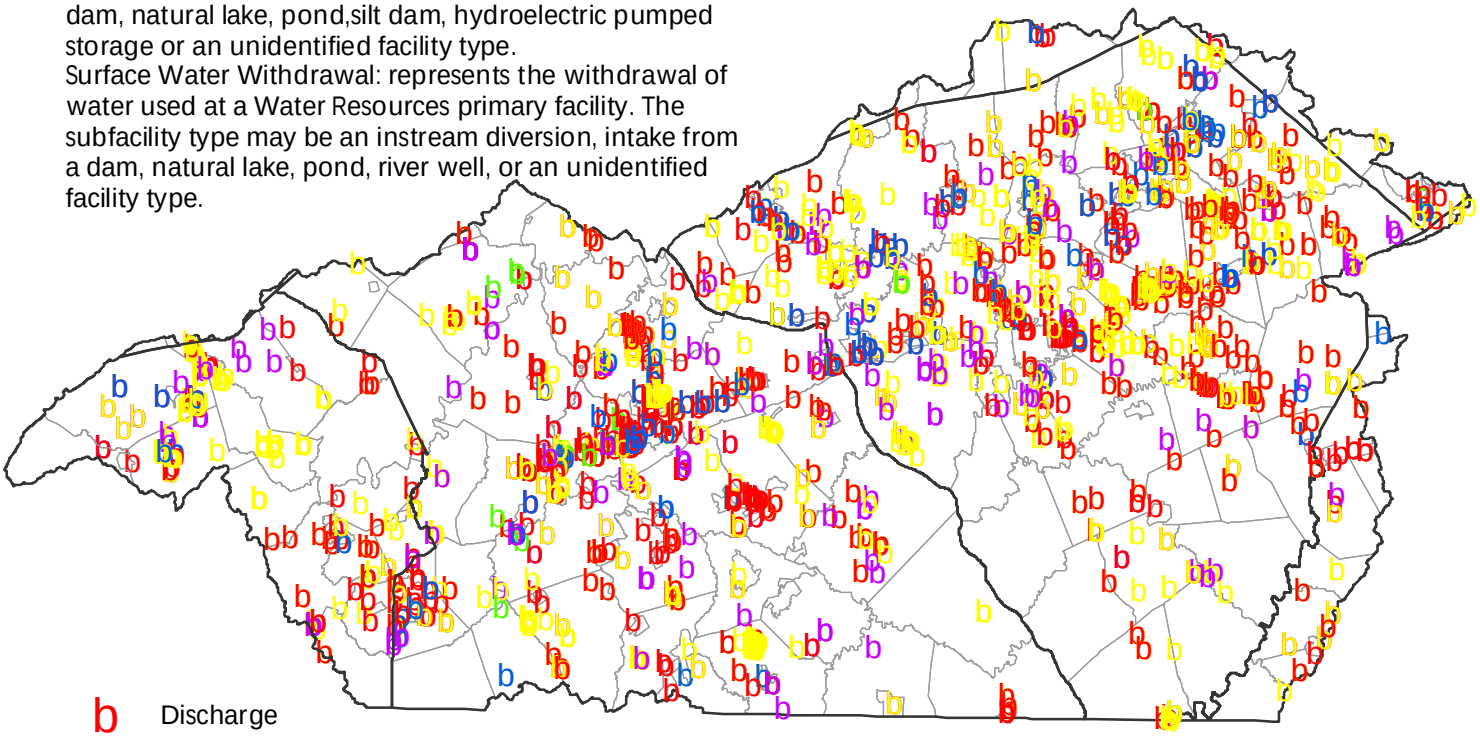
Discharge: represents the return of water used at a Water Resources primary facility. The subfacility type may be a sewage treatment plant, instream discharge, spray irrigation field, groundwater recharge, on-lot septic or an unidentified facility type.

Ground Water Withdrawal: represents the withdrawal of water used at a Water Resources primary facility. The subfacility type may be a well, spring, quarry, infiltration gallery, deep mine, surface mine or an unidentified facility type.

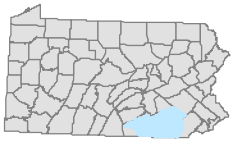
Interconnection: represents the point of interconnection between Water Resources primary facilities. The subfacility type may be for an interconnection between two public water supply agencies or between a public water supply agency and a commercial or industrial water user.

Storage: represents the storage of water used at a Water Resources primary facility. The subfacility type represents raw or treated water storage and may be a quarry, standpipe, open off-stream reservoir, closed off-stream reservoir, instream reservoir, hydroelectric dam, natural lake, pond,silt dam, hydroelectric pumped storage or an unidentified facility type.

Surface Water Withdrawal: represents the withdrawal of water used at a Water Resources primary facility. The subfacility type may be an instream diversion, intake from a dam, natural lake, pond, river well, or an unidentified facility type.



b Discharge
b Ground Water Withdrawal
b Interconnection
b Storage
b Surface Water Withdrawal
Townships
County Boundary



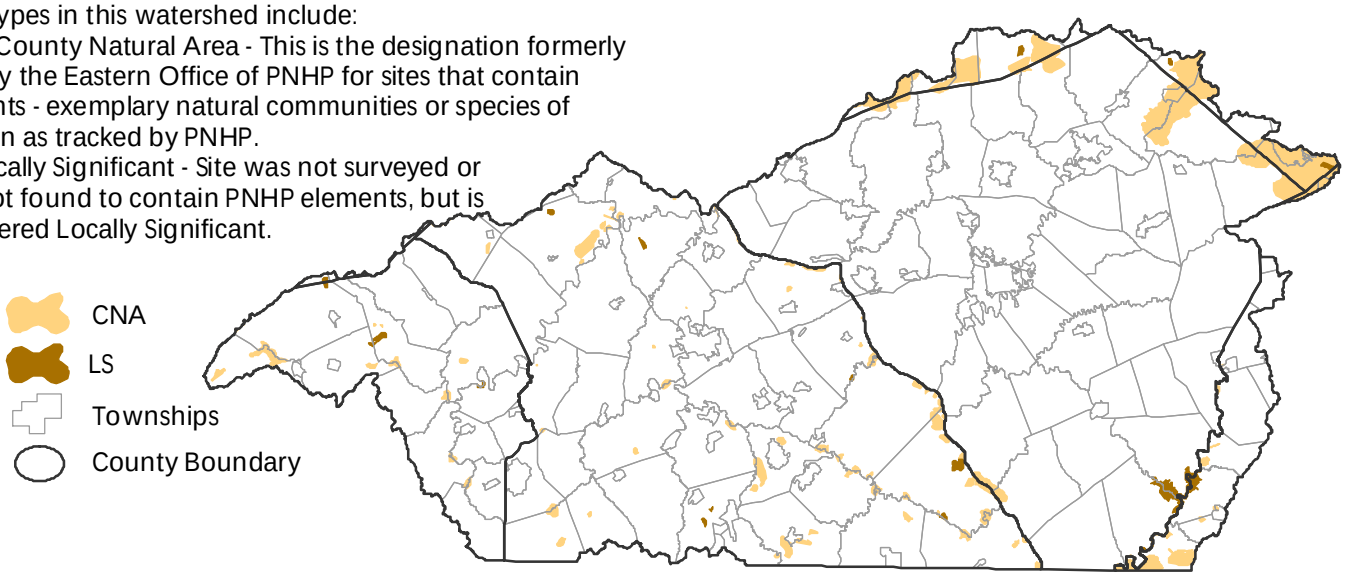
Natural Heritage Inventory Sites[12]

These areas are intended to identify outstanding floral, faunal, and geologic features, including natural communities (habitats) and locations of animal and plant species of special concern (endangered, threatened, or rare).

Area Types in this watershed include:

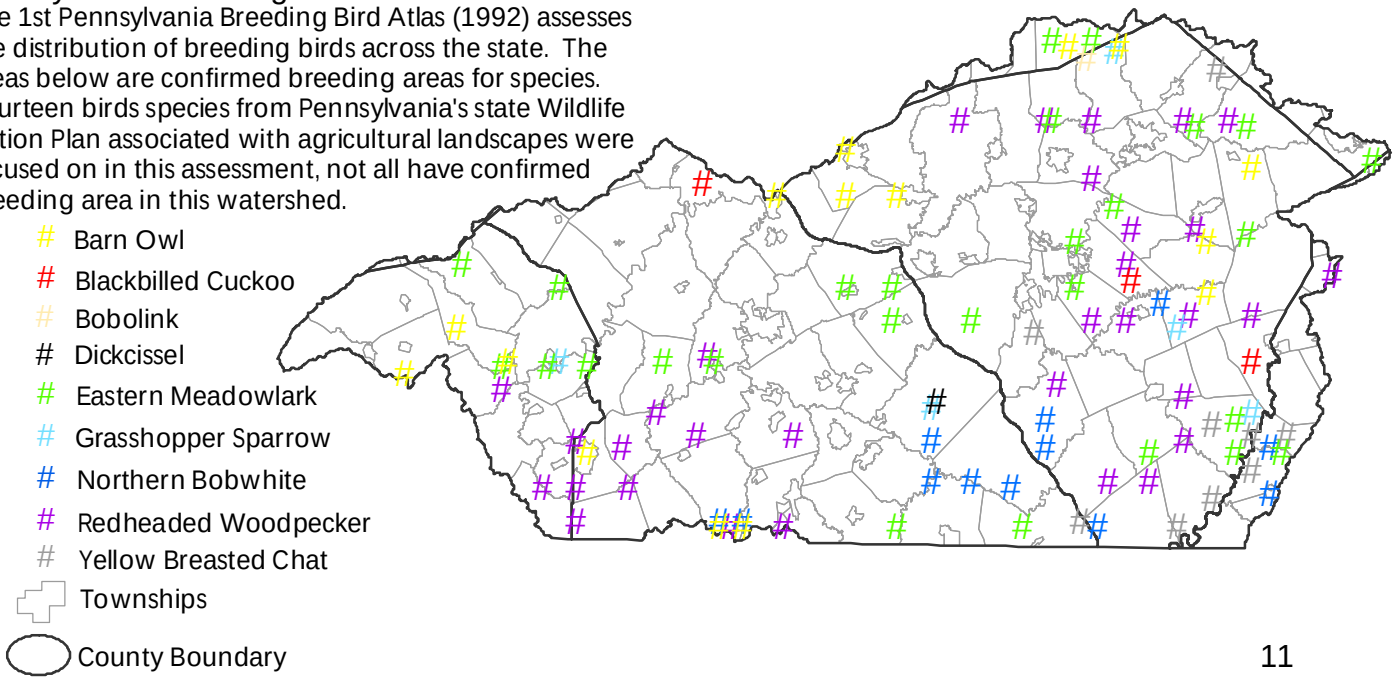
CNA - County Natural Area - This is the designation formerly used by the Eastern Office of PNHP for sites that contain elements - exemplary natural communities or species of concern as tracked by PNHP.

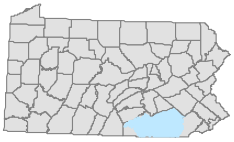
LS - Locally Significant - Site was not surveyed or was not found to contain PNHP elements, but is considered Locally Significant.



Pennsylvania Breeding Bird Atlas[13]

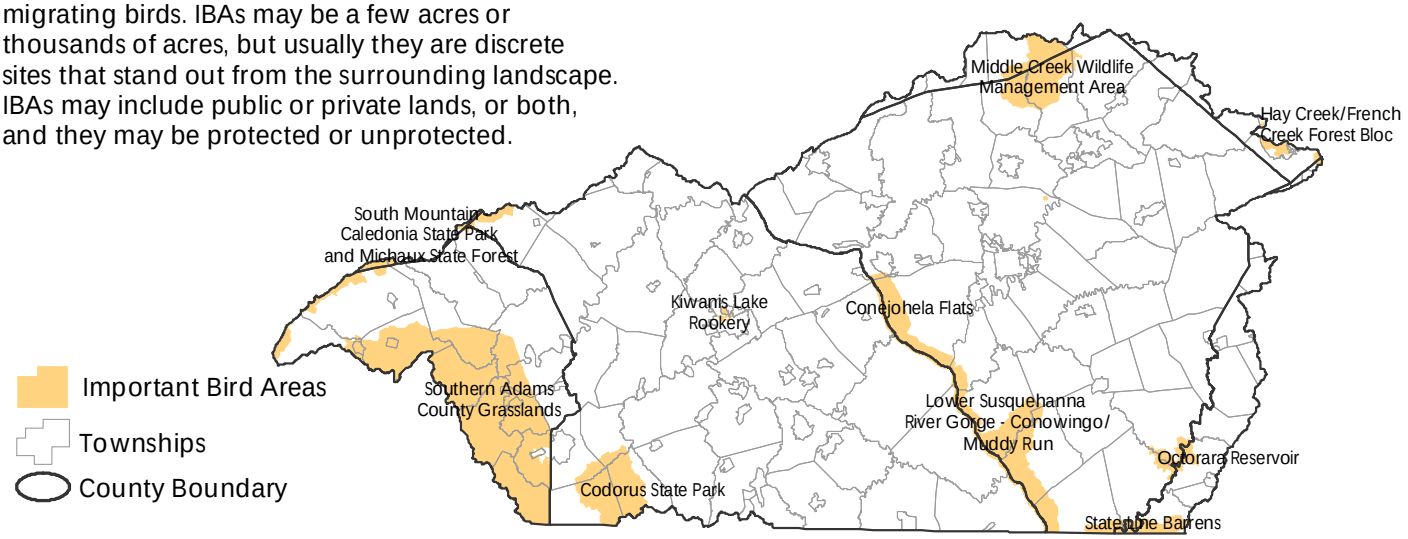
The 1st Pennsylvania Breeding Bird Atlas (1992) assesses the distribution of breeding birds across the state. The areas below are confirmed breeding areas for species. Fourteen birds species from Pennsylvania's state Wildlife Action Plan associated with agricultural landscapes were focused on in this assessment, not all have confirmed breeding area in this watershed.





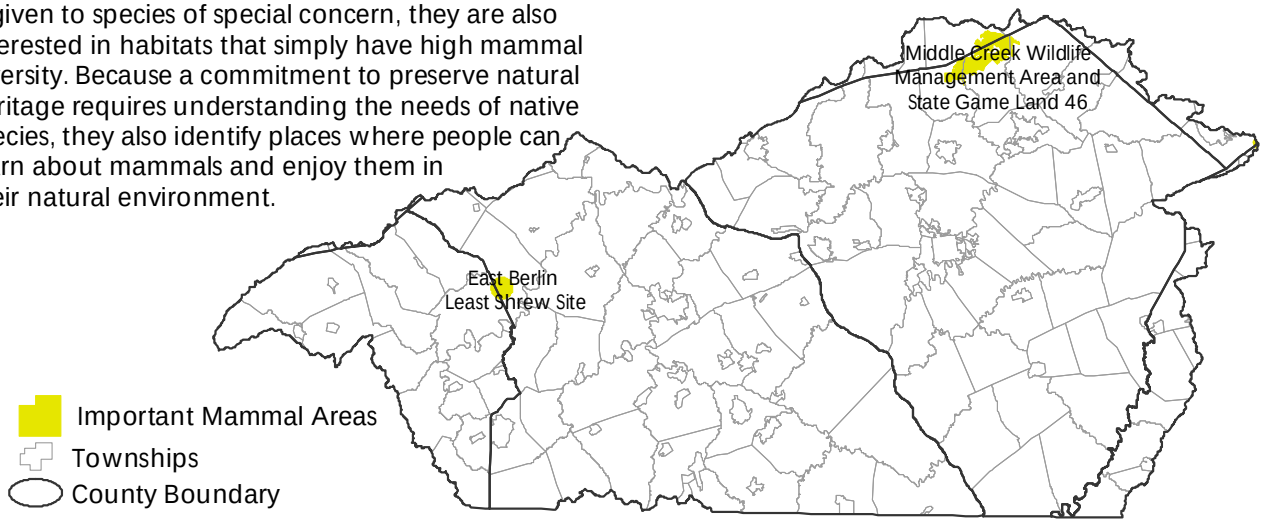
Important Bird Areas[14]

Important Bird Areas (IBA) are sites that provide essential habitat for one or more species of bird. IBAs include sites for breeding, wintering, and/or migrating birds. IBAs may be a few acres or thousands of acres, but usually they are discrete sites that stand out from the surrounding landscape. IBAs may include public or private lands, or both, and they may be protected or unprotected.

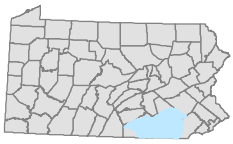


Important Mammal Areas[15]

The Important Mammal Areas Project is being carried out by a broad based alliance of sportsmen, conservation organizations, wildlife professionals, and scientists. The primary concern is to help ensure the future of Pennsylvania's wild mammals, both game and non-game species. Although particular attention is given to species of special concern, they are also interested in habitats that simply have high mammal diversity. Because a commitment to preserve natural heritage requires understanding the needs of native species, they also identify places where people can learn about mammals and enjoy them in their natural environment.

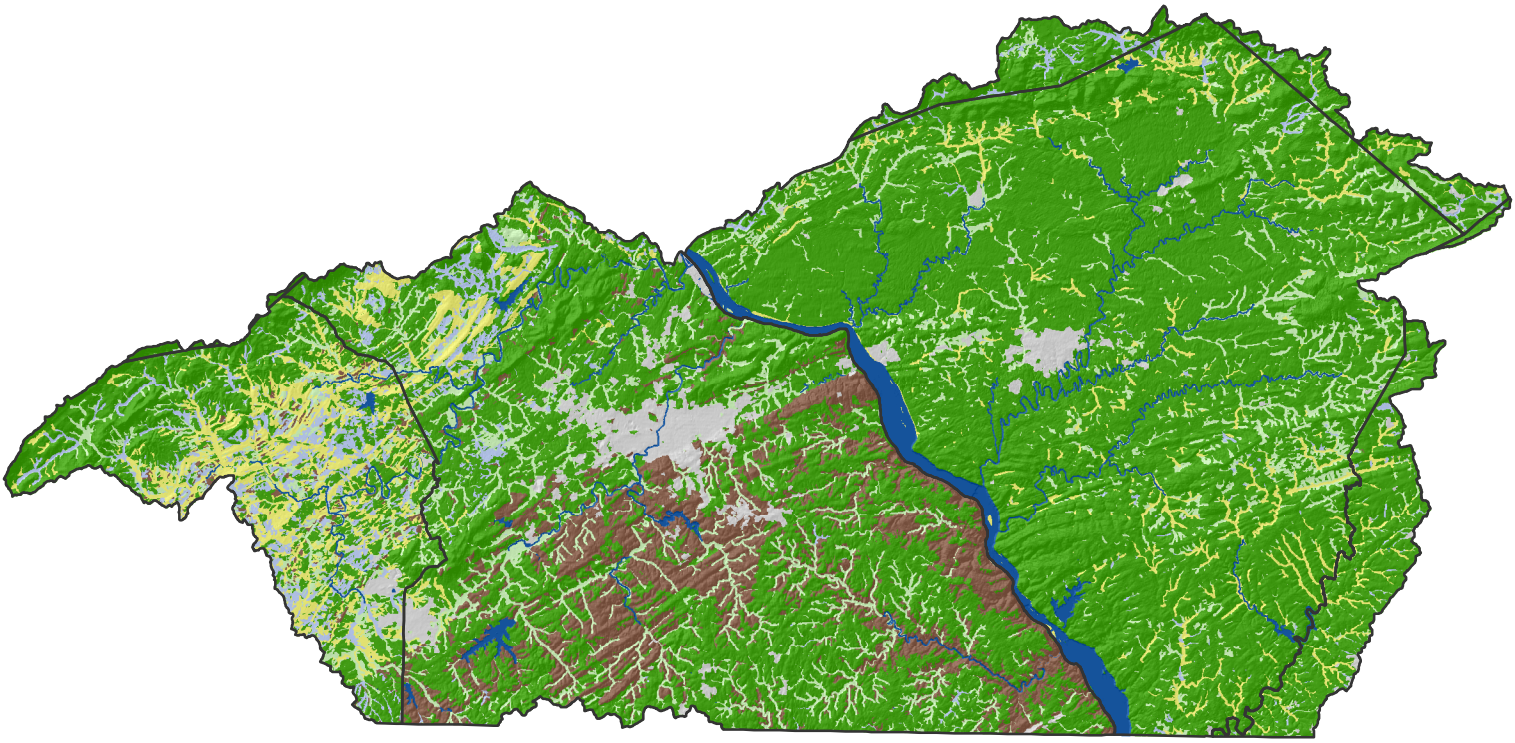


Soils [16]



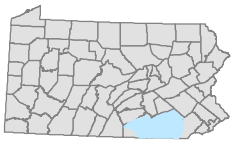
Drainage Classification

Drainage class (natural) refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized -- excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."



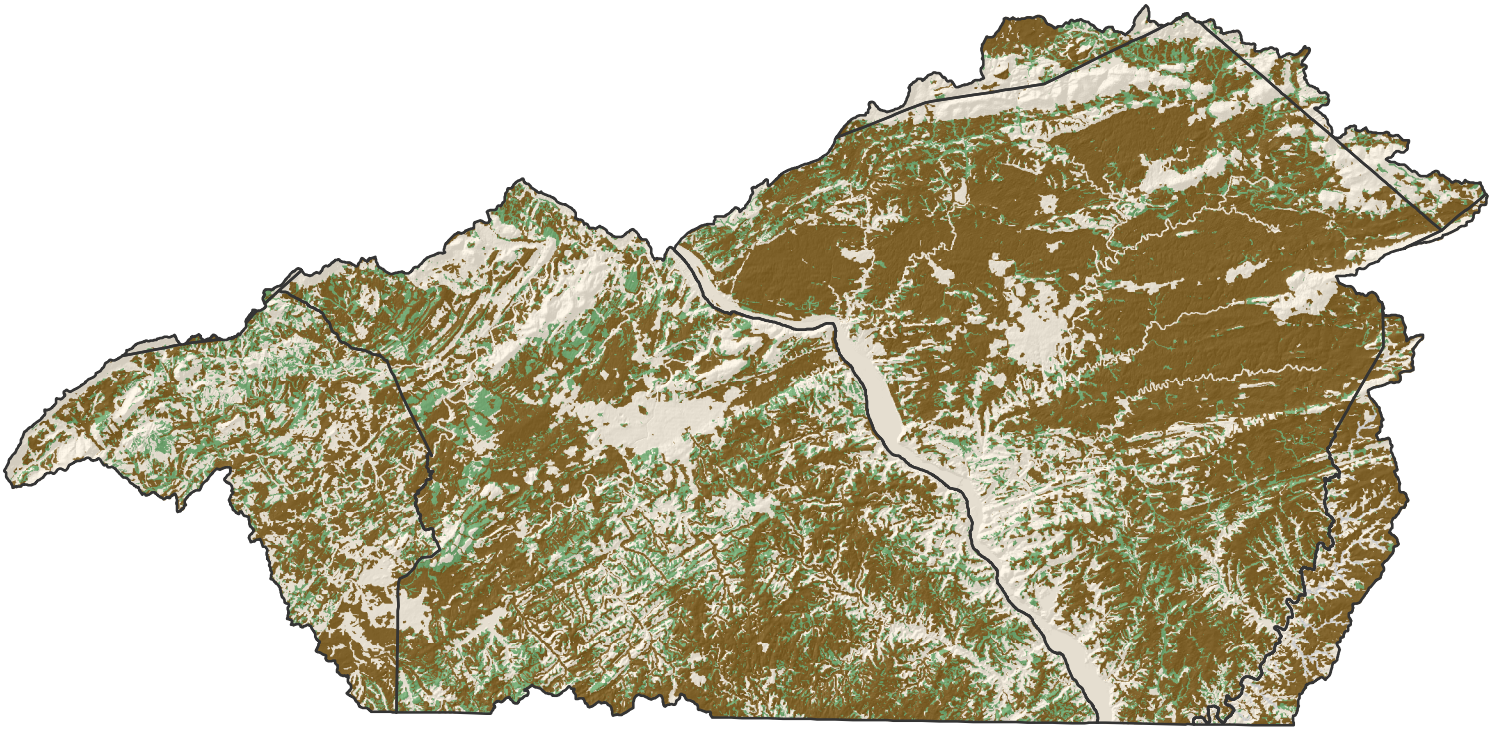
Drainage Classification

	% Area
Excessively - Somewhat excessively drained	9.8
Well drained	68.3
Moderately well drained	8.9
Somewhat poorly drained	5.0
Poorly -Very poorly drained	2.7
Water	2.2
Unclassified	3.1
County Boundary	



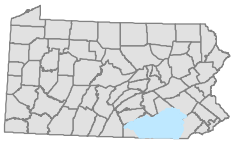
Farmland Classification

Farmland classification identifies soil map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. Farmland classification identifies the location and extent of the most suitable land for producing food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the Federal Register, Vol. 43, No. 21, January 31, 1978.



Farmland Classification

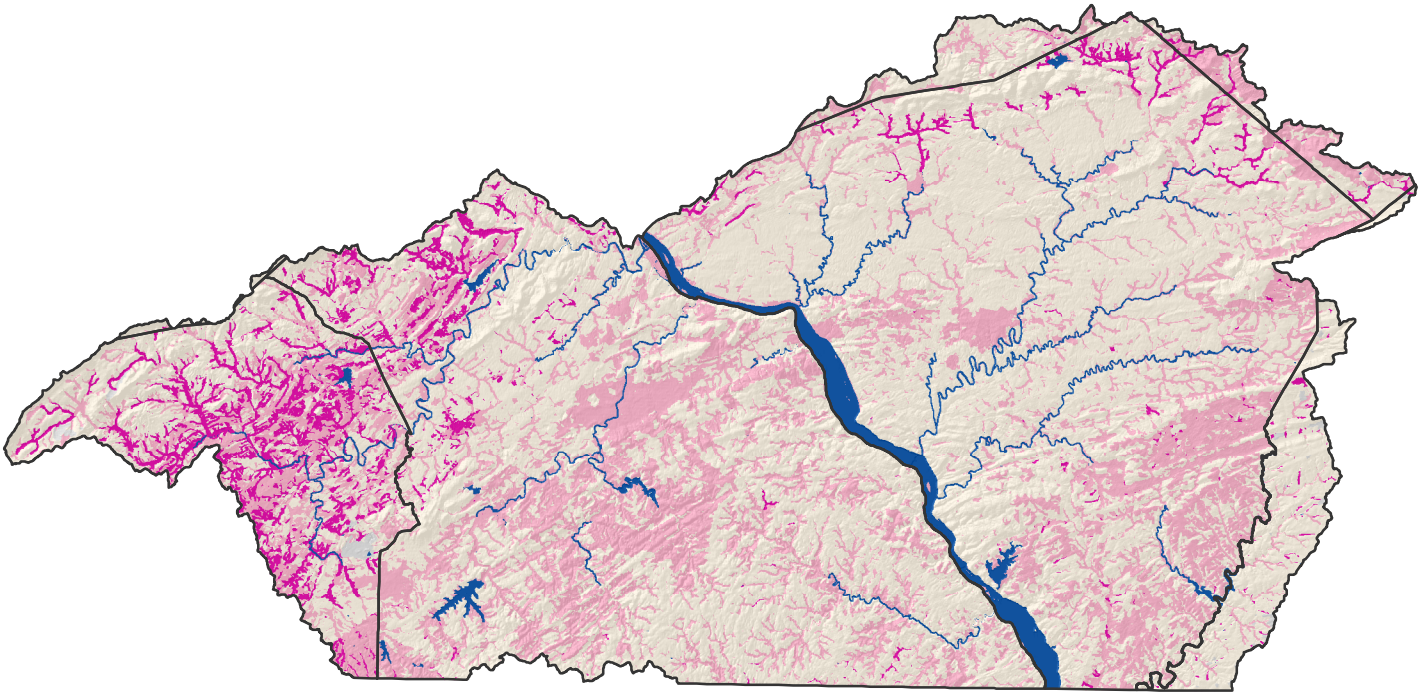
	% Area
All areas are prime farmland	44.7
Farmland of statewide importance	26.0
Not prime farmland or statewide importance	29.1
Unclassified	.2
County Boundary	



Hydric Soil Classification

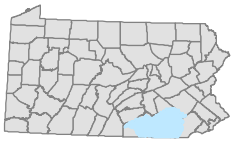
This rating provides an indication of the proportion of the map unit that meets criteria for hydric soils. Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.



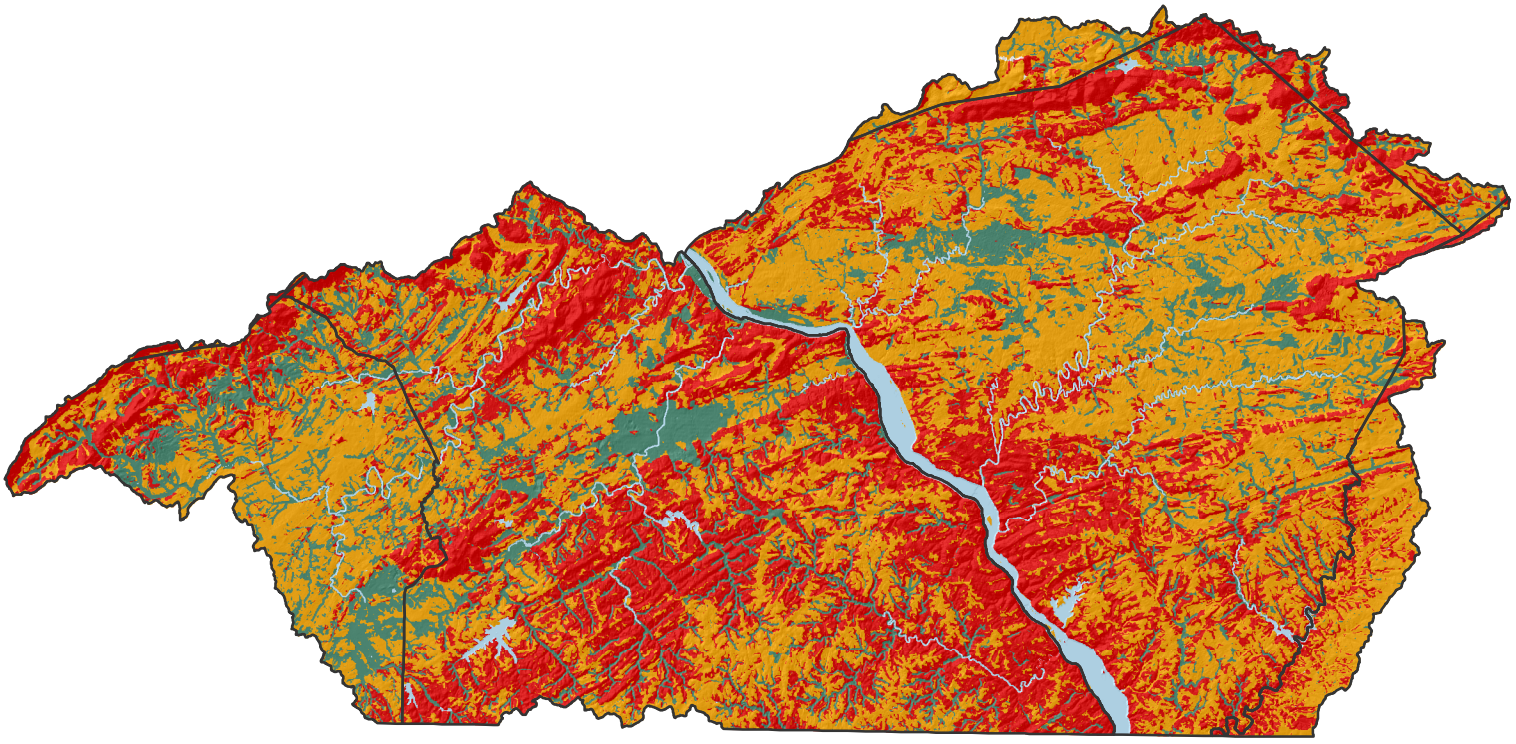
Hydric Classification

	% Area
Not Hydric	67.9
Partially Hydric	26.2
All Hydric	3.4
Water	2.2
Unknown	.3
County Boundary	

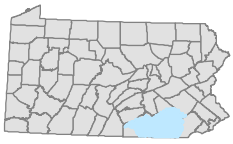


Highly Erodible Land

A soil map with an erodibilty index (EI) of 8 or greater is considered to be highly erodible land (HEL). The EI for a soil map unit is determined by dividing the potential erodibility for the soil map unit by the soil loss tolerance (T) value established for the soil in the FOTG as of January 1, 1990. Potential erodibility is based on default values for rainfall amount and intensity, percent and length of slope, surface texture and organic matter, permeability, and plant cover. Actual erodibility and EI for any specific map unit depends on the actual values for these properties.

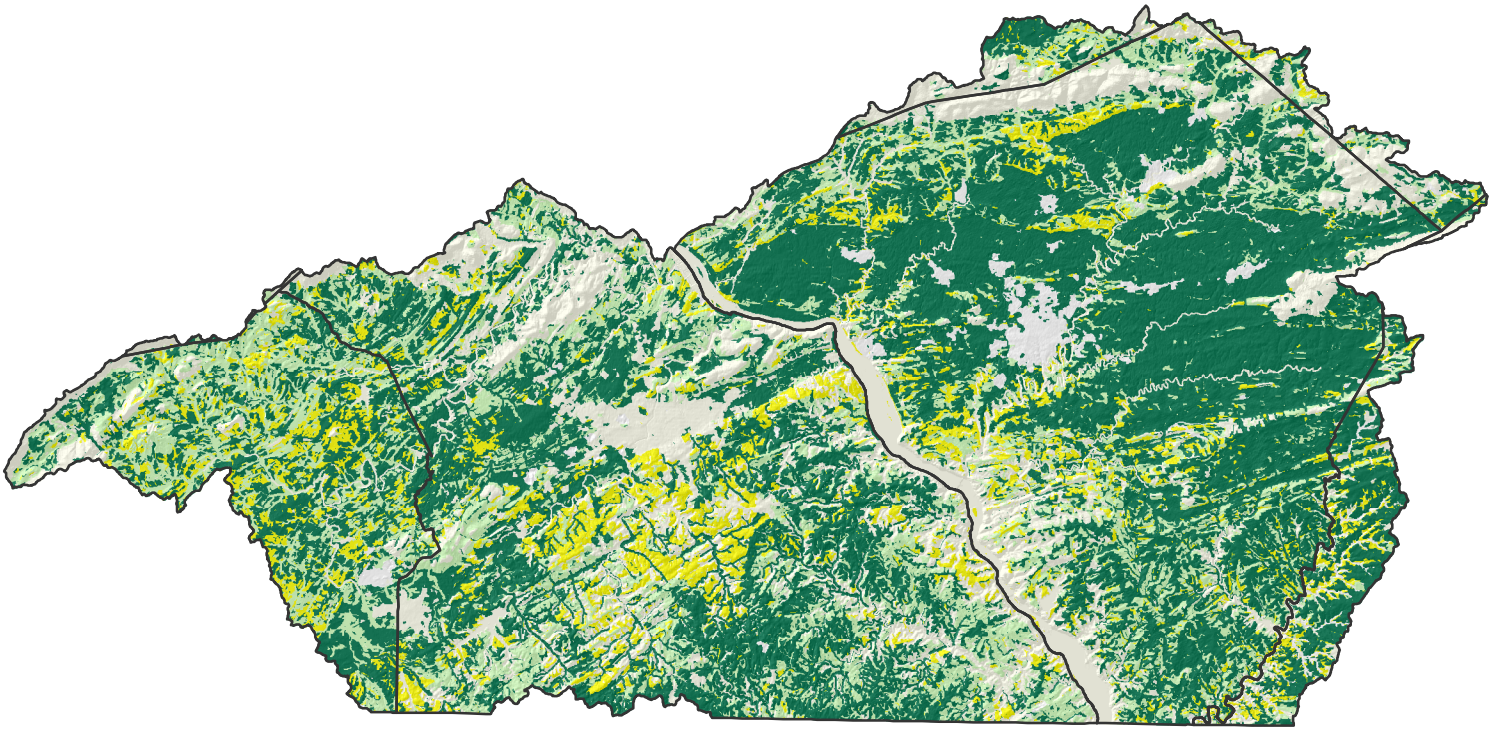


Erosion Classification	% Area
Not highly erodible land	13.3
Potentially highly erodible land	45.8
Highly erodible land	38.7
Water	2.2
County Boundary	

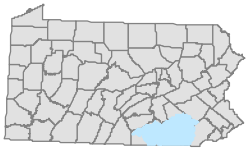


Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

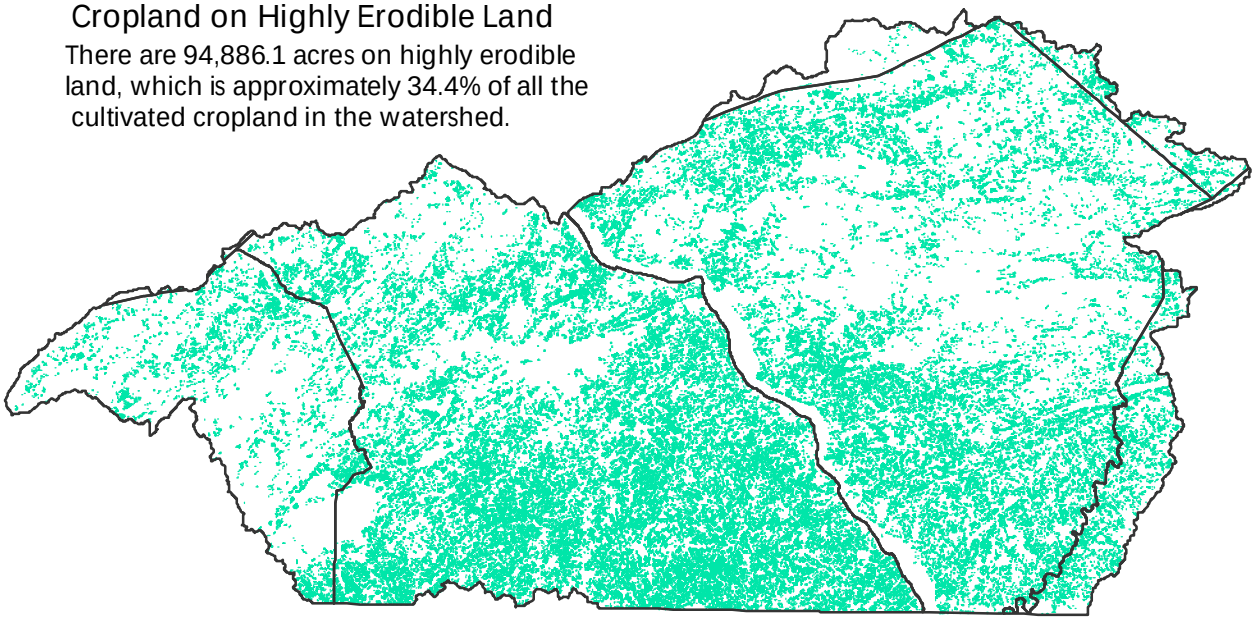


Land Capability Classification	% Area
Well Suited (Capability Class 1 -2)	46.8
Moderately well suited (Capability Class 3)	21.8
Poorly suited (Capability Class 4 -5)	10.0
Unsuited (Capability Class 6 - 8)	19.6
Unclassified	1.8
County Boundary	



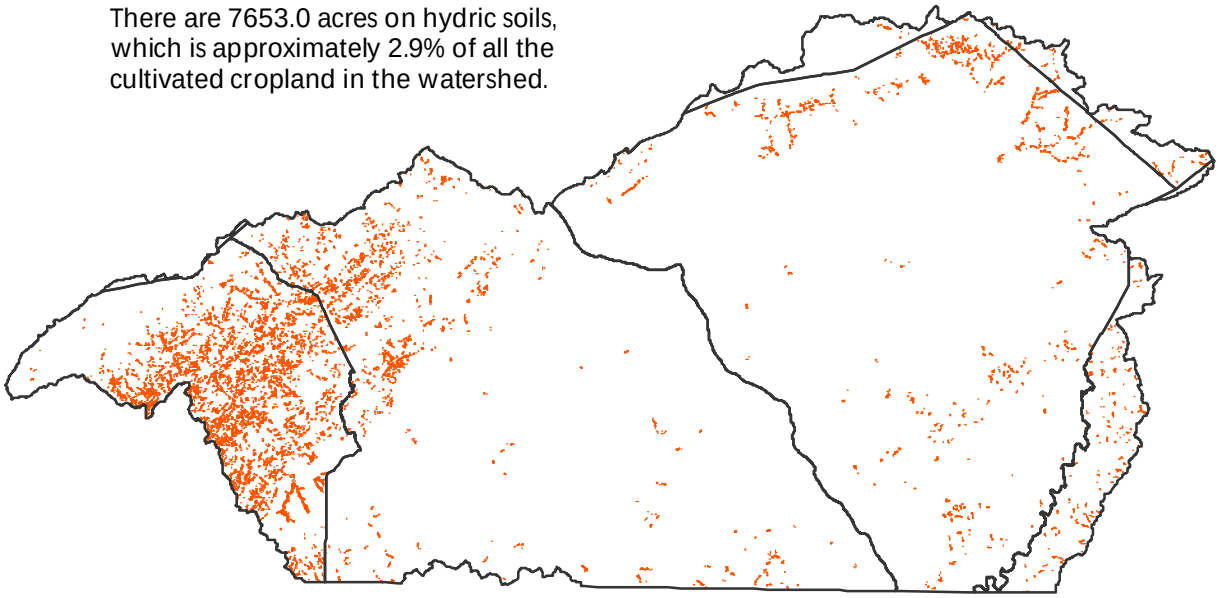
Cropland on Highly Erodible Land

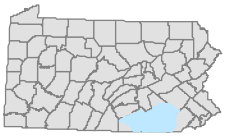
There are 94,886.1 acres on highly erodible land, which is approximately 34.4% of all the cultivated cropland in the watershed.



Cropland on Hydric Soils

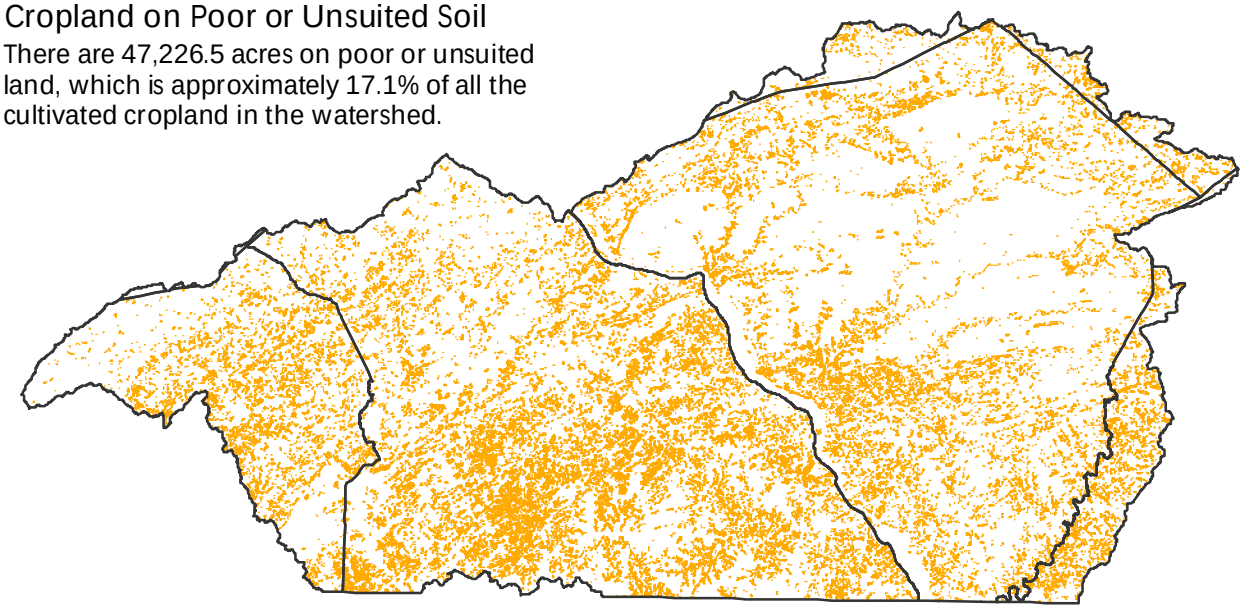
There are 7653.0 acres on hydric soils, which is approximately 2.9% of all the cultivated cropland in the watershed.



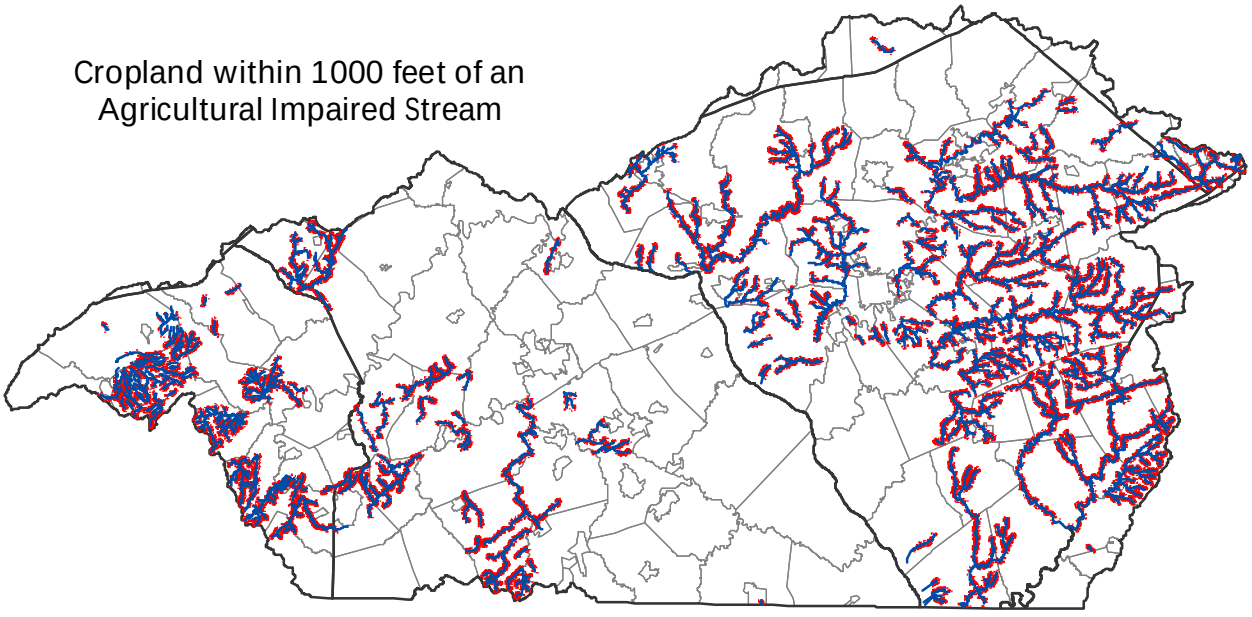


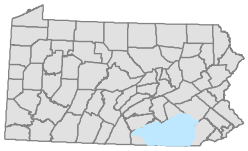
Cropland on Poor or Unsuited Soil

There are 47,226.5 acres on poor or unsuited land, which is approximately 17.1% of all the cultivated cropland in the watershed.



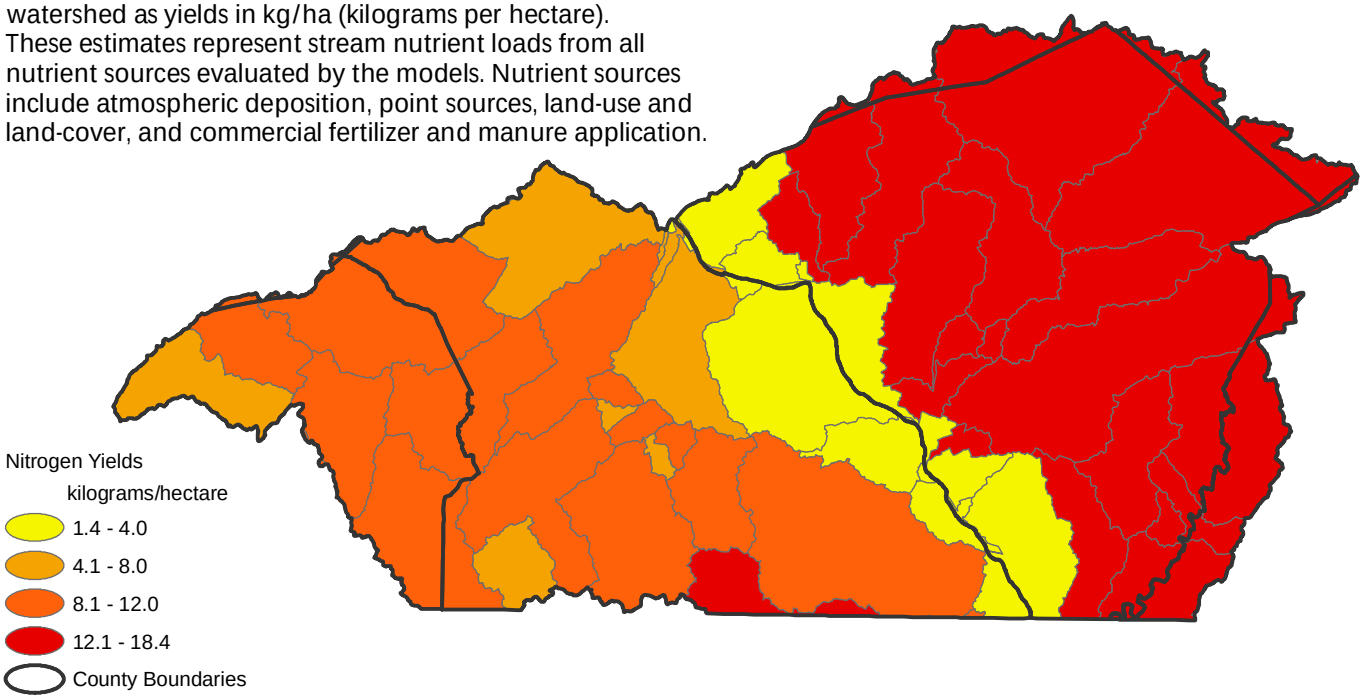
Cropland within 1000 feet of an Agricultural Impaired Stream





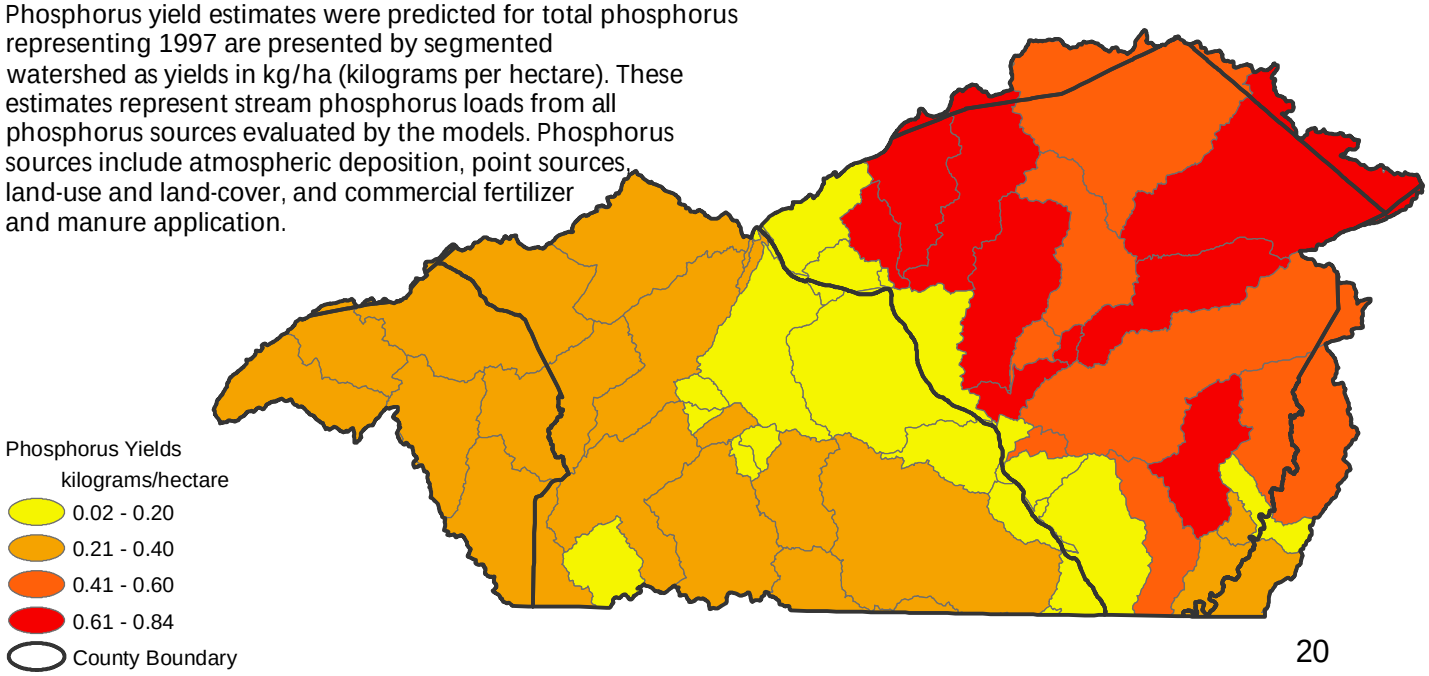
Nitrogen Yields[17]

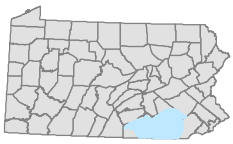
Nutrient yield estimates were predicted for total nitrogen representing 1997 are presented by segmented watershed as yields in kg/ha (kilograms per hectare). These estimates represent stream nutrient loads from all nutrient sources evaluated by the models. Nutrient sources include atmospheric deposition, point sources, land-use and land-cover, and commercial fertilizer and manure application.



Phosphorus Yields[17]

Phosphorus yield estimates were predicted for total phosphorus representing 1997 are presented by segmented watershed as yields in kg/ha (kilograms per hectare). These estimates represent stream phosphorus loads from all phosphorus sources evaluated by the models. Phosphorus sources include atmospheric deposition, point sources, land-use and land-cover, and commercial fertilizer and manure application.





Resource Concerns

Major resource concerns in the area include:

Soil Quality on Cropland:
- -Water Erosion Rates (Sheet & Rill, Ephemeral and Classic Gully)
- -Wind Erosion Rates (Limited applicability in PA)
- -Compaction Levels and Organic Content of Soil

Water Quality on Cropland and Pastureland:
- -Sediment Loss Per Acre
- -Nitrogen loss with waterborne sediment
- -Dissolved Nitrogen Loss in Surface Water Runoff
- -Dissolved Nitrogen Loss in Leachate
- -Phosphorous Loss with waterborne sediment
- -Dissolved Phosphorous loss in surface water runoff
- -Phathogens and Pharmaceutical loss emerging issues
- -Water Temperature due to loss of streamside canopy loss

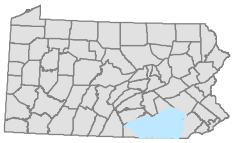
Water Quality On Headquarters:
- -CNMPs Written for Livestock Operations
- -CNMPs Applied for Livestock Operations

Healthy Habitat for At Risk and Declining Species on all Working Lands
- -Grassland Species of Concern in PA:
- -Field Edge Species of Concern in PA:

Farmland Conversion

Conservation Practices

Common conservation practices for cropland:
- Waste Storage Facility
- Riparian Forest Buffer
- Nutrient Management
- Pest Management
- Prescribed Grazing
- Tree and Shrub Establishment
- Residue Management
- Wildlife Habitat
- Wetlands Created, Restored, or Established
- Heavy Use Area
- Filter Strip
- Manure Transfer
- Terrace
- Underground Outlet
- Grassed Waterway
- Roof Runoff Structure
- Diversion
- Cover Crop

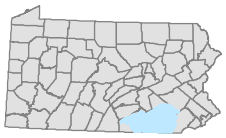


Crop Residue Management Data:

The 2004 tillage information from the Conservation Technology Information Center provides the following tillage information for York and Lancaster Counties, which are both almost entirely within the Lower Susquehanna watershed:

York County -
58% cropland in some type of conservation tillage including 37% of which is in no-till. An additional 13% is in reduced tillage (15-30% residue) and 27% in conventional tillage (0-15% residue).

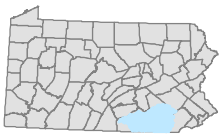
Lancaster County -
14% cropland in some type of conservation tillage which is all in no-till. An additional 23% is in reduced tillage (15-30% residue) and 63% in conventional tillage (0-15% residue).



PRS Performance Measures[18]

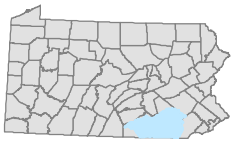
	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	Total
Total Conservation Systems Planned (acres)	21,783	38,743	19,035	26,834	27,784	NA	29,599	33,333	197,111
Total Conservation Systems Applied (acres)	4,686	7,822	15,632	24,069	17,288	NA	18,390	25,484	113,371
Key Conservation Treatments									
Waste Storage Facility (number)	47	192	125	44	45	27	21	48	549
Riparian Forest Buffer (acres)	67	1,031	428	633	586	108	100	171	3,124
Erosion Control Total Soils Saved (tons/year)	3,939	6,506	12,654	12,749	10,416	NA	NA	NA	46,264
Nutrient Management (acres)	10,842	8,571	13,281	15,599	11,608	3,774	4,846	6,968	75,489
Pest Management (acres)	166	83	1,633	3,031	2,045	1,147	4,368	4,269	16,742
Prescribed Grazing (acres)	222	1,867	771	1,674	770	790	1,239	1,001	8,334
Tree and Shrub Establishment (acres)	0	2	118	691	188	28	32	30	1,089
Residue Management (acres)	2,285	7,457	6,069	4,975	3,202	3,798	8,403	6,917	43,106
Wildlife Habitat (acres)	32	238	1,026	2,440	3,227	150	479	1,110	8,702
Wetlands Created, Restored, or Established	0	30	18	19	36	23	12	41	179
Heavy Use Area Protection (acres)						61	8	151	220
Filter Strip (acres)						21	9	12	42
Manure transfer (number)						110	2	8	120
Terrace (feet)						10,610	3,667	43,875	58,152
Underground Outlet (feet)						6,774	674	10,332	17,780
Grassed Waterway (acres)						1,241	157	292	1,690
Diversion (feet)						5,080	5,241	5,904	16,225
Cover Crop (acres)						263	4,324	3,667	8,254
Roof Runoff Structure (number)						20	3	38	61
Acres in Conservation Programs									
Conservation Technical Assistance									
Planned	17,754	27,378	12,930	20,301	21,670	NA	27,114	28,416	155,563
Applied	3,279	6,637	11,761	20,229	13,224	NA	15,710	18,976	89,816
Conservation Reserve Program									
Planned	3,087	98	1,181	4,941	4,401	NA	804	1,019	15,531
Applied	145	102	569	2,167	3,208	NA	927	1,508	8,626
Environmental Quality Incentive Program									
Planned	4,246	3,348	2,033	339	1,089	NA	5,593	4,578	21,226
Applied	234	79	814	556	539	NA	2,062	4,241	8,525
Farmland Protection Policy/Farm and Ranch Lands Protection Program									
Planned	26	7,042	3,060	0	63	NA	0	0	10,191
Applied	0	436	508	0	31	NA	0	0	975
Forestry Incentive Program									
Planned	0	0	0	0	0	NA	0	0	0
Applied	0	0	0	0	0	NA	0	0	0
Grasslands Reserve Program									
Planned				0	0	NA	31	0	31
Applied				0	0	NA	0	11	11
Grazing Lands Conservation Initiative									
Planned	299	1,008	669						1,976
Applied	238	1,561	1,881						3,680
Wildlife Habitat Incentive Program									
Planned	1	10	0	0	0	NA	78	13	102
Applied	0	46	0	107	0	NA	26	84	263
Wetlands Reserve Program									
Planned	1	5	0	0	0	NA	0	0	6
Applied	0	5	0	0	0	NA	0	0	5

NA - Reporting was unavailabel by Hydrologic Unit Code



Social and Census Data [19]

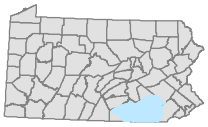
	Adams	Berks	Chester	Cumberland	Lancaster	Lebanon	York	Total
Farms (number)	633	61	201	6	5208	99	2317	8525
Land in farms (acres)	90,903	7,333	17,657	716	405,258	11,256	259,656	792,779
Total cropland (acres)	67,790	5,890	13,054	576	327,681	9,229	202,738	626,958
Principal operator by primary occupation - Farming (number)	350	39	115	3	3870	63	1123	5563
Farms by Size								
1 to 9 acres	56	8	22	1	694	14	246	1041
10 to 49 acres	256	22	98	2	1622	32	1179	3211
50 to 179 acres	199	19	61	2	2483	35	612	3411
180 to 499 acres	81	9	15	1	246	17	189	558
500 to 999 acres	32	2	4	0	52	1	46	137
1,000 acres or more	10	0	2	0	12	0	46	70
Livestock and Poultry								
Cattle and calves inventory (farms)	223	26	66	3	3102	51	739	4210
Cattle and calves inventory - Beef cows (farms)	136	8	22	1	594	13	405	1179
Cattle and calves inventory - Milk cows (farms)	30	11	33	1	1880	26	153	2134
Hogs and pigs inventory (farms)	33	4	5	0	424	11	113	590
Sheep and lambs inventory (farms)	28	4	13	0	377	6	177	605
Layers 20 weeks old and older inventory (farms)	47	5	16	0	608	10	184	870
Broilers and other meat-type chickens sold (farms)	5	2	2	0	300	4	28	341
Crops Harvested								
Corn for grain (acres)	10,194	1,236	2,582	97	38,712	2,281	67,586	122,688
Corn for silage or greenchop (acres)	4,393	922	1,439	111	92,910	2,098	10,599	112,472
Wheat for grain, all (acres)	6,895	330	499	38	10,657	612	21,228	40,259
Oats for grain (acres)	313	119	33	8	582	55	1,495	2,605
Barley for grain (acres)	625	133	194	16	8,926	218	4,152	14,264
Soybeans for beans (acres)	7,616	837	1,387	55	27,771	1,259	36,729	75,654
Forage - land used for all hay and all haylage, grass silage, and greenchop (acres)	20,421	1,714	4,544	181	92,403	2,185	36,739	158,187
Vegetables harvested for sale (acres)	235	35	82	4	5,667	132	3,059	9,214
Land in orchards (acres)	8,644	45	65	2	948	13	1,509	11,226
Total cropland harvested (acres)	58,274	5,240	10,684	495	293,484	8,590	179,032	555,799
Farm Operator by Ethnicity								
White	939	93	301	8	7512	146	3369	12,368
Black or African American	1	0	7	0	2	0	10	20
Asian	3	0	1	0	8	0	5	17
Hispanic	6	0	4	0	72	1	23	106
American Indian/Alaskan Native	3	0	1	0	1	1	8	14
Pacific Islander	0	0	0	0	0	0	0	0
Women	254	25	105	2	1795	39	1017	3237



Partnership Groups:

A cooperative project involving NRCS and conservation partners, including:

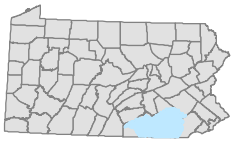
- State Conservation Commission
- Pennsylvania Department of Environmental Protection
- Pennsylvania Game Commission
- Pennsylvania Grazing/Forage Lands Conservation Coalition
- Pennsylvania Fish & Boat Commission



Footnotes/Bibliography

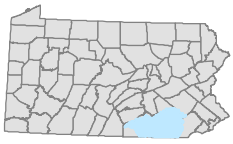
All data is provided "as is". There is no warranties, express or implied, including the warranty of fitness for a particular purpose, accompanying this document. Use for planning purpose only.

1. Common Resource Area
   Common Resource Area (CRA) delineation is defined as a geographical area where resource concerns, problems, or treatment needs are similar. More information can be found online at http://soils.usda.gov/survey/geography/cra.html
2. National Elevation Dataset (NED)
   The NED is a seamless mosaic of the best-available elevation data. The primary source data were the USGS 7.5-minute (30-meter or 10-meter resolution) DEM's. A hillshade grid was also created using the DEM and used to creare a 3-D effect. More inforamtion on NED can be found online at http://ned.usgs.gov/
3. Land Use / Land Cover 2001
   Land Use / Land Cover map was created using the National Land Cover Dataset. The National Land Cover Dataset was compiled from Landsat satellite TM imagery with a spatial resolution of 30 meters and supplemented by various ancillary data (where available). More inforamtion can be found online at http://landcover.usgs.gov/
4. Average Annual Precipitation
   The average annual precipitation data for this map layer were produced through a partnership between NRCS and the Spatial Climate Analysis Service at Oregon State University (OSU). The average annual precipitation is from 1961 through 1990. More information can be found online at http://www.ncgc.nrcs.usda.gov/products/datasets/climate/index.html
5. National Wetlands Inventory (NWI)
   The NWI maps do not show all wetlands since the maps are derived from aerial photointerpretation with varying limitations due to scale, photo quality, inventory techniques, and other factors. More information can be found online at http://www.fws.gov/nwi/
6. Impaired Streams
   Impaired Streams were derived from Pennsylavania Department of Protection Office of Water Management, 2006 list on Non-Attaining Streams. More information can be found on DEP website at http://www.depweb.state.pa.us/dep/site/default.asp
7. Exceptional Value and High Quality Streams
   Exceptional Value and High Quality Streams were taken from the Chapter 93 data layer received from Pennsylvania Department of Environmental Protection. For more information on what qualifies a stream as exceptional value or high quality or any information on Chapter 93 streams go to http://www.pacode.com/secure/data/025/chapter93/chap93toc.html



Footnotes/Bibliography

8. Pennsylvania Trout Waters
   Pennsylvania Trout Water data is compiled by the Pennsylvania Fish and Boat Commission. This layer was created based on the 1:24000 National Hydropahy Dataset (NHD) water bodies layer. More information can be found online at http://www.fish.state.pa.us/fishpub/summary/troutwaters.html
9. Total Maximun Daily Load (TMDL)
   TMDL is the sum of the individual waste load allocations and load allocations which would not produce a violation of water quality standards. The data used is from 2003, the PA Department of Environmental Protection is currently working on updating the GIS data available. More information can be found on TMDL locations in PA at http://www.dep.state.pa.us/watermanagement_apps/tmdl/, and/or nationally at http://www.epa.gov/owow/tmdl/
10. Water Quality Testing Points
    Water Quality Testing Points monitor water quality with emphasis on stream acidity in Pennsylvania with an assoiciated database. The database contains more than 33,466 records on water quality from 1986 to the present from 622 testing sites throughout Pennsylvania. Information in the records includes alkalinity and Ph and includes nitrates and phosphates for some sites since 1996. The information is maintained by the Alliance for Aquatic Resource Monitoring. More information can be found online at http://alpha.dickinson.edu/storg/allarm/allarm%20projects/database.htm
11. Water Resource Points
    A Water Resource is a DEP primary facility type related to the Water Use Planning Program. More information can be found http://www.depweb.state.pa.us/dep/site/default.asp
12. Natural Heritage Inventory Sites
    The Natural Areas polygons were developed by the Pennsylvania Natural Heritage Program (PNHP) County Natural Heritage Inventory (CNHI) Program. Natural Areas were identified using map and air photo interpretation, aerial rconnaissance, and field surveys. More information and county reports can be found online at http://www.naturalheritage.state.pa.us/
13. Pennsylvania Breeding Bird Atlas
    Data was taken for the 1st Pennsylvania Breeding Bird Atlas (1992). For this watershed assessment, fourteen bird species were chosen to be focused on. More information about all bird species can be obtained at http://www.carnegiemnh.org/atlas/home.htm
14. Important Bird Areas
    The Important Bird Areas Program (IBA) is a global effort to identify and conserve areas that are vital to birds and other biodiversity. For more information nationally and/or on the state level go to http://www.audubon.org/bird/iba/
15. Important Mammal Areas
    Important Mammal Areas Project, IMAP, the first program of it's kind, was created by the Mammal Technical Committee of the Pennsylvania Biological Survey (PaBS). For more inforamtion go online to http://www.pawildlife.org/imap.htm



Footnotes/Bibliography

16. Soils

Soil Survey spatial and tabular data were used for the following survey areas:

Adams County (PA001)
Berks County (PA011)
Chester County (PA029)
Cumberland County (PA041)
Lancaster County (PA071)
Lebanon County (PA075)
York County (PA133)

Spatial and tabular data an be downloaded at http://soildatamart.nrcs.usda.gov/

17. Nitrogen and Phosphorus Yields

Nitrogen and Phosphorus yields were obtained from United States Geological Survey. More inforamtion can be found online at http://www.usgs.gov

18. Performance Results System (PRS)

PRS data was extracted from PRS by year, conservation system, conservation practice, and programs by hydrologic unit code. More information can be found online at the PRS homepage http://ias.sc.egov.usda.gov/prshome/

19. Social and Census Data

Ag census data and ethnicity data were downloaded from the National Agricultural Statistics Service (NASS). The data was adjusted by percent of Hydrologic unit in the county. More inforamtion can be found online at http://www.nass.usda.gov/Census_of_Agriculture/index.asp