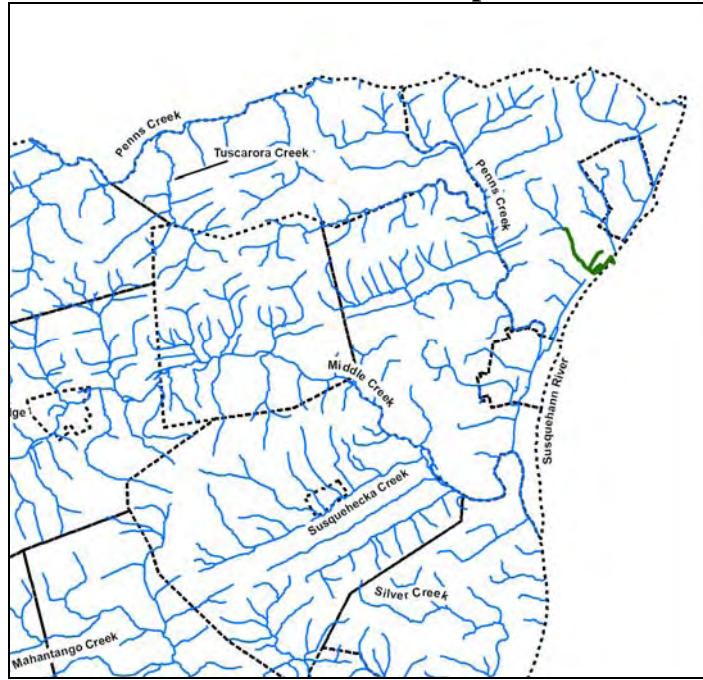
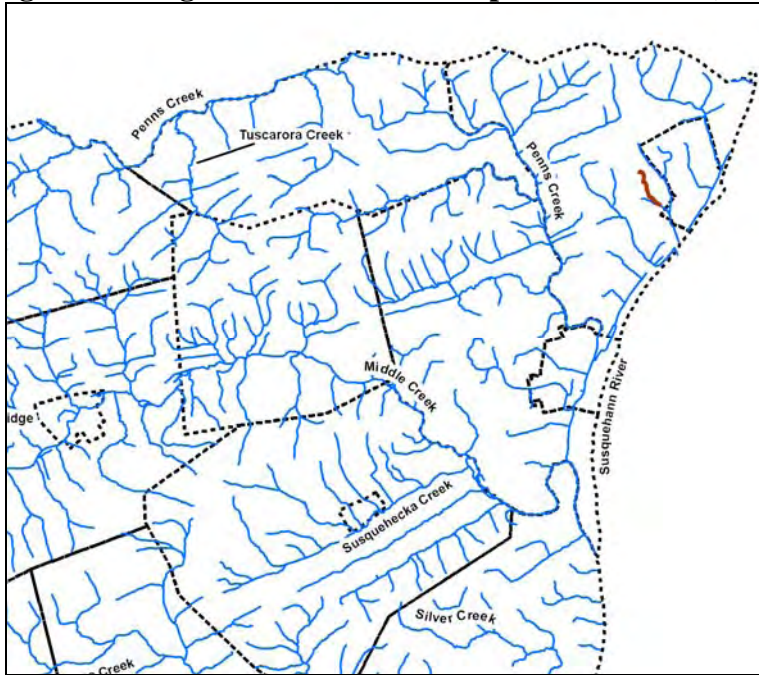


**Map 20: Golf Courses/Other Habitat Alteration Impaired Streams (Marked in Green)**



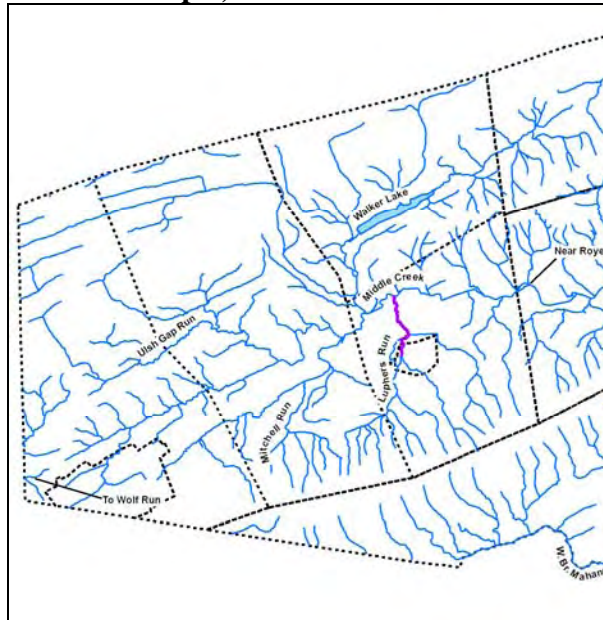
**Map 21: Grazing Related Agriculture/Nutrient Impaired Streams (Marked in Brown)**



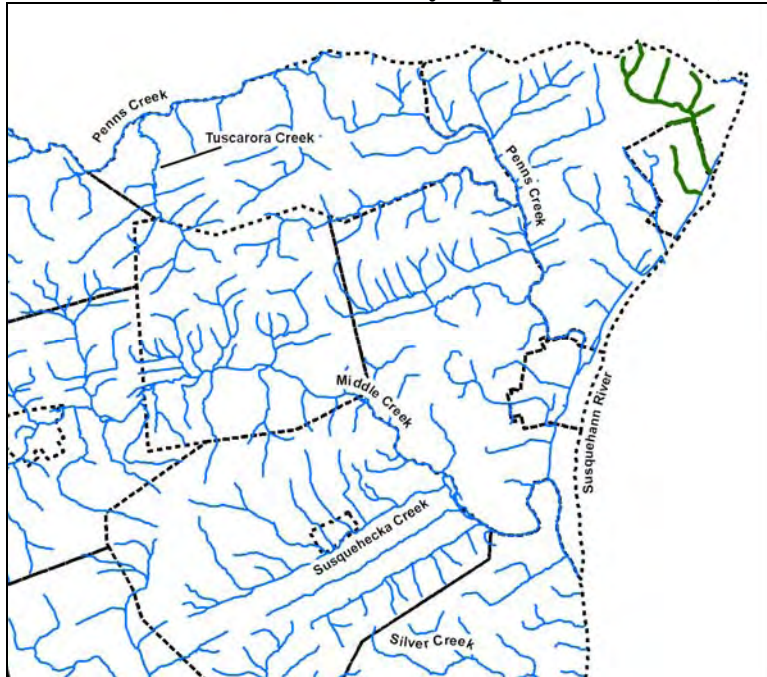
**Map 22: Grazing Related Agriculture/Siltation Impaired Streams (Marked in Gray)**



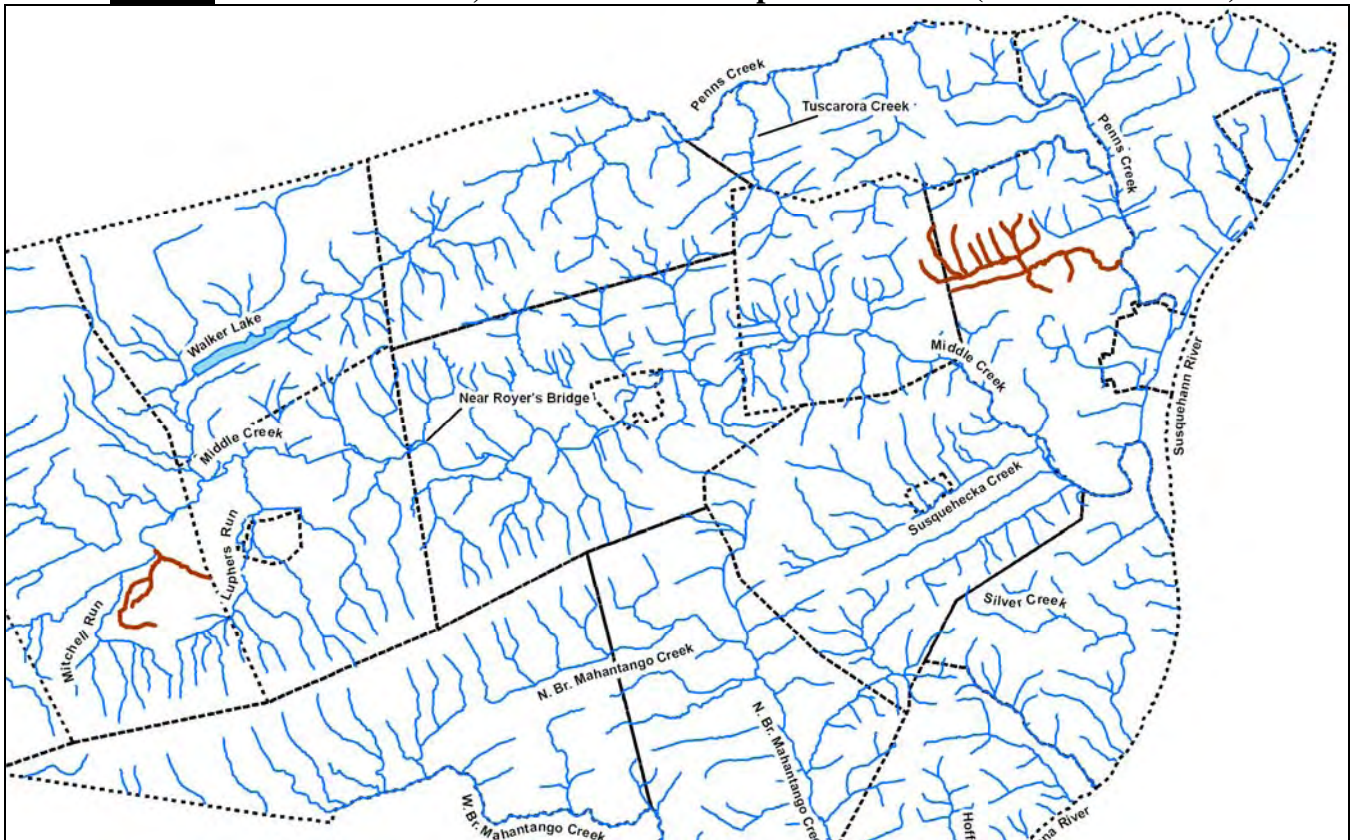
**Map 23: Municipal Point Source/Organic Enrichment/Low Dissolved Oxygen/Nutrients Impaired Streams (Marked in Purple)**



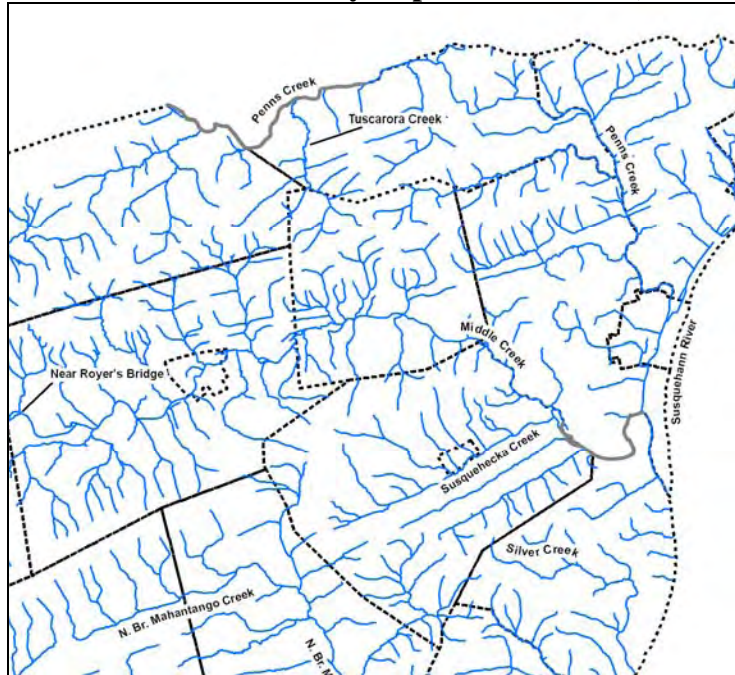
**Map 24: Road Runoff/Water/Flow Variability Impaired Streams (Marked in Green)**



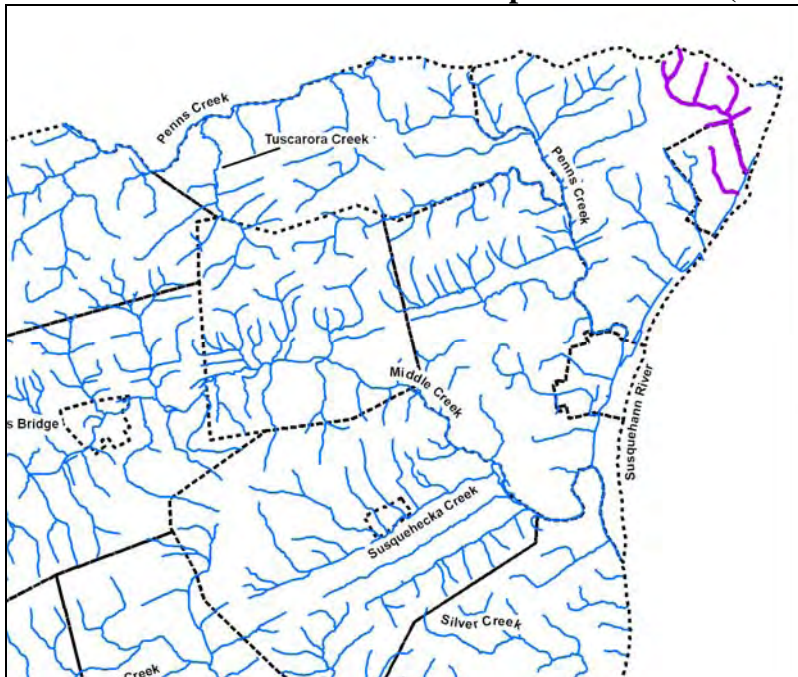
**Map 25: Small Residential, Runoff/Siltation Impaired Streams (Marked in Brown)**



**Map 26: Source Unknown/Mercury Impaired Streams (Marked in Gray)**

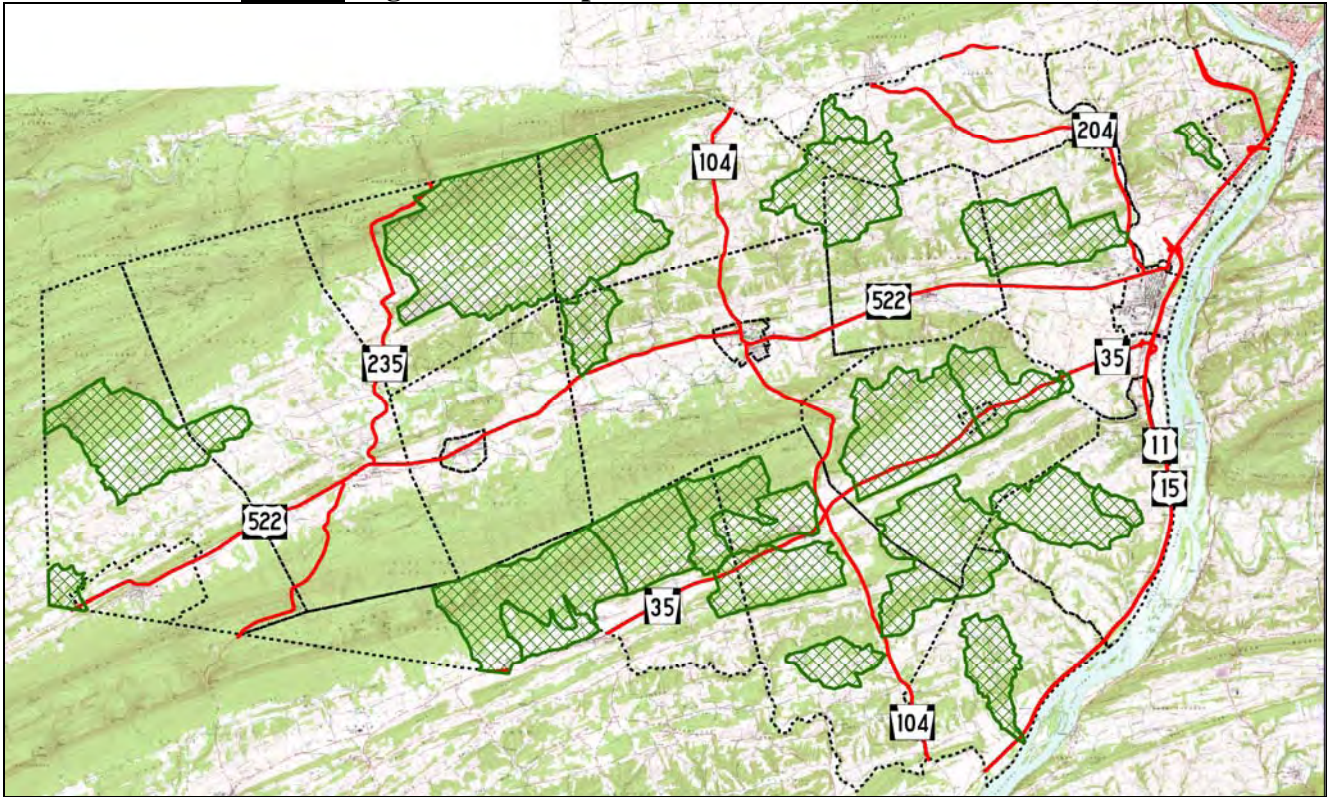


**Map 27: Urban Runoff/Storm Sewers/Siltation Impaired Streams (Marked in Purple)**

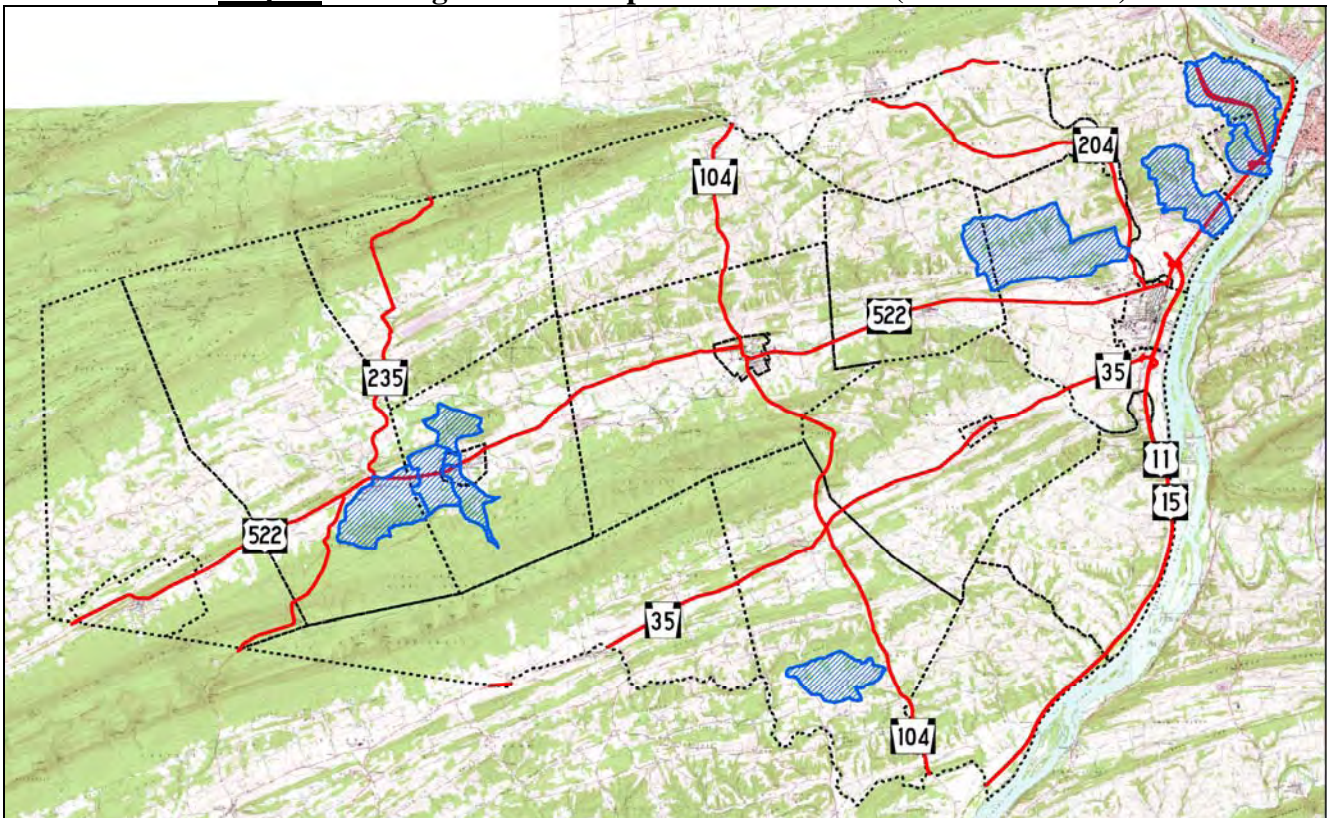


The following maps (Maps 28 – 31) show approximate locations of impaired watersheds according to category group: Agriculture, Non-Agriculture, Both (agriculture and non-agriculture) or Other. Refer to Tables 8A and 8B on page 27 for a list of identified water body problems (including Walker Lake) and what group is has been classified in this implementation plan. (SCCD, December 2009 Shapefile)

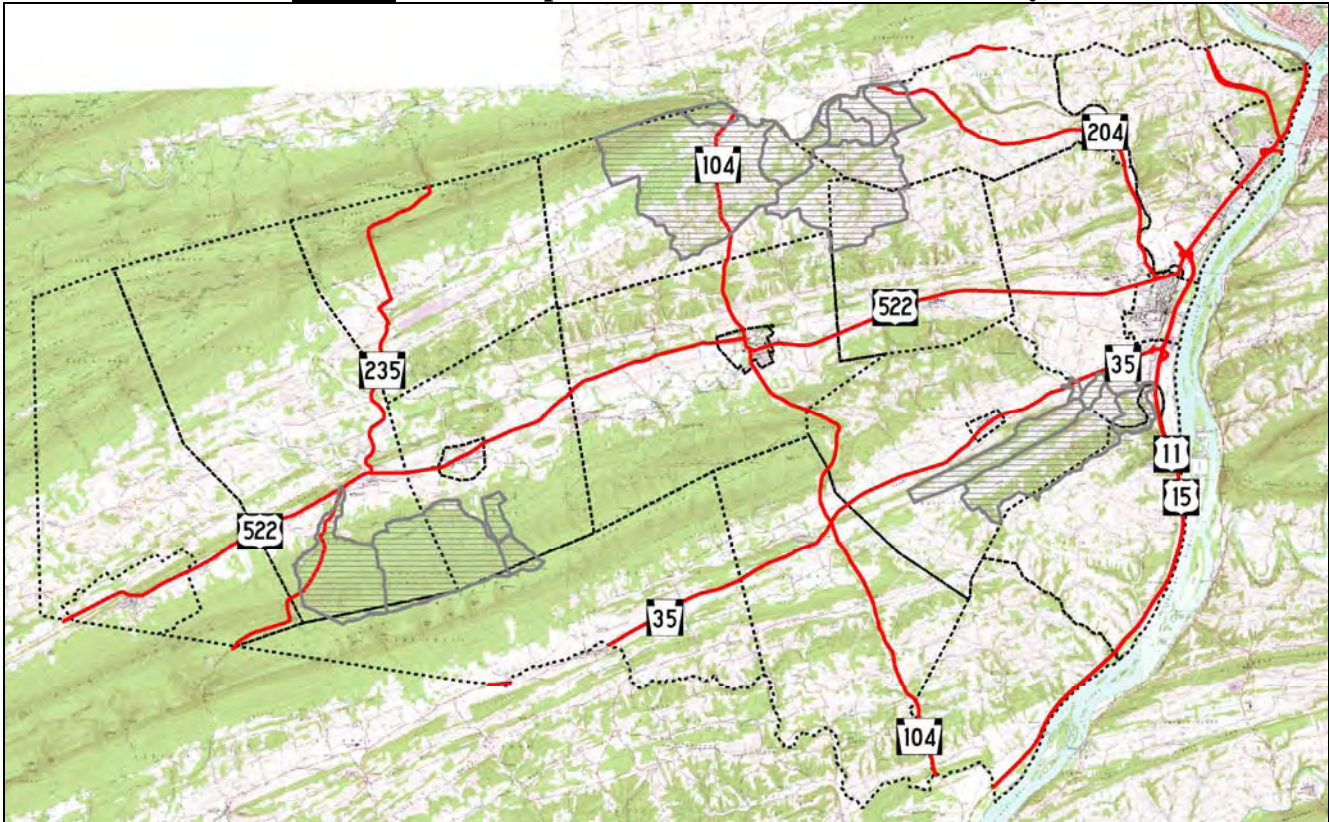
**Map 28: Agricultural Impaired Watersheds (Marked in Green)**



**Map 29: Non-Agricultural Impaired Watersheds (Marked in Blue)**

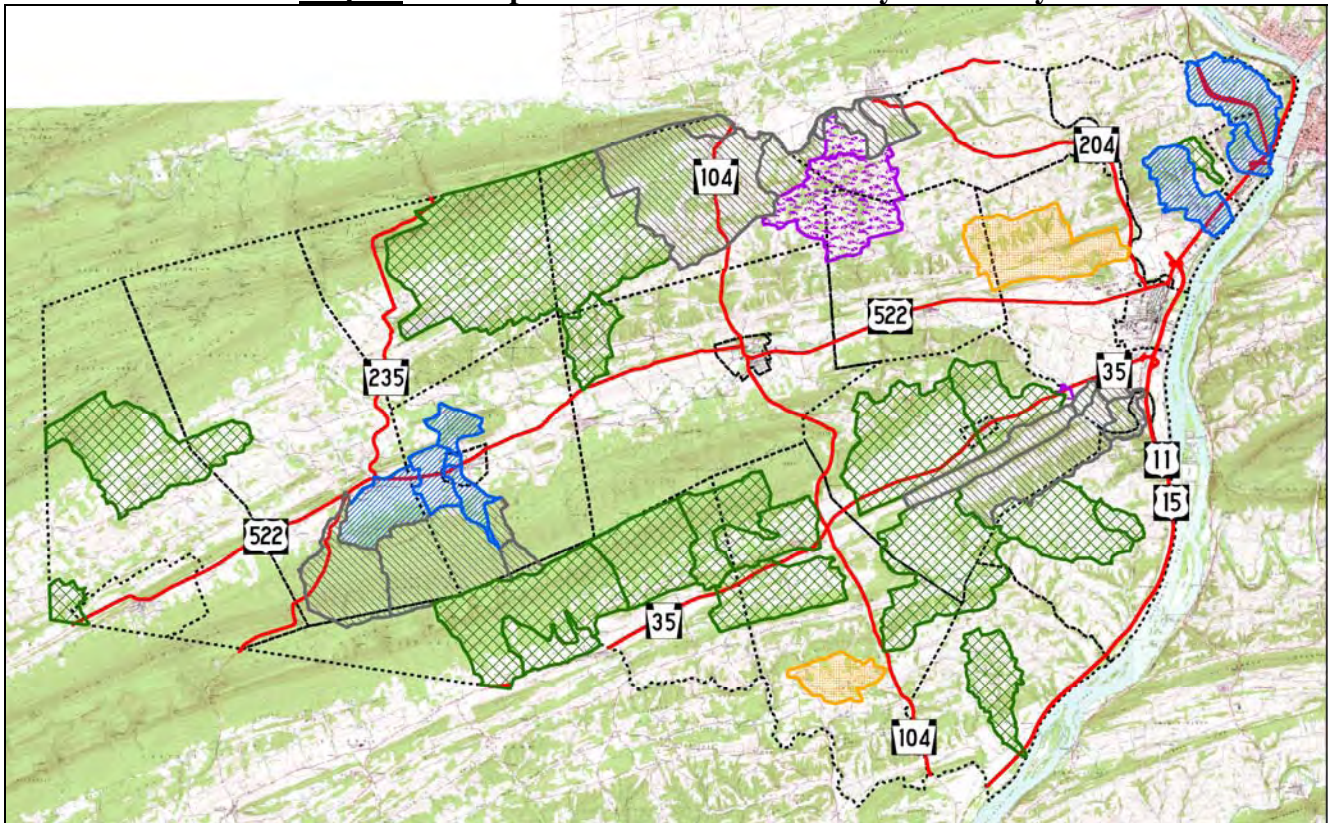


**Map 30: Other Impaired Watersheds (Marked in Gray)**



On Map 31 (next page), it should be noted that the Tuscarora Creek watershed (in purple) is classified on the map as being both Agricultural and Other impaired. In reality, the stream section has been classified as “Grazing, Agricultural/Siltation” impaired. However, where Tuscarora Creek flows into Penns Creek, sections of Penns Creek above and below it are impaired by unknown sources of mercury. (SCCD, December 2009 Shapefile)

**Map 31: All Impaired Watersheds with Snyder County**



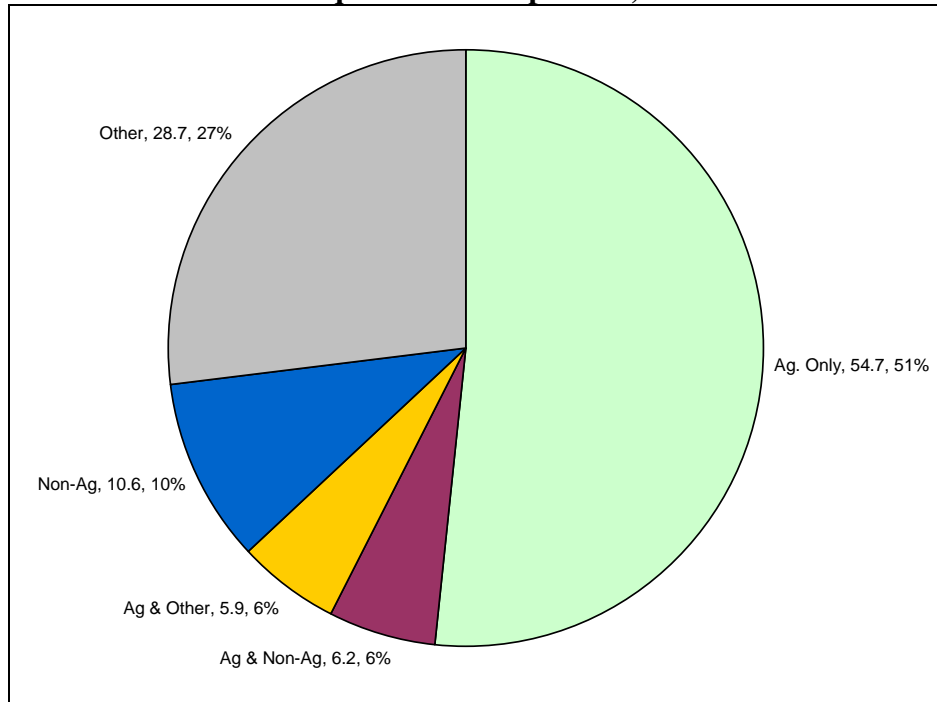
Legend: Green = Agricultural Only, Blue = Non-Agricultural Only, Gray = Other Only, Purple = Agricultural and Other, Orange = Agricultural and Non-Agricultural.

Figures 4 & 5 (next page) show the percentage and the area (in square miles) of Snyder County surface area that lies with a watershed that flows into identified impaired streams and Walker Lake. Table 10 shows the area of land that is within the designated impairment category. While 106.1 square miles is a large volume of land that flows into impaired waterbodies, it should be noted that 68% (225.9 out of 332 square miles) of the land area is Snyder County is not with a impaired waterbody. (SCCD, December 2009 Shapefile)

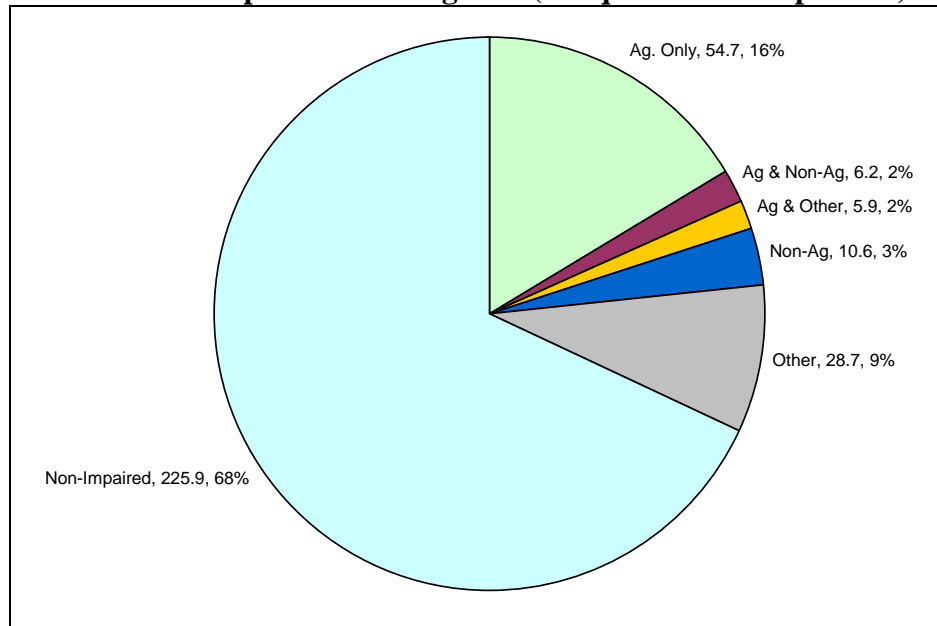
**Table 10: Area of Surface Land within Snyder County that Lies Within and Outside Impairment Watersheds (square miles)**

	Area Impaired	Total Area	Ag	Non-Ag	Other
Ag. Only	54.7	54.7	54.7		
Ag & Non-Ag	6.2	6.2	6.2	6.2	
Ag & Other	5.9	5.9	5.9		5.9
Non-Ag	10.6	10.6		10.6	
Other	28.7	28.7			28.7
Non-Impaired		225.9			
<b>TOTALS</b>	<b>106.1</b>	<b>332.0</b>	<b>66.8</b>	<b>16.8</b>	<b>34.6</b>

**Figure 4: Breakdown of Watershed Impairment Categories in Snyder County (In square miles & percent)**



**Figure 5: Breakdown of the Entire Area of Snyder County in Comparison with Watershed Impairment Categories (In square miles & percent)**





## **Water Quality Trends**

### **Agricultural Trends**

As mentioned before in the County Description section of this strategy, Snyder County is mostly comprised of forestland and agricultural land consisting of cropland, pastures and orchards. Types of farming range from small commercial dairy farms, pastured beef and sheep operations, crop farmers who own and rent hundreds of acres, farmers with swine finishing facilities to many type of poultry operations. (NASS-PA, 2004)

If a person looks at a barn on a typical dairy farm, some things should stand out. The bank barn, which originally housed a small number of young and milking dairy cattle, has had building sections added to it to allow for herd expansion. Also, the original barn and other facilities were likely placed near a stream for ease of water access. In some instances, the manure gutter cleaner may even be pointing toward the stream. Other dairy farmers have either expanded the original facilities or have built a completely new facility to raise heifers or raise and milk cows. Many PA counties have experienced this same situation. (Penn State, February 2003 and SCCD, January 2005)

Other livestock operations have changed as well. While local beef and sheep operations have generally not changed in production methods over the recent years, this cannot be said for the swine and poultry industry. Small hen houses and swine sheds are almost a thing of the past. One swine finishing facility can house from 1,000 to 3,000 hogs. Newer facilities house roughly 2,200 hogs. Although there have been layer, pullet and broiler operations in the county for years, more poultry operations have been coming into existence. Breeder bird operations (where roosters and egg laying hens roam free inside a large building to produce future birds), turkey operations, guinea operations and additional broiler operations have come to the area. These facilities normally consist of large buildings approximately 40 ft. wide x 500 ft. long. Many farmers choose to add a poultry or swine facility on their farm so that their farm can become more financially productive. Others choose to help supplement off-farm income and still make the farmland productive in some way without being forced to sell the land that could end up in development. (SCCD, January 2005)

It should be noted that there are 43 concentrated animal operations (CAOs) and ten concentrated animal feeding operations (CAFOs) within Snyder County. (There are also 26 volunteers in the Act 38 program as well.) With changes in state and federal regulations, farmers under state regulated nutrient management plans or farmers who receive technical assistance from Natural Resources Conservation Service (NRCS) may have to change manure management and application rates on their own land, as well as rented and imported farmland. (SCCD, January 2005, December 2006, February 2010 and PA Nutrient Management Program Website, 2005)

As Table 11 (shows on the next page) from the U.S. Census Bureau's Website (December 2004 and January 2005), the percentage of the Snyder County residents that are age 65 and over has increased, while the national average has decreased slightly.

Snyder County Implementation Plan – 2010  
Water Quality Trends

**Table 11: County & National Percentages for Age 65 and Over**

Census Year	Snyder County Percentage Age 65 and over	National Percentage Age 65 and over
1990	12.6%	12.6%
2000	14.0%	12.4%

Note: Percentages represent entire populations, not just individuals who identify themselves as farmers

With the percentage of the populace age 65 and over increasing, it would stand to reason that more and more farmers will be retiring or decreasing their activities towards agricultural production. This may be one reason that we have seen an increase in crop grain farmers renting more farmland. Some of these crop farmers have increased their rented acreage in their operations.

The information listed on Tables 12A through 12B are taken from the 1987, 2002 and 2007 Census of Agriculture for Snyder County. Table 12C's information comes solely from the 2007 Census of Agriculture. (USDA-NASS, 1987, USDA-NASS, 2002 and NASS-PA, Updated December 2009)

**Table 12A: Snyder County Census of Agriculture Data -- General**

Item (for Snyder County)	1987	2002	2007
Farms (number)	702	784	998
Land in Farms (acres)	88,998	100,034	100,179
Average Size of Farm (acres)	128	128	100
Market Value of Products Sold		\$80,601,000	\$109,041,000
Crop (including Nursery/Greenhouse) Sales			\$14,864,000
Livestock Sales			\$94,177,000
Average Sales Per Farm		\$102,807	\$109,259

**Table 12B: Snyder County Census of Agriculture Data -- Detailed**

Item (for Snyder County)	1987	2002	2007
Value of Land & Buildings:			
Average per Farm	\$177,973	\$426,932	\$500,022
Average per Acre	\$1,312	\$3,558	\$4,981
Farms by Size			
1 – 9 acres	69	71	70
10 – 49 acres	152	208	384
50 – 179 acres	331	362	411
180 – 499 acres	129	113	107
500 – 999 acres	16	15	22
1,000 acres or more	5	15	4
Total Cropland:			
Farms	647	712	881
Acres	66,268	71,711	65,426

Snyder County Implementation Plan – 2010  
Water Quality Trends

**Table 12B: Snyder County Census of Agriculture Data – Detailed (continued)**

Item (for Snyder County)	1987	2002	2007
Operators by days worked off farm:			
Any days	374	448	657
200 Days or more	203	279	398
Cattle & Calves Inventory:			
Farms	445	438	454
Number	20,334	25,714	25,564
Beef Cows:			
Farms	100	114	101
Number	1,452	1,553	1,116
Milk Cows			
Farms		320	153
Number		19,943	6,292
Cattle & Calves Sold:			
Farms	420	343	374
Number	9,852	21,746	14,957
Hogs & Pigs Inventory:			
Farms	145	72	72
Numbers	19,925	49,087	36,157
Hogs & Pigs Sold:			
Farms	144	77	68
Numbers	39,975	193,322	140,256
Sheep & Lambs Inventory:			
Farms	39	51	70
Numbers	969	1,222	998
Chickens 3 Months Old or Older Inventory:			
Farms	94		
Numbers	74,185		
Layers 20 Weeks Old and Older Inventory:			
Farms		97	164
Numbers		252,833	300,957
Broilers & Other Meat-Type Chickens Sold:			
Farms	37	63	63
Numbers	4,275,569	13,422,689	13,283,321
Corn for Grain			
Farms		298	306
Acres		13,310	13,958
Bushels		685,156	1,096,618
Corn for Silage or Greenchop			
Farms		249	217
Acres		8,919	8,114
Tons		75,612	83,106

Snyder County Implementation Plan – 2010  
Water Quality Trends

**Table 12C: Selected Snyder County 2007 Census of Agriculture Data – Detailed**

Item	Quantity	State Rank
<b>VALUE OF SALES BY COMMODITY GROUP</b>		
Grains, oilseeds, dry beans, and dry peas	\$6,304,000	26
Tobacco	\$37,000	12
Vegetables, melons, potatoes, and sweet potatoes	\$3,646,000	10
Fruits, tree nuts, and berries	\$2,240,000	11
Nursery, greenhouse, floriculture, and sod	\$829,000	48
Cut Christmas trees and short rotation woody crops	\$328,000	18
Other crops and hay	\$1,480,000	42
Poultry and eggs	\$47,824,000	6
Cattle and calves	\$12,959,000	9
Milk and other dairy products from cows	\$20,313,000	26
Hogs and pigs	\$12,538,000	7
Sheep, goats, and their products	\$68,000	43
Horses, ponies, mules, burros, and donkeys	\$141,000	44
<b>TOP CROP ITEMS (acres)</b>		
Forage - land used for all hay and haylage, grass silage, and greenchop	19,195	36
Corn for grain	13,958	28
Soybeans for beans	8,569	18
Corn for silage	8,114	17
Wheat for grain, all	1,600	24
<b>TOP LIVESTOCK INVENTORY ITEMS (number)</b>		
Broilers and other meat-type chickens	2,780,177	2
Layers	300,957	13
Pullets for laying flock replacement	171,431	11
Turkeys	132,118	7
Hogs and pigs	36,157	8

Stream study information (provided by DEP and others) shows which streams have problems in Snyder County. With the categories mentioned earlier, 39% are agriculturally related. This means that 43.211 miles out of the **111.055** problem miles are caused by such problems as cropland soil erosion, manure and fertilizer nutrient runoff, cattle grazing siltation and direct manure deposition near and in streams. (PA-DEP, October 2009a & 2009b and PA-DEP, January 2010 website)

*Note: An additional 14.637 miles (13%) is caused by agricultural and non-agricultural problems. This means that a total of 57.848 miles is caused by agricultural problems. This does not include Walker Lake's 239 acres. (PA-DEP, January 2010 website and PA-DEP, October 2009a & 2009b)*

### Non-Agricultural Trends

As mentioned in the County Description and Water Resources/Quality sections of this strategy, the population of Snyder County is steadily increasing. The population of Snyder County has increased from 29,522 in 1960 to 37,546 in 2000. (US Census Bureau, December 2004) Also, with the aforementioned improvement to US Routes 11 and 15, access to and from the county has become more efficient to carry increasing traffic patterns.

Snyder County Conservation District technical staff has indicated that there has been an increase in erosion & sedimentation plans and NPDES (National Pollution Discharge Pollution Elimination System) permits reviewed and issued. One hundred seventy-nine erosion and sedimentation plans were reviewed and sixty-eight NPDES permits were issued. (Refer to Table 7 found on page 11.) A person driving along the local and state roads will see more earthmoving and construction activity at almost every part of the county than in the past. (SCCD, December 2006)

*Note: The Conservation District had issued general permits in the past. Due to financial and workload issues, general permits are now given by the PA DEP's Northcentral office in Williamsport.*

In the U. S. Census Bureau's Website, housing unit numbers were estimated to have increased from 14,890 since the 2000 Census was taken to 15,169 in 2002. This is an increase of 279 in just two years. This also increases the density of housing units per square mile of land area from 45.0 to 45.8. (US Census Bureau, December 2004 and January 2005.)

As mentioned before, roughly 50% of the housing units in Snyder County have on-lot sewage disposal systems. Table 13 (next page) shows housing condition characteristics for Snyder County and Pennsylvania for 1990. If the numbers are correct, that means 6,828 housing units out of 13,629 are served by on-lot sewage disposal. That means that the landowner, not a professionally trained treatment plant employee or manager, must make sure that their own system is functioning correctly and not polluting nearby water resources. (Snyder Co. Planning Commission, 2001)

Snyder County Implementation Plan – 2010  
Water Quality Trends

**Table 13: Housing Conditions Characteristics for Snyder County & PA**

Jurisdiction	Total Units	Sewage Disposal (1990) Percentage		
		Public System	On-Lot	Other
PA	4,938,140	74.3	24.5	1.2
Snyder County	13,629	46.2	50.1	3.7
Adams Township	324	-	90.7	9.3
Beaver Township	195	2.1	94.4	3.6
Beavertown Borough	379	99.2	0.8	-
Center Township	682	26.8	69.6	3.5
Chapman Township	429	3.3	79.3	17.5
Franklin Township	847	9.0	86.3	4.7
Freeburg Borough	254	100.0	-	-
Jackson Township	504	3.2	93.7	3.2
McClure Borough	426	84.5	14.8	0.7
Middleburg Borough	602	96.7	3.3	-
Middlecreek Township	650	36.5	60.9	2.6
Monroe Township	1,622	55.5	43.9	0.6
Penn Township	945	43.9	52.9	3.2
Perry Township	664	11.3	82.2	6.5
Selinsgrove Borough	1,839	98.6	1.1	-
Shamokin Dam Borough	754	93.2	6.5	0.3
Spring Township	675	39.6	53.6	6.8
Union Township	519	1.2	91.3	7.5
Washington Township	482	1.5	91.3	7.3
West Beaver Township	436	-	84.6	15.4
West Perry Township	401	0.5	94.0	5.5

Stream study information provided by DEP identifies streams that have shown problems in Snyder County. With the categories mentioned earlier, 14% are solely non-agricultural related. This means that 15.911 miles out of the 104.616 problem miles are caused by such problems as small residential lot runoff, golf courses, urban removal of vegetation and other urban runoff. (PA-DEP, January 2010 website and PA-DEP, October 2009a & 2009b)

*Note: An additional 14.637 miles (13%) is caused by agricultural and non-agricultural problems. This means that a total of 30.548 miles is caused by non-agricultural problems. (PA-DEP, January 2010 website and PA-DEP, October 2009a & 2009b)*

Water Quality Trends

As mentioned earlier in this report, there has been only two formal water quality assessments completed within Snyder County (PA-DEP-NCRO, August 2008 and Aqua-Link, 2003). However, DEP has supplied conservation districts with information regarding nitrogen, phosphorous and sediment loading into the Chesapeake Bay watershed in late 2004. Please refer to the following tables regarding this information.

Note that this information “contains the projected 2002 nutrient and sediment loads based on the reported management practices implemented through 2002. The nutrient loads in this file were estimated using EPA's Chesapeake Bay Program watershed model. The nutrient and sediment loads represent a projection of the loads that will occur some time in the future, assuming all reported management practices installed in the watershed as of 2002 are fully effective and fully maintained. Because these loads represent a future condition equal to all management practices being fully effective, the projected 2002 should not be compared directly to actual 2002 water quality conditions.” (Information quoted from PA-DEP Spreadsheets, 2004)

Refer to Tables 14 through 21 for detailed information.

**Table 14: Projected 2002 Edge-of-Stream Loads --- in pounds per year for Snyder County according to Practice**

<b>Practice</b>	<b>Nitrogen</b>	<b>Phosphorous</b>	<b>Sediment</b>
Conventional Till	459,556	38,075	19,318
Conservation Till	351,153	18,411	4,660
Hay	145,472	9,888	4,701
Pasture	227,724	13,116	3,833
Manure	245,099	29,824	0
Forest	254,907	2,262	4,106
Pervious Developed	42,948	2,617	1,032
Impervious Developed	12,784	733	0
Mixed Open	221,479	16,570	4,567
Open Water	17,825	887	0
Septic Systems	51,096	0	0

Snyder County Implementation Plan – 2010  
Water Quality Trends

**Table 15: Nitrogen Projected 2002 Edge-of-Stream Loads ---  
in pounds per year within Snyder County**

<b>Practice</b>	<b>SNYDER Percent w/in PA C. B. Watershed</b>	<b>SNYDER RANKING IN PA C. B. Watershed</b>	<b>Snyder Percent w/in DEP NC Region</b>	<b>Rank within DEP NC Region</b>
Conventional Till	1.98%	19	5.73%	8
Conservation Till	2.80%	12	9.63%	4
Hay	1.56%	22	4.13%	7
Pasture	2.22%	16	7.86%	5
Manure	3.53%	8	13.95%	2
Forest	0.95%	33	1.77%	13
Pervious Developed	0.69%	29	2.52%	11
Impervious Developed	0.51%	29	1.83%	11
Mixed Open	2.62%	18	6.31%	8
Open Water	0.99%	26	2.74%	11
Septic Systems	1.12%	26	5.14%	9

**Table 16: Phosphorous Projected 2002 Edge-of-Stream Loads ---  
in pounds per year within Snyder County**

<b>Practice</b>	<b>Percent SNYDER w/in PA C. B. Watershed</b>	<b>SNYDER RANKING in PA C. B. Watershed</b>	<b>Snyder Percent w/in DEP NC Region</b>	<b>Rank within DEP NC Region</b>
Conventional Till	2.04%	19	6.97%	7
Conservation Till	2.84%	12	12.20%	4
Hay	1.65%	20	4.83%	5
Pasture	1.84%	19	5.93%	5
Manure	3.53%	8	13.95%	2
Forest	0.87%	34	1.63%	13
Pervious Developed	0.67%	30	2.43%	11
Impervious Developed	0.50%	30	1.84%	11
Mixed Open	2.56%	18	6.20%	8
Open Water	0.97%	26	2.76%	11
Septic Systems	--	42	--	14



Snyder County Implementation Plan – 2010  
Water Quality Trends

**Table 17: Sediment Projected 2002 Edge-of-Stream Loads  
--- in tons per year**

<b>Practice</b>	<b>Percent SNYDER w/in PA C. B. Watershed</b>	<b>SNYDER RANKING in PA C. B. Watershed</b>	<b>Snyder Percent w/in DEP NC Region</b>	<b>Rank within DEP NC Region</b>
Conventional Till	1.99%	16	9.60%	6
Conservation Till	2.65%	12	13.55%	3
Hay	2.20%	16	7.29%	5
Pasture	2.82%	15	9.33%	5
Manure	--	42	--	14
Forest	0.99%	33	1.97%	13
Pervious Developed	0.96%	28	3.61%	11
Impervious Developed	--	42	--	14
Mixed Open	3.08%	13	7.25%	7
Open Water	--	42	--	14
Septic Systems	--	42	--	14

Snyder County Implementation Plan – 2010  
Water Quality Trends

**Table 18: From DEP, Chesapeake Bay Proram**  
***Nitrogen Contribution from Manure into Chesapeake Bay***

COUNTY	Manure (lb. of N)	COUNTY RANKING	Percent within PA CBP Watershed
LANCASTER	1545322	1	22.24%
FRANKLIN	947452	2	13.63%
BRADFORD	362574	3	5.22%
BEDFORD	301322	4	4.34%
MIFFLIN	299151	5	4.31%
LEBANON	269763	6	3.88%
BLAIR	253319	7	3.65%
<b>SNYDER</b>	<b>245099</b>	<b>8</b>	<b>3.53%</b>
TIOGA	243272	9	3.50%
CUMBERLAND	210403	10	3.03%
CENTRE	207228	11	2.98%
HUNTINGDON	199563	12	2.87%
JUNIATA	188249	13	2.71%
PERRY	169940	14	2.45%
SUSQUEHANNA	164499	15	2.37%
UNION	147543	16	2.12%
LYCOMING	136995	17	1.97%
YORK	128488	18	1.85%
ADAMS	106351	19	1.53%
NORTHUMBERLAND	96319	20	1.39%
COLUMBIA	91970	21	1.32%
CLINTON	79713	22	1.15%
DAUPHIN	71915	23	1.03%
CHESTER	59430	24	0.86%
SCHUYLKILL	59152	25	0.85%
CLEARFIELD	47434	26	0.68%
FULTON	43909	27	0.63%
SULLIVAN	41530	28	0.60%
POTTER	36053	29	0.52%
WYOMING	34024	30	0.49%
BERKS	32507	31	0.47%
CAMBRIA	26008	32	0.37%
LUZERNE	23883	33	0.34%
MONTOUR	20148	34	0.29%
LACKAWANNA	20052	35	0.29%
SOMERSET	13672	36	0.20%
ELK	9579	37	0.14%
INDIANA	7105	38	0.10%
WAYNE	6833	39	0.10%
CAMERON	678	40	0.01%
MCKEAN	264	41	0.00%
JEFFERSON	0	42	0.00%

Percent from Top 7 Counties  
57.26%

Percent from Bottom 34 Counties  
39.21%

**Table 19: From DEP, Chesapeake Bay Program**  
***Phosphorous Contribution from Manure into Chesapeake Bay***

COUNTY	Manure (lb. of P)	COUNTY RANKING	Percent within PA CBP Watershed
LANCASTER	188044	1	22.24%
FRANKLIN	115294	2	13.64%
BRADFORD	44121	3	5.22%
BEDFORD	36666	4	4.34%
MIFFLIN	36404	5	4.31%
LEBANON	32828	6	3.88%
BLAIR	30826	7	3.65%
<b>SNYDER</b>	<b>29824</b>	<b>8</b>	<b>3.53%</b>
TIOGA	29604	9	3.50%
CUMBERLAND	25603	10	3.03%
CENTRE	25218	11	2.98%
HUNTINGDON	24285	12	2.87%
JUNIATA	22908	13	2.71%
PERRY	20680	14	2.45%
SUSQUEHANNA	20018	15	2.37%
UNION	17955	16	2.12%
LYCOMING	16671	17	1.97%
YORK	15625	18	1.85%
ADAMS	12943	19	1.53%
NORTHUMBERLAND	11721	20	1.39%
COLUMBIA	11191	21	1.32%
CLINTON	9699	22	1.15%
DAUPHIN	8751	23	1.03%
CHESTER	7231	24	0.86%
SCHUYLKILL	7198	25	0.85%
CLEARFIELD	5771	26	0.68%
FULTON	5343	27	0.63%
SULLIVAN	5055	28	0.60%
POTTER	4387	29	0.52%
WYOMING	4141	30	0.49%
BERKS	3956	31	0.47%
CAMBRIA	3165	32	0.37%
LUZERNE	2906	33	0.34%
MONTOUR	2452	34	0.29%
LACKAWANNA	2440	35	0.29%
SOMERSET	1663	36	0.20%
ELK	1166	37	0.14%
INDIANA	865	38	0.10%
WAYNE	832	39	0.10%
CAMERON	82	40	0.01%
MCKEAN	32	41	0.00%
JEFFERSON	0	42	0.00%

Percent from Top 7 Counties  
57.26%

Percent from Bottom 37 Counties  
39.21%

**Table 20: Nitrogen Contribution from Manure from Northcentral DEP Region**

COUNTY	Manure (lb. of N)	COUNTY RANKING	Percent within PA CBP Watershed
BRADFORD	362574	1	20.64%
<b>SNYDER</b>	<b>245099</b>	<b>2</b>	<b>13.95%</b>
TIOGA	243272	3	13.85%
CENTRE	207228	4	11.80%
UNION	147543	5	8.40%
LYCOMING	136995	6	7.80%
NORTHUMBERLAND	96319	7	5.48%
COLUMBIA	91970	8	5.24%
CLINTON	79713	9	4.54%
CLEARFIELD	47434	10	2.70%
SULLIVAN	41530	11	2.36%
POTTER	36053	12	2.05%
MONTOUR	20148	13	1.15%
CAMERON	678	14	0.04%

**Table 21: Phosphorous Contribution from Manure from Northcentral DEP Region**

COUNTY	Manure (lb. of P)	COUNTY RANKING	Percent within PA CBP Watershed
BRADFORD	44121	1	20.64%
<b>SNYDER</b>	<b>29824</b>	<b>2</b>	<b>13.95%</b>
TIOGA	29604	3	13.85%
CENTRE	25218	4	11.80%
UNION	17955	5	8.40%
LYCOMING	16671	6	7.80%
NORTHUMBERLAND	11721	7	5.48%
COLUMBIA	11191	8	5.24%
CLINTON	9699	9	4.54%
CLEARFIELD	5771	10	2.70%
SULLIVAN	5055	11	2.36%
POTTER	4387	12	2.05%
MONTOUR	2452	13	1.15%
CAMERON	82	14	0.04%

Table 22 (found in the next page) shows Snyder County rankings that are contributing to the state’s portion of the Chesapeake Bay watershed. In most categories, Snyder County is in the “middle of the pack,” ranging from 20<sup>th</sup> to 22<sup>nd</sup> among 42 counties within the Chesapeake Bay watershed. Contribution of pollutants from manure (8<sup>th</sup> among 42 counties) is the exception. However, compared to the 14 counties of DEP’s Northcentral region, Snyder County ranks high not only in manure management pollution, but also from pasture problems along streams and cropland erosion. Snyder County ranks 2<sup>nd</sup> regarding manure pollution within DEP’s Northcentral Region. (PA-DEP 2004 Spreadsheets)

**Table 22: Summary of Information Regarding DEP Supplied Information Described Above**

<b>Description of Sources</b>	<b>County Rank (Out of 42, with 1<sup>st</sup> being the highest)</b>	<b>County Contribution Percentage among all Counties</b>
<b>Comparing Snyder County to all 42 CB Watershed PA Counties</b>		
Edge of Stream, Total Nitrogen Contribution to Chesapeake Bay, from PA	22nd	1.80%
Edge of Stream, Total Phosphorous Contribution to Chesapeake Bay, from PA	20th	2.13%
Edge of Stream, Total Sediment Contribution to Chesapeake Bay, from PA	20th	1.95%
Delivered, Total Nitrogen Contribution to Chesapeake Bay, from PA	22nd	1.99%
Delivered, Total Phosphorous Contribution to Chesapeake Bay, from PA	21st	1.95%
Delivered, Total Sediment Contribution to Chesapeake Bay, from PA	22nd	1.58%
Nitrogen Contribution from Manure into Chesapeake Bay	8th	3.53%
Phosphorous Contribution from Manure into Chesapeake Bay	8th	3.53%
<b>Description of Sources</b>	<b>County Rank (out of 14, with 1<sup>st</sup> being the highest)</b>	<b>County Contribution Percentage amount all Counties</b>
<b>Comparing Snyder County to all 14 counties within DEP's Northcentral region.</b>		
Nitrogen, Edge of Stream Loads, Conventional Till	5th	5.73%
Phosphorous, Edge of Stream Loads, Conventional Till	7th	6.97%
Sediment, Edge of Stream Loads, Conventional Till	6th	9.60%
Nitrogen, Edge of Stream Loads, Conservation Till	4th	9.63%
Phosphorous, Edge of Stream Loads, Conservation Till	4th	12.20%
Sediment, Edge of Stream Loads, Conservation Till	3rd	13.55%
Nitrogen, Edge of Stream Loads, Pasture	7th	7.86%
Phosphorous, Edge of Stream Loads, Pasture	5th	5.93%
Sediment, Edge of Stream Loads, Pasture	5th	9.33%
Nitrogen, Edge of Stream Loads, Manure	2nd	13.95%
Phosphorous, Edge of Stream Loads, Manure	2nd	13.95%

While compiling information related to the identified problem streams, the top five categories selected in identifying problems were identified below. Three of the five categories were agricultural related, one was non-agricultural related (urban development and construction) and one was dealing with a problem that is beyond the scope or means of the Snyder County Conservation District can handle. (PA-DEP, October 2009a& 2009b):

**Table 23: Top 5 Categories among Impaired Streams in Snyder County**

<b>305(b) Stream Problem Category</b>	<b>Category Type</b>	<b>Total Miles of Streams with Problem in Snyder County</b>
Atmospheric Deposition, pH	Other	28.340
Ag/Siltation	Agriculture	23.310
Grazing Related Ag/Siltation	Agriculture	19.728
Small Residential, Runoff/Siltation	Non-Agriculture	17.738
Crop Related/Siltation	Agriculture	13.547

Please refer to Maps 6 through 31, Tables 8A, 8B, 9 and 10, and Figures 1 through 5 found earlier in this report. Tables 8A and 8B show charts regarding stream impairment data that relates to Snyder County water bodies from DEP’s eMap PA Access and DEP geodata regarding non-attaining and attaining streams from its “Integrated List.” The information on identified problem streams corresponds with data provided by DEP’s eMap PA Access and other DEP supplied sources. (PA-DEP, January 2010 website, PA-DEP December 2009, October 2009a & October 2009b)

**Sediment & Nutrient Reduction**

**Program Accomplishments**

With the advent of the Chesapeake Bay Program cost sharing agricultural best management practices (BMPs) in 1987, Snyder County Conservation District has been able to install many conservation practices to prevent sediment and nutrient pollution. Listed below are agricultural BMPs that were installed on 44 contracted Chesapeake Bay Program farms. (SCCD, December 2005)

**Table 24: BMPs installed through the Older Chesapeake Bay Program in Snyder County**

<b>Number</b>	<b>Description</b>
35 items	Waste Storage Structures & Ponds
13 farms	Soil Conservation Practices on Cropland
38 acres	Critical Area Seeding
5	Barnyard Improvements
3 miles	Diversions
7 miles	Fencing Streams, Pastures and Barnyards
4 items	Filter Areas
8 miles	Grass Waterways
188 acres	Pasture and Hayland Conservation and Management
18 items	Roof Storm Water Control Systems
13 items	Heavy Use Area Protected Areas for Barnyards and Cattle Walkways
1 item	Spring Development
8996 ft.	Subsurface Drain Lines
3 items	Water Troughs and Tanks
3549 ft.	Underground Outlet Lines
14 items	Waste Transfer Systems on 12 farms, including milkhouse & barnyard wastewater treatment
8 items	Stream Crossings on 7 farms
2 units	Mortality Composter

The Natural Resources Conservation Service—Middleburg Field Office (NRCS), along with the Farmer Service Agency (FSA), helped install practices under the Environmental Quality Incentives Program (EQIP) since the mid-1990s. Some of the practices were funded in conjunction with the Chesapeake Bay Program. However, there were some practices that EQIP funded by itself. Also, NRCS has also offered other programs such as the Chesapeake Bay Watershed Initiative (CBWI). These practices are listed below. Practices also funded by the Chesapeake Bay Program and EQIP are not listed below. Those practices would be listed on Table 24. (NRCS, December 2006 and February 2010)

Snyder County Implementation Plan – 2010  
Sediment & Nutrient Reduction

**Table 25: EQIP & Other NRCS practices in Snyder County**

<b>Practice Installed</b>	<b>Number Installed</b>
Waste Storage Structure	15
Critical Area Planting	3
Stone & Grassed Waterways	12
Roof Runoff Controls	9
Waste or Manure Transfer Systems (including Milkhouse Wastewater Treatment)	14
Diversion	2
Water Control Structure	5
Fencing Projects	17
Heavy Use Areas Protected	15
Cattle Walkways	4
Cattle Stream Crossings	5
Streambank Protection	1
Vegetative Filter Areas	4
Underground Outlets	9
Subsurface Drainage	5
Spring Developments	1
Conversion to No-Till Systems	5
Water & Sediment Control Basin	1
Composting	1

NRCS is the main agency in Snyder County to write conservation plans for farm landowner and operators. From 2003 and 2008, 16,285 acres of conservation planning was offered and reported by NRCS. In 2009, NRCS wrote conservation plans for 2,668 acres. (SCCD, February 2010 and NRCS, February 2010).

Beginning in 2000, Snyder County landowners could participate in the Conservation Reserve Enhancement Program (CREP) installing practices to help water quality and wildlife habitat. A list of those practices completed is located below: (FSA, December 2005, December 2005 and February 2010)

**Table 26: CREP practices installed in Snyder County**

<b>Description</b>	<b>Acres</b>
Grass & Legume Establishment	4,230.1
Native Grass Establishment	338.1
Hardwood Tree Planting	11.4
Permanent Wildlife Habitat (Includes seeding, tree planting and shrub planting)	8.5
Grass Waterways	19.3
Wildlife Food Plots	50.0
Contour Grass Strips	4.9
Filter Strips	34.5
Riparian Forested Buffer (Includes cattle watering facilities, cattle stream bank fencing, and improving existing buffers)	243.2
Wetland Restoration	11.0