
APPENDIX A. GLOSSARY

Acidity	The capacity of water for neutralizing a basic solution.
Agricultural Preservation Areas	Lands enrolled in a statewide program that has been established to promote the conservation and preservation of agricultural lands and the agricultural community.
Air Pollutant	Any substance in the air that causes damage to life, ecosystems, or property.
Airsheds	Geographic areas responsible for emitting 75 percent of the air pollution reaching a body of water.
All Terrain Vehicle	A small, open motor vehicle having one seat and three or more wheels fitted with large tires. It is designed chiefly for recreational use over roadless, rugged terrain.
Atmospheric Deposition	The process of airborne pollutants falling to the ground.
Basicity	The extent to which a substance is a base, which is defined as having a pH over seven.
Bedrock	The solid rock that underlies the soil and other unconsolidated material, or that is exposed at the surface.
Best Management Practices	Refer to the most environmentally appropriate techniques for agriculture, forestry, mining, development, urban storm water management, and other practices that are potential threats to natural resources.
Biological Diversity	The number and variety of organisms found within a specific geographic region, or a particular habitat; the variability among living organisms on the earth, including the variability within and between species and within and between ecosystems.
Biological Diversity Area	An area of land recognized as supporting populations of state, nationally, or globally significant species or natural communities, high-quality examples of natural communities or ecosystems, or natural exceptional native diversity.
Canal	A man-made waterway that is usually used to connect existing bodies of water.
Carbon Monoxide	A colorless, odorless, poisonous gas that results from the incomplete burning of carbon fuels.

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Comprehensive Plans	A general policy guide for the physical development of a municipality, taking into account many factors including locations, character, and timing of future development.
Concentrated Animal Feeding Operation	A farm where large quantities of livestock or poultry are housed inside buildings or a confined area and all units of production, including feed, wastes and dead animals are concentrated in one area.
Conservation	The maintenance of environmental quality and resources; resources include physical, biological, or cultural. Ecosystem management within given social and economic constraints; producing goods and services for humans without depleting natural ecosystem diversity, and acknowledging the natural character of biological systems.
Conservation Lands	Public or private lands with management plans that include the protection of natural areas as a primary objective.
Dedicated Area	An area of land recognized because of an owner's specific intention to protect it, which could result in the improving to become either a biological diversity area in the future or an even better high-quality area within an already designated biological diversity area.
Degradation	A degeneration to a poorer quality, condition or state.
Direct Deposition	Occurs when pollutants enter a waterway by falling directly into it.
Drainage Pattern	The arrangement of streams in a landscape in response to local topography and subsurface geology.
Easement	A deed restriction that landowners may voluntarily place of their property to protect its future uses.
Eco-region	A geographical unit based on associations of those biotic and environmental factors that directly affect or indirectly express energy, moisture, and nutrients regulating the structure and function of ecosystems.
Ecosystems	An area and its living and non-living components.
Environmental Education	A learning process that increases knowledge and awareness of the environment and associated challenges, develops skills and expertise to address these challenges, and fosters attitudes, motivation, and commitment to make informed decisions and take responsible actions.
Erosion	The processes by which solids are displaced from the earth's surface; includes weathering, dissolution, abrasion, corrosion, and transportation.

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Factory Farms	Larger, corporate-based farms that emphasize high volume and profit.
Family Farms	Smaller farms that have been in operation for several generations.
Floodplain	The level land among the course of a river or stream formed by the deposition of sediment during periodic floods.
Forest Management	The art and science of treating a forest to promote a desired outcome.
Geology	Geology is the science that deals with the study of the earth and its history, and is the name of the natural features of our plant.
Ground-level Ozone	A harmful secondary pollutant formed in the atmosphere when nitrogen oxide (NO _x) combines and reacts with volatile organic compounds in the presence of sunlight and warm temperatures.
Groundwater	Water beneath the earth's surface; found in pore spaces in rock material. Supplies wells and springs as a source of drinking water for many; also
High-Grading	Involves cutting of only the biggest, most profitable trees in a stand; considered a non-sustainable practice.
Hydric Soils	Soils that are adequately moist in the upper section to cultivate anaerobic conditions during the growing season.
Hydrologic Unit Code	A system for organizing watersheds of the United States that divides and subdivides the watershed into successively smaller hydrologic units and is then assigned an identifying number.
Hydrology	The study of movement of water on the earth; includes surface water and groundwater.
Indirect Deposition	Occurs when a pollutant enters a waterway by falling onto land and being washed into waterbodies as runoff.
Invasive species	Environmentally noxious weeds that grow aggressively, spread easily, and displaces other plants.
Karst	An area of limestone marked by irregularities such as sinkholes, fissures, caves, and underground streams, which are created by erosion.
Landscape Conservation Area	A larger area of land that contains minimal human disturbance and allows ecosystems to function on a landscape level.
Landslide	Ground movements that change the stability of slope from stable to unstable are landslides

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Lichens	A symbiosis between a fungal and algal life form that usually grows on trees or rocks.
Major Employers	Companies having a minimum of 200 employees.
Management Recommendations	Non-regulatory suggestions to improve the quality of life.
Methylmercury	A neurotoxin formed by the transformation of mercury by certain microorganisms; it is highly toxic and easily accumulates in fish, shellfish and animals that eat fish.
Natural Heritage Inventories	A method of assessing areas of important plants, animals, and ecological communities.
Natural Resources	A naturally-occurring material with economic value.
Nonpoint Source	Pollutants that have no readily visible source and often require detailed analysis and research to discern the source.
Ozone	A colorless, odorless, gas that forms in the atmosphere.
Ozone Layer	A colorless, odorless, gas located in the upper atmospheric layer that filters the sun's harmful ultraviolet rays.
Particular Matter	Tiny drops of liquid or small particles of dust, metal or other materials that float in the air.
Physiographic Provinces	A region with a particular type of landscape and geology.
Point Source	Pollutants that can be easily traced to their source.
Precipitation	Any form of water that falls from the sky, including, rain, snow, sleet, fog, and hail.
Preservation	The act or process of keeping something safe from harm or injury; the act of maintaining or reserving.
Prime Agricultural Soils	Soils that are extremely well suited for agricultural uses and meet certain physical, chemical, and slope characteristics.
Red beds	Stratosphere of reddish-colored sedimentary rocks, such as sandstone, siltstone, and shale.
Restoration	Returning to its original state or condition.

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Riparian Areas	Areas of protective vegetation next to a body of water that serves as a barrier against polluted runoff and provides habitat corridors for wildlife.
Runoff	Rainfall or snowmelt not absorbed by soil that flows over the surface of the ground to a receiving waterway.
Secondary Pollutant	A new air pollutant formed when primary pollutants react in the atmosphere.
Sedimentary Rock	Rocks formed by the deposition of sediment.
Sedimentation	The deposit of particles moved by erosion.
Silviculture	The art and science of controlling the establishment, growth, composition, health and quality of forests and woodlands.
Smart Growth Practices	A current movement that focuses on redevelopment of established urban areas and other ways to reduce sprawl pressures on undeveloped countrysides.
Soil Associations	A classification of soil types that comprise two to three major soil types and a few minor soil types.
Stormwater	Water that runs off the land into surface waters during and immediately following periods of precipitation.
Stormwater Management Plan	Planning for surface runoff into streams and river systems during rain and/or snowmelt events.
Streambed	The channel base of a stream or river or creek; it serves as an interchange between groundwater and surface water.
Subsidence	The downward movement of surface material involving little or no horizontal movement.
Sustainable	The ability to provide for the needs of the world's current population without damaging the ability of future generations to provide for themselves. When a process is sustainable, it can be carried out over and over without negative environmental effects or impossibly high costs to anyone involved.
Symbiosis	An alliance between two or more species that benefits each member.
Synthetic Processes	Human-controlled processes, such as burning fossil fuels.
Temperate Continental Climate	A climate without extremes of temperatures or precipitation.

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Topography	Describes landscape features of an area.
Total Maximum Daily Load (TMDL)	A limit for pollutant load placed on a waterway by Department of Environmental Protection. TMDLs are determined for a waterway based on how much pollutant it is determined that the waterway can assimilate and still meet its designated use criteria. TMDLs will be used to regulate the percentage of total pollutant load that each source in a watershed can contribute.
Unemployment Rate	The percentage of people of the total labor force that are actively seeking a job but cannot find employment.
Value Added	The additional value added to a product at a stage of production.
Water Gap	An opening or notch which occurs when a section of a ridge has a weaker geological structure and a stream essentially cuts through a ridge to end up
Water Quality Trading	A program which allows facilities with higher pollution control costs to purchase the right to pollute from facilities that have reduced their pollution output below their required limits.
Watershed	The area of land that drains to a particular point along a stream. Each stream has its own watershed. Topography is the key element affecting this area of land. The boundary of a watershed is defined by the highest elevations surrounding the stream. A drop of water falling outside of the boundary will drain to another watershed.
Wetland	An area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances support, a prevalence of vegetation typically adapted for life in saturated soil conditions.
Wildlife Management Areas	Areas dedicated to wildlife management activities and low-intensity, wildlife-related recreation, including hunting and wildlife observation.
Zoning	A legal mechanism by which government bodies, for the sake of protecting public health, safety, morals and general welfare, can limit a landowner's right to use privately owned land by dividing land into districts and creating land-use regulations.

APPENDIX B. PLANNING COMMITTEES

Brokenstraw Creek Watershed Conservation Plan Steering Committee

Diane Carson	Pennsylvania Department of Environmental Protection
Rich Constantino	Chautauqua County Planning Department
Mat Elwell	Erie County Planning Department
Dan Glotz	Warren County Planning Commission
Jean Gomory	Warren County Conservation District
John Jablonsky	Chautauqua Watershed Conservancy
Joyce McChesney	Concerned Citizen
Kim McCullough	Pennsylvania Department of Conservation and Natural Resources
L. Christian Moseback	Penn State Cooperative Extension, Warren County Office
Brian Pilarcik	Crawford County Conservation District
Karen Prather	Brokenstraw Creek Watershed Council
Jake Welsch	Erie County Planning Commission
Heather Wilcox	Warren County Conservation District Penn Soil RC&D Council
Dave Wilson	Chautauqua County Soil & Water Conservation District Chautauqua Water Quality Task Force

Brokenstraw Creek Watershed Conservation Plan Advisory Committees

Project Area Characteristics

Lainard Bush	Brokenstraw Creek Watershed Council
Tracey Christensen	Brokenstraw Creek Watershed Council
Gary Fleeger	Pennsylvania Geological Survey
Dorothy Hvozda	Brokenstraw Creek Watershed Council
Bill Kibler	Brokenstraw Creek Watershed Council
J. Lynne Myers	
Paul Piozzola	Columbus Township Supervisor
Cecile Stelter	Pennsylvania Department of Conservation and Natural Resources Bureau of Forestry
Farley Wright	PA Wilds Planning Team

Land Resources

Lainard Bush	Brokenstraw Creek Watershed Council
Tracey Christensen	Brokenstraw Creek Watershed Council
Gary Fleeger	Pennsylvania Geological Survey
Dorothy Hvozda	Brokenstraw Creek Watershed Council
Bill Kibler	Brokenstraw Creek Watershed Council
J. Lynne Myers	
Kevin Peterson	Freehold Township Supervisor
Paul Piozzola	Columbus Township Supervisor
Cecile Stelter	Pennsylvania Department of Conservation and Natural Resources Bureau of Forestry

Water Resources

Lainard Bush	Brokenstraw Creek Watershed Council
Tracey Christensen	Brokenstraw Creek Watershed Council
Gary Fleeger	Pennsylvania Geological Survey
Dorothy Hvozda	Brokenstraw Creek Watershed Council
Bill Kibler	Brokenstraw Creek Watershed Council
J. Lynne Myers	
Kevin Peterson	Freehold Township Supervisor
Paul Piozzola	Columbus Township Supervisor
Thomas Savko	Coldwell Creek Chapter Trout Unlimited
Cecile Stelter	Pennsylvania Department of Conservation and Natural Resources Bureau of Forestry
Paul Stroup	Brokenstraw Creek Watershed Council

Biological Resources

Lainard Bush	Brokenstraw Creek Watershed Council
Tracey Christensen	Brokenstraw Creek Watershed Council
Gary Fleeger	Pennsylvania Geological Survey
Dorothy Hvozda	Brokenstraw Creek Watershed Council
Bill Kibler	Brokenstraw Creek Watershed Council
Paul Piozzola	Columbus Township Supervisor
Cecile Stelter	Pennsylvania Department of Conservation and Natural Resources Bureau of Forestry
Paul Stroup	Brokenstraw Creek Watershed Council

Cultural Resources

Lainard Bush	Brokenstraw Creek Watershed Council
Tracey Christensen	Brokenstraw Creek Watershed Council
Dorothy Hvozda	Brokenstraw Creek Watershed Council
Bill Kibler	Brokenstraw Creek Watershed Council
J. Lynne Myers	
Thomas Savko	Coldwell Creek Trout Unlimited
Cecile Stelter	Pennsylvania Department of Conservation and Natural Resources Department of Forestry
Farley Wright	PA Wilds Planning Team

APPENDIX C. AGRICULTURAL SOILS

Prime Agricultural Soils

Map Symbol	Unit Name	Percent Slope	Map Symbol	Unit Name	Percent Slope
<i>Chautauqua County</i>			<i>Chautauqua County (continued)</i>		
AIA	Allard silt loam	0 to 3	OrA	Orpark silt loam, if drained	0 to 3
AIB	Allard silt loam	3 to 8	OrB	Orpark silt loam, if drained	3 to 8
BrA	Barcelona silt loam, if drained	0 to 3	Po	Pompton silt loam	
BrB	Barcelona silt loam, if drained	3 to 8	RaA	Raynham silt loam, if drained	0 to 3
BsA	Busti silt loam, if drained	0 to 3	RaB	Raynham silt loam, if drained	3 to 8
BsB	Busti silt loam, if drained	3 to 8	Rf	Raynham silt loam, flooded, if drained	
ChB	Chadakoin silt loam	3 to 8	Rh	Redhook silt loam, if drained	
CkB	Chautauqua silt loam	3 to 8	RnA	Rhinebeck silt loam, if drained	0 to 3
CIA	Chenango silt loam	0 to 3	ShB	Schuyler silt loam	3 to 8
CIB	Chenango silt loam	3 to 8	SoA	Scio silt loam	0 to 3
CnA	Chenango gravelly loam	0 to 3	SoB	Scio silt loam	3 to 8
CnB	Chenango gravelly loam	3 to 8	Sw	Swormville silt loam, if drained	
CoA	Chenango channery loam, fan	0 to 3	Te	Teel silt loam	
CoB	Chenango channery loam, fan	3 to 8	Tg	Tioga silt loam	
CpA	Churchville silt loam, if drained	0 to 3	ToB	Towerville silt loam	3 to 8
CpB	Churchville silt loam, if drained	3 to 8	UnA	Unadilla silt loam	0 to 3
CsB	Collamer silt loam	3 to 8	UnB	Unadilla silt loam	3 to 8
CvB	Colonie loamy fine sand	3 to 8	VaB	Valois gravelly silt loam	3 to 8
DeA	Darien silt loam, if drained	0 to 3	Wa	Wakeville silt loam, if drained	
DeB	Darien silt loam, if drained	3 to 8	<i>Crawford County</i>		
EIA	Elnora fine sandy loam	0 to 3	BrA	Braceville gravelly loam	0 to 3
EIB	Elnora fine sandy loam	3 to 8	BrB	Braceville gravelly loam	3 to 8
FmA	Fremont silt loam, if drained	0 to 3	CaA	Cambridge silt loam	0 to 3
FrB	Frewsburg silt loam, if drained	3 to 8	CoA	Chenango gravelly silt loam	0 to 3
He	Hamlin silt loam		CoB	Chenango gravelly silt loam	3 to 8
HnA	Hinesburg fine sandy loam	0 to 3	HnA	Hanover silt loam	0 to 3
HnB	Hinesburg fine sandy loam	3 to 8	HnB	Hanover silt loam	3 to 8
Ho	Holderton silt loam, if drained		HvA	Haven silt loam	0 to 3
HrA	Hornell silt loam, if drained	0 to 3	Ph	Philo silt loam	
Me	Middlebury silt loam		Po	Pope loam	
Mn	Minoa fine sandy loam		ScA	Scio silt loam	0 to 3
NgA	Niagara silt loam, loamy substratum, if drained	0 to 3	VaB	Valois gravelly silt loam	3 to 8
NgB	Niagara silt loam, loamy substratum, if drained	3 to 8	VmB	Valois-Cambridge complex	3 to 8

Map Symbol	Unit Name	Percent Slope	Map Symbol	Unit Name	Percent Slope
Erie County			Erie County (continued)		
BcA	Berrien fine sandy loam	0 to 2	LcA3	Lobdell silt loam, severely eroded	0 to 3
BcB	Berrien fine sandy loam	2 to 8	LdA	Lobdell silt loam, high bottom	0 to 3
BcB3	Berrien fine sandy loam, severely eroded	2 to 8	LdB	Lobdell silt loam, high bottom	3 to 6
CcA	Chagrin fine sandy loam	0 to 3	MdB	Mardin gravelly silt loam	3 to 8
CcA3	Chagrin fine sandy loam, severely eroded	0 to 3	MdB3	Mardin gravelly silt loam, severely eroded	3 to 8
CdA	Chagrin silt loam	0 to 3	OaA	Ottawa fine sandy loam	0 to 2
CeA	Chagrin silt loam, high bottom	0 to 3	OaB	Ottawa fine sandy loam	2 to 8
CeB	Chagrin silt loam, high bottom	3 to 6	OaB3	Ottawa fine sandy loam, severely eroded	2 to 8
Cf	Chagrin very gravelly loam, fan	0 to 6	ObA	Ottawa loamy fine sand	0 to 2
CgB	Conotton coarse sandy loam	3 to 8	ObB	Ottawa loamy fine sand	2 to 8
CgB3	Conotton coarse sandy loam, severely eroded	0 to 8	ObB3	Ottawa loamy fine sand, severely eroded	2 to 8
ChA	Conotton gravelly loam	0 to 3	OtA	Ottawa loamy fine sand	0 to 2
ChB	Conotton gravelly loam	3 to 8	PaA	Phelps gravelly silt loam	0 to 3
ChB3	Conotton gravelly loam, serverly eroded	3 to 8	PaB	Phelps gravelly silt loam	3 to 8
CkB	Conotton gravelly sandy loam	3 to 8	PaB3	Phelps gravelly silt loam, severely eroded	3 to 8
CkB3	Conotton graveely sandy loam, severely eroded	3 to 8	PcA	Platea silt loam, moderately well drained variant	0 to 2
CmA	Conotton gravelly sandy loam, moderately well drained variant	0 to 3	SaA	Scio silt loam	0 to 3
CmB	Conotton gravelly sandy loam, moderately well drained	3 to 8	UaA	Unadilla fine sandy loam	0 to 3
CmB3	Conotton gravelly sandy loam, moderately well drained variant, severely eroded	3 to 8	WeA	Williamson and Collamer fine sandy loams	0 to 2
CoB	Colonie loamy fine sand	2 to 6	WfA	Williamson and Collamer silt loams	0 to 2
EnB	Elnora loam fine sand	1 to 5	Warren County		
HbA	Howard gravelly silt loam	0 to 3	BcB	Braceville gravelly silt loam	0 to 8
HbB	Howard gravelly silt loam	3 to 8	ChA	Chenango gravelly silt loam	0 to 3
HbB3	Howard gravelly silt loam, severely eroded	3 to 8	ChB	Chenango gravelly silt loam	3 to 8
HoA	Howard gravelly silt loam	0 to 3	CtA	Cookport silt loam	0 to 3
LaB	Langford silt loam	0 to 8	CtB	Cookport silt loam	3 to 8
LaB2	Langford silt loam, moderately eroded	0 to 8	GnB	Cilpin channery silt loam	3 to 8
LaB3	Langford silt loam, severely eroded	0 to 8	HnB	Hanover silt loam	3 to 8
LcA	Lobdell silt loam	0 to 3	HtA	Hazleton channery sandy loam	0 to 3
			HtB	Hazleton channery sandy loam	3 to 8
			KnB	Kinzua channery silt loam	3 to 8
			LdB	Lordstown channery silt loam	3 to 8
			MaA	Mardin gravelly silt loam	0 to 3
			MaB	Mardin gravelly silt loam	3 to 8

Map Symbol	Unit Name	Percent Slope	Map Symbol	Unit Name	Percent Slope
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Warren County (continued)

Ph	Philo silt loam	
Po	Pope loam	
Sc	Scio silt loam	

Warren County (continued)

UnA	Unadilla silt loam	0 to 3
WhB	Wharton silt loam	3 to 8
WoB	Wooster gravelly silt loam	3 to 8

Farmland of Statewide Importance

Map Symbol	Unit Name	Percent Slope	Map Symbol	Unit Name	Percent Slope
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Chautauqua County

As	Ashville silt loam	
BsC	Busti silt loam	8 to 15
Ca	Canadice silty clay loam	
Cb	Canandaigua silt loam, loamy substratum	
CdB	Canaseraga silt loam	3 to 8
CdC	Canaseraga silt loam	8 to 15
CfC	Carrollton channery silt loam	8 to 15
ChC	Chadakoin silt loam	8 to 15
CkC	Chautauqua silt loam	8 to 15
CnC	Chenango gravelly loam	8 to 15
CpC	Churchville silt loam	8 to 15
CsC	Collamer silt loam	8 to 15
CvC	Colonie loamy fine sand	8 to 15
DaA	Dalton silt loam	0 to 3
DaB	Dalton silt loam	3 to 8
DeC	Darien silt loam	8 to 15
ErA	Erie silt loam	0 to 3
ErB	Erie silt loam	3 to 8
ErC	Erie silt loam	8 to 15
FmB	Fremont silt loam	3 to 8
FmC	Fremont silt loam	8 to 15
FrC	Frewsburg silt loam	8 to 15
Ge	Getzville silt loam	
HnC	Hinesburg fine sandy loam	8 to 15
HrB	Hornell silt loam	3 to 8
HrC	Hornell silt loam	8 to 15
IvB	Ivory silty clay loam	3 to 8
LnB	Langford silt loam	3 to 8
LnC	Langford silt loam	8 to 15
MdB	Mardin channery silt loam	3 to 8

Chautauqua County

MdC	Mardin channery silt loam	8 to 15
OrC	Orpark silt loam	8 to 15
ShC	Schuyler silt loam	8 to 15
ToC	Woerville silt loam	8 to 15
UnC	Unadilla silt loam	8 to 15
VaC	Valois gravelly silt loam	8 to 15
VcC	Valois gravelly silt loam, rolling	8 to 15
VoA	Volusia channery silt loam	0 to 3
VoB	Volusia channery silt loam	3 to 8
VoC	Colusia channery silt loam	8 to 15

Crawford County

AvA	Alvira silt loam	0 to 3
AvB	Alvira silt loam	3 to 8
CaB	Cambridge silt loam	3 to 8
CaC	Cambridge silt loam	8 to 15
CcB	Cambridge-Venango silt loams	3 to 8
CeA	Caneadea silt loam	0 to 3
CeB	Caneadea silt loam	3 to 8
CoC	Chenango gravelly silt loam	8 to 15
FhA	Frenchtown silt loam	0 to 3
FhB	Frenchtown silt loam	3 to 8
HnC	Hanover silt loam	8 to 15
HvB	Haven silt loam	3 to 8
Hy	Holly silt loam	
MaC	Mardin gravelly silt loam	8 to 15
PkB	Platea silt loam	3 to 8
Rh	Red Hook loam	
ScB	Scio silt loam	3 to 8
Sh	Sheffield silt loam	

Map Symbol	Unit Name	Percent Slope	Map Symbol	Unit Name	Percent Slope
Crawford County (continued)			Erie County (Continued)		
VaC	Valois gravelly silt loam	8 to 15	MbB	Mahoning silt loam	3 to 8
VmC	Valois-Cambridge complex	8 to 15	MbB2	Mahoning silt loam, moderately eroded	3 to 8
VnA	Venango silt loam	0 to 3	MbC	Mahoning silt loam	8 to 15
VnB	Venango silt loam	3 to 8	MbC2	Mahoning silt loam, moderately eroded	8 to 15
VnC	Venango silt loam	8 to 15	MdC	Mardin gravelly silt loam	8 to 15
WyA	Wyoming gravelly sandy loam	0 to 3	OaC	Ottawa fine sandy loam	8 to 15
WyB	Wyoming gravelly sandy loam	3 to 8	ObC	Ottawa loamy fine sand	8 to 15
Erie County			PaC	Phelps gravelly silt loam	8 to 15
BcC	Berrien fine sandy loam	8 to 15	PaC3	Phelps gravelly silt loam, severely eroded	8 to 15
CbA	Caneadea silt loam	0 to 2	PbA	Platea silt loam	0 to 2
CbB	Caneadea silt loam	2 to 8	PbB	Platea silt loam	2 to 8
CbB3	Caneadea silt loam, severely eroded	2 to 8	PbB3	Platea silt loam, severely eroded	2 to 8
CbC	Caneadea silt loam	8 to 15	PbC	Platea silt loam	8 to 15
CgC	Conotton coarse sandy loam	8 to 15	PcB	Platea silt loam, moderately well drained variant	2 to 8
ChC	Conotton gravelly loam	8 to 15	PcB3	Platea silt loam, moderately well drained variant, severely	2 to 8
CkC	Conotton gravelly sandy loam	8 to 15	PcC	Platea silt loam, moderately well drained variant	8 to 15
CtA	Conneaut silt loam	0 to 2	PvA	Painesville fine sandy loam	0 to 2
DaA	Dalton silt loam	0 to 2	RaA	Rimer fine sandy loam	0 to 2
DaB	Dalton silt loam	2 to 8	RaB	Rimer fine sandy loam	2 to 8
DaB2	Dalton silt loam, moderately eroded	2 to 8	RaB3	Rimer fine sandy loam, severely eroded	2 to 8
DeC	Darien and Platea silt loams	6 to 12	SaB	Scio silt loam	3 to 8
EbA	Erie silt loam	0 to 3	SaC	Scio silt loam	8 to 15
EbB	Erie silt loam	3 to 8	SrA	Sebring silt loam	0 to 2
EbB2	Erie silt loam, moderately eroded	3 to 8	StA	Stanhope silt loam, frequently flooded	0 to 2
EbB3	Erie silt loam, severely eroded	3 to 8	TyB	Tyner-Otisville complex	2 to 6
EbC	Erie silt loam	8 to 15	UaB	Unadilla fine sandy loam	3 to 8
EbC2	Erie silt loam, moderately eroded	8 to 15	UaB3	Unadilla fine sandy loam, severely eroded	3 to 8
FaA	Fredon loam	0 to 3	UaC	Unadilla fine sandy loam	8 to 15
FaB	Fredon loam	3 to 8	VaA	Volusia gravelly silt loam	0 to 3
GfC	Glenford silt loam	6 to 12	VaB	Volusia gravelly silt loam	3 to 8
HaA	Halsey loam	0 to 3	VaB3	Volusia gravelly silt loam, severely eroded	3 to 8
HbC	Howard gravelly silt loam	8 to 15			
HrA	Hornell silt loam	0 to 2			
HrB	Hornell silt loam	2 to 6			
LaC	Langford silt loam	8 to 15			
LaC2	Langford silt loam, moderately eroded	8 to 15			

Map Symbol	Unit Name	Percent Slope	Map Symbol	Unit Name	Percent Slope
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Erie County (continued)

VaC	Volusia gravelly silt loam	8 to 15
VbA	Volusia silt loam	0 to 3
VbB	Volusia silt loam	3 to 8
VbB3	Volusia silt loam, severely eroded	3 to 8
VbC	Volusia silt loam	8 to 15
WaA	Wallington fine sandy loam	0 to 2
WaB	Wallington fine sandy loam	2 to 8
WaB3	Wallington fine sandy loam, severely eroded	2 to 8
WaC	Wallington fine sandy loam	8 to 15
WbA	Wallington silt loam	0 to 2
WbB	Wallington silt loam	2 to 8
WbB3	Wallington silt loam, severely eroded	2 to 8
WbC	Wallington silt loam	8 to 15
WcA	Wauseon fine sandy loam	0 to 2
WdA	Wayland silt loam	0 to 3
WeB	Williamson and Collamer fine sandy loams	2 to 8
WeB3	Williamson and Collamer fine sandy loams, serverely eroded	2 to 8
WeC	Williamson and Collamer fine sandy loams	8 to 15
WfB	Williamson and Collamer silt loams	2 to 8
WfC	Williamson and Collamer silt loams	8 to 15
WgB	Wooster gravelly silt loam	3 to 12
WgC	Wooster gravelly silt loam	12 to 20

Warren County

AaA	Alvira silt loam	0 to 3
AaB	Alvira silt loam	3 to 8
AaC	Alvira silt loam	8 to 15
At	Atkins silty clay loam	
CaC	Carrollton channery silt loam	8 to 15
CdB	Cavode silt loam	0 to 8
CdC	Cavode silt loam	8 to 15
ChC	Chenango gravelly silt loam	8 to 15
CtC	Cookport silt loam	8 to 15
EkC	Elko silt loam	8 to 15
EsB	Ernest silt loam	3 to 8
GnC	Gilpin channery silt loam	8 to 15
HaB	Hartleton channery silt loam	3 to 8
HaC	Hartleton channery silt loam	8 to 15
HnC	Hanover silt loam	8 to 15
HtC	Hazleton channery sandy loam	8 to 15
IvB	Ivory silt loam	3 to 8
KnC	Kinzua channery silt loam	8 to 15
LdC	Lordstown channery silt loam	8 to 15
MaC	Mardin gravelly silt loam	8 to 15
ReA	Rexford loam	0 to 8
VeA	Venango silt loam	0 to 3
VeB	Venango silt loam	3 to 8
VeC	Venango silt loam	8 to 15
Wa	Wayland silt loam	
WhC	Wharton silt loam	8 to 15
WoC	Wooster gravelly silt loam	8 to 15

APPENDIX D. RESOURCE CONSERVATION RECOVERY ACT

Site	Permit	Address	City	Type
Corry Micronic Inc	PAD050945260	Rt 6 East	Coumbus	Conditionally Exempt Small Quality Generator
Blair Dist Complex	PAD987393154	Junction of 6 and 62	Irvine	Conditionally Exempt Small Quality Generator
Ellwood National Steel	PAR000523795	3 Front Street	Irvine	Large Quantity Generator Hazardous Waste Biennial Reporter
Kwik Fill M129	PAD987333135	274 State Street	Youngsville	Conditionally Exempt Small Quality Generator
National Forge	PAD002101418	1 Front Street	Irvine	Large Quantity Generator Hazardous Waste Biennial Reporter
Torpedo Specialty Wire Incorporated	PAD002116994	Route W	Pittsfield	Large Quantity Generator Hazardous Waste Biennial Reporter
Associated Spring Barnes Group	PAD005030812	226 South Center Street	Corry	Large Quantity Generator Hazardous Waste Biennial Reporter
Baker Oil Tools	PAD987345105	13255 Route 6	Corry	Conditionally Exempt Small Quality Generator
Bridgestone Firestone	PA0000045443	466 S. Shady Ave	Corry	Conditionally Exempt Small Quality Generator
Chase Manufacturing	PAR00527465	9 Pennsylvania Ave	Corry	Conditionally Exempt Small Quality Generator
Corry Area High School	PAD039928544	534 E. Pleasant St	Corry	Conditionally Exempt Small Quality Generator
Corry Armory	PA0000949123	205 E. Washington St	Corry	Conditionally Exempt Small Quality Generator
Corry Chrystler Jeep Dodge	PAR000029272	13255 Route 6	Corry	Conditionally Exempt Small Quality Generator
Corry Contract	PAD096338397	21 Maple Ave	Corry	Small Quantity Generator Hazardous Waste Biennial Reporter Recycler
Corry Custom Mach	PAR000021402	34 N 1st Ave	Corry	Conditionally Exempt Small Quality Generator
Corry Forge	PAD005028527	441 East Main St	Corry	Conditionally Exempt Small Quality Generator
Corry Heibert Corporation	PAD000431221	844 East Columbus Avenues	Corry	Small Quantity Generator
Corry Manufacturing Company	PAD053149084	519 W. Main St	Corry	Small Quantity Generator
Corry Micronics Materials Divsion	PA0000888099	145 Enterprise Road Bay 7 & 8	Corry	Conditionally Exempt Small Quality Generator
Crotty Chevy-Olds Incorporated	PAD061774048	E Columbus Ave	Corry	Small Quantity Generator
Erie Plastics	PAD005029673	1 Plastics Road	Corry	Conditionally Exempt Small Quality Generator
Foamex Manufacturing	PAD005029517	466 S. Shady Ave	Corry	Small Quantity Generator Hazardous Waste Biennial Reporter
Freeman Electric	PAR000505560	316 Eagle Street & N 2nd Ave	Corry	Conditionally Exempt Small Quality Generator
Humes Ford of Corry Route 6	PAR000505636	13626 Route 6	Corry	Conditionally Exempt Small Quality Generator
Kwik Fill M134	PAD987333168	RD 2 E Columbus Ave	Corry	Small Quantity Generator
Kwik Fill M7	PAD987328614	949 N Center St	Corry	Conditionally Exempt Small Quality Generator

Site	Permit	Address	City	Type
MPE Machine Tool Incorporated	PAR000023713	27 W Washington	Corry	Conditionally Exempt Small Quality Generator
Penelec Corry Dist Office	PAD981112931	29 N 1st Ave	Corry	Conditionally Exempt Small Quality Generator
Quick Clean Dry Cleaners	Pad987364510	1115 N Center St	Corry	Conditionally Exempt Small Quality Generator
Thunderport	PAR000037788	30 Meave Ave	Corry	Unspecified
Tonnard Manufacturing	PAR000020388	715 Spring St	Corry	CESQG
Viking Plastics Incorporated	PAD987346723	575 Catherine St	Corry	CESQG
Walmart Supercenter 2909	PAR0005805883	961 E. Columbus Ave	Corry	CESQG

Inactive Sites	Permit	Address	City	Type
Thomas Reno Dominic	PAD067534966	Mais Street	Pittsfield	Unspecified
Torpedo Wire and Stric Incorporated	PAD987345048	RT 27	Pittsfield	Unspecified
Wiggerts Chev Incorporated	PAD987400066	500 E. Main St	Youngsville	Unspecified
BP Oil 07271	PAD981933682	7 E. Columbus Ave	Corry	Unspecified
Cabot Oil & Gas Corporation	PAD987280203	11999 Rte 6	Corry	Unspecified
Cooper Energy Services	PAD005032073	19 N Center St	Corry	Unspecified
Corry Micronics	PAR000031385	380 Sciota St	Corry	Unspecified
Corry Rubber	PAD005032644	601 W. Main St	Corry	Unspecified
Dowell Schulumerger Incorporated	PAD096329818	W. Main St. Ext	Corry	Unspecified
Frontera Auto Body	PAD982365108	11871 Rt 6 West	Corry	Unspecified
Humes Ford of Corry Incorporated	PAD987285913	13639 W Smith St	Corry	Unspecified
Sherwin-Williams Company	PAD059294207	U.S. Highway 6 Bypass	Corry	Unspecified
Sunoco Service Station-Corry	PAD000779629	404-408 N Center St	Corry	Unspecified

APPENDIX E. ILLEGAL DUMPSITES

County	Municipality	Roadway	ID#	Tons	Distance from water	Visibility	Terrain	Active?
Erie	Wayne Township	Hereford Road	75	0.75	No waterway nearby	Yes	Flat	No
Warren	Brokenstraw Township	York Hill Road	1	2	No waterway nearby	Yes	Steep	Yes
Warren	Brokenstraw Township	Lauger Road	4	11	50 to 100 feet	Partially	Extremely steep	Yes
Warren	Brokenstraw Township	Telick Road	5	0.5	More than 100 feet	Yes	Flat	Yes
Warren	Columbus Township	Locey Road	7	1	In waterway/wetland	Yes	Gently sloped	Yes
Warren	Columbus Township	Alder Bottom Road	8	0.5	No waterway nearby	Yes	Flat	Yes
Warren	Freehold Township	Kidder Road	18	1.5	No waterway nearby	Yes	Medium slope	Yes
Warren	Freehold Township	Route 6 Site 1	19	2	Within 50 feet	Partially	Gently sloped	Yes
Warren	Pittsfield Township	Garland Spring Creek Road	32	0.5	More than 100 feet	Partially	Flat	Yes
Warren	Pittsfield Township	Danelson Hill Road	33	7.5	No waterway nearby	No	Extremely steep	Yes
Warren	Freehold Township	Panther Gap Road	34	25	No waterway nearby	Yes	Gently sloped	Yes
Warren	Pittsfield Township	Mickle Hill Road	35	15	No waterway nearby	No	Extremely steep	No
Warren	Pittsfield Township	Smilth Hill Road	36	25	No waterway nearby	Yes	Extremely steep	Yes
Warren	Pittsfield Township	Extension road	37	1	No waterway nearby	Yes	Flat	No
Warren	Spring Creek Township	Eldred Hill Road	44	1.5	No waterway nearby	Yes	Gently sloped	Yes
Warren	Spring Creek Township	Hyde Raod	45	12.5	50 to 100 feet	Yes	Extremely steep	Yes
Warren	Sugar Grove Township	Penny Bank Road	47	10	No waterway nearby	Partially	Steep	Yes
Warren	Sugar Grove Township	Deer Run Road Site 2	48	0.5	More than 100 feet	Yes	Flat	Yes
Warren	Sugar Grove Township	Goast Hill Road	49	7.5	No waterway nearby	Partially	Extremely steep	No
Warren	Sugar Grove Township	Deer Run Road Site 1	51	0.5	50 to 100 feet	Yes	Medium slope	No

Municipality	Roadway	ID#	Bagged Trash	Household Trash	Recyclables	Household Hazardous Waste	Tires	Clean Fill	Construction and Demolition Wast	Yard Waste	Appliances	Electronics	TV	Furniture	Mattress	Vehicle Parts	Car Battery
Wayne Township	Hereford Road	75	N	Y	Y	Y	1	N	N	N	2	0	0	0	1	Y	0
Brokenstraw Township	York Hill Road	1	Y	Y	N	N	0	Y	N	Y	0	0	0	0	0	N	0
Brokenstraw Township	Lauger Road	4	Y	Y	Y	N	8	Y	Y	Y	5	0	1	7	0	Y	0
Brokenstraw Township	Telick Road	5	N	Y	N	N	0	N	N	N	0	0	0	0	0	N	0
Columbus Township	Locey Road	7	Y	N	N	N	0	Y	N	Y	0	0	0	0	0	N	0
Columbus Township	Alder Bottom Road	8	N	Y	N	N	13	N	N	N	0	0	0	0	0	Y	0
Freehold Township	Kidder Road	18	N	N	N	N	0	N	N	Y	0	0	0	0	0	N	0
Freehold Township	Route 6 Site 1	19	Y	Y	Y	N	0	Y	N	Y	0	0	0	0	0	N	0
Pittsfield Township	Garland Spring Creek Road	32	N	N	N	N	9	N	N	N	0	0	0	0	0	N	0
Pittsfield Township	Danelson Hill Road	33	N	N	Y	N	12	Y	Y	Y	3	0	0	0	0	N	0
Freehold Township	Panther Gap Road	34	N	N	N	N	600	N	N	N	0	0	0	0	0	Y	0
Pittsfield Township	Mickle Hill Road	35	N	Y	Y	N	0	Y	Y	Y	7	0	0	3	1	Y	0
Pittsfield Township	Smilth Hill Road	36	Y	Y	Y	Y	84	Y	N	Y	14	0	0	4	1	Y	0
Pittsfield Township	Extension road	37	N	N	N	N	0	N	Y	Y	0	0	0	0	0	N	0
Spring Creek Township	Eldred Hill Road	44	N	N	N	N	0	N	N	Y	0	0	0	0	0	N	0
Spring Creek Township	Hyde Raod	45	N	N	N	N	0	Y	N	Y	0	0	0	0	0	N	0
Sugar Grove Township	Penny Bank Road	47	N	N	Y	N	0	Y	Y	Y	2	0	0	0	0	N	0
Sugar Grove Township	Deer Run Road Site 2	48	N	Y	N	N	0	N	N	N	0	0	0	0	0	N	0
Sugar Grove Township	Goast Hill Road	49	N	Y	N	N	6	Y	Y	Y	0	0	1	1	0	Y	0
Sugar Grove Township	Deer Run Road Site 1	51	N	N	Y	N	0	Y	Y	Y	2	0	0	0	0	N	0

APPENDIX X. BROWNFIELDS

Site	Municipality	Status (# Cleanups)	Cleanup Standard	Contaminants	Date
Corry Hiebert Prop Old	City of Corry	Active (1)			
Cooper Cameron Facility	City of Corry	Active (1)			
Cooper Cameron Facility	City of Corry	Complete	SWH		1/31/2008
Corry Multiple Tenant Facility	Wayne Township	Active (2)			
Corry Multiple Tenant Facility	Wayne Township	Complete	SS	Fuel #2, PAH	11/8/2006
Deer Head Inn	Spring Creek Township	Active (1)			
National Forge	Brokenstraw Township	Active (3)			
National Forge	Brokenstraw Township	Complete	SS	Diesel Fuel	
National Forge	Brokenstraw Township	Complete	SS		
National Forge	Brokenstraw Township	Complete	SWH		12/27/1995
National Forge	Brokenstraw Township	Complete	SWH	Lead	3/26/1996
National Forge	Brokenstraw Township	Complete	SWH	Lead, PBC	4/19/1996
National Forge	Brokenstraw Township	Complete	SWH	Inorganics	1/10/1997
National Forge	Brokenstraw Township	Complete	SWH		5/23/1997
National Forge	Brokenstraw Township	Complete	SWH		12/18/1997
National Forge	Brokenstraw Township	Complete	SWH		7/2/1999
Ralvin Hill Road	Clymer	Complete	SF		
Hoag Road	Busti	Complete			

Site-Specific Standard Cleanup SS
Non-Residential Statewide Health Standard Cleanup SWH
New York State Superfund SF

(Source: PA DEP, 2008d, NY DEC4)

APPENDIX G. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMITS

NPDES Permit	Facility Name	Address	Permit Issue Date	Permit Expiration Date	Standard Industrial Classification Code	Latitude	Longitude
PA0103021	Bear Lake Inn	Box 132 Greely Street Bear Lake, PA 16402	7/11/2005	7/10/2010	Drinking places (alcoholic beverages)	41.992688	-79.493162
PAG048870	Bonnie F Mayes SFTF	Crippen Hill Road Pittsfield, PA 16340	2/26/2003	2/25/2008	Operations of dwellings other than apartment buildings	41.824943	-79.349393
PAR228328	Briggs Transport Wood Mulch Facility	Huntly Road Bear Lake, PA 16402	6/2/2003	6/1/2008	Wood products, not elsewhere classified	41.98789	-79.432966
PAG049180	Carl Beason	Carol Hill Road Columbus, PA 16405	6/23/2005	2/4/2009	Operations of dwellings other than apartment buildings	41.925611	-79.582805
PAG048627	Carl Sliter	Page Hollow Road Pittsfield, PA 16340	8/10/2005	2/4/2009	Operations of dwellings other than apartment buildings	41.903611	-79.40111
PAG048688	Charles & Nancy Snyder	Intersection of Hudson & Alderbottom Road Columbus, PA 16405	2/18/2005	2/4/2009	Operations of dwellings other than apartment buildings	41.981111	-79.569166
PAG049178	Curtis D & Stephanie L Petty SFTF	Carrier Road Columbus PA 16405	8/2/2005	2/4/2009	Operations of dwellings other than apartment buildings	41.928027	-79.548777
PAG048673	Daniel Grable	Box 51 Route 27 Pittsfield, PA 16340	12/17/2004	2/4/2009	Operations of dwellings other than apartment buildings	41.792777	-79.458333
PAG048354	Denise Eyler	Forest Hill Road Sugar Grove, PA 16350	10/17/2005	2/4/2009	Operations of dwellings other than apartment buildings	41.987777	-79.398611
PA0239488	Eldred Township WWTP	State Route 27 Pittsfield,, PA 16340	9/2/2004	9/1/2009	Sewerage systems	41.722361	-79.54375

NPDES Permit	Facility Name	Address	Permit Issue Date	Permit Expiration Date	Standard Industrial Classification Code	Latitude	Longitude
PAG048313	Elsie Mitchell	Pine Valley Road Columbus, PA 16405	5/31/2005	2/4/2009	Operations of dwellings other than apartment buildings	41.984	-79.514194
PAG049263	Eric W Sproveri SFTF	Ross Hill Road Garland, PA 16416	6/14/2006	2/4/2009	Operations of dwellings other than apartment buildings	41.77622	-79.450972
PA0031682	Hog Haven	Matthew Run Road Youngsville, PA 16371	7/29/2004	7/28/2009	Rooming and boarding house	41.862037	-79.325443
PAG048537	Howard P Jones SRSTP	Bailey Hill Road T557 Bear Lake, PA 16402-9609	12/16/2003	12/15/2008	Operations of dwellings other than apartment buildings	41.943611	-79.469444
PAG049223	Jennifer & Troy Gibson	RD 1 Box 85 Youngsville, PA 16371	12/15/2005	2/4/2009	Operations of dwellings other than apartment buildings	41.913333	-79.304722
PAG049202	Jeremy Johnson	RD 1 Box 160 B Youngsville, PA 16371	10/3/2005	2/4/2009	Operations of dwellings other than apartment buildings	41.879583	-79.353083
PAG049206	John & Paula Walsh SFTF	Brown Hill Road Youngsville, PA 16371	9/27/2005	2/4/2009	Operations of dwellings other than apartment buildings	41.902416	-79.304583
PAG048336	John McCanna	RR 1 Box 55 Youngsville, PA 16371	3/7/2005	2/4/2009	Operations of dwellings other than apartment buildings	41.87	-79.316666
PAG049191	Micheal H Thomas SFTF	109 Matthews Run Road Youngsville, PA 16371	8/2/2005	2/4/2009	Operations of dwellings other than apartment buildings	41.914166	-79.339722
PA0103675	Miracle Mountain Ranch	RD 1 Box 95 Spring Creek, PA 16436	8/1/2005	7/31/2010	Religious organizations	41.879166	-79.503611
PAG049179	Ronda Skinner	U.S. Route 6 Columbus, PA 16405	7/14/2005	2/4/2009	Operations of dwellings other than apartment buildings	41.928527	-79.50811

NPDES Permit	Facility Name	Address	Permit Issue Date	Permit Expiration Date	Standard Industrial Classification Code	Latitude	Longitude
PAG049177	Rory Luvison	Patchen Hollow Road Sugar Grove, PA 16350	6/20/2005	2/4/2009	Operations of dwellings other than apartment buildings	41.928666	-79.342888
PAG048320	Steve Brundage	RR 1 Box 24 Columbus, PA 16405	11/19/2004	2/4/2009	Operations of dwellings other than apartment buildings	41.960555	-79.554277
PAG049221	Tena Cochran SFTF	Greeley Street Bear Lake, PA 16402	12/13/2005	2/4/2009	Operations of dwellings other than apartment buildings	41.991891	-79.50595
PAG048962	William Knisley	Stillwater & Cemetary Rds. Sugar Grove, PA, 16350	7/27/2004	2/4/2009	Operations of dwellings other than apartment buildings	41.9805	-79.39775
PA0028371	Youngsville Borough STP	Davis Street Youngsville, PA 16371	2/3/2006	2/2/2011	Sewerage systems	41.308832	-79.308832
PAP128233	Corry Manufacturing	519 West Main Street Corry, PA 16407	Not available	Not available	Metal coating and allied service	41.918737	-79.645898
PAG048961	Sharon & Stanley Butcher	21089 Lindsey Hollow Road Corry, PA 16407	7/13/2004	2/4/2009	Operations of dwellings other than apartment buildings	41.88	-79.626666

(Source: US EPA, 2008a)

APPENDIX H. SPECIES OF CONCERN

INVERTEBRATES

Scientific Name	Common Name	Global Rank	State Rank	State Status	Proposed State Status	Federal Status
<i>Lycaena hyllus</i>	Clubshell	G2	S1S2	PE	PE	LE
<i>Lanthus parvulus</i>	Northern Riffleshell	G2T2	S2	PE	PE	LE
<i>Epioblasma torulosa rangiana</i>	Aphrodite Fritillary	G5	S3S4			
<i>Speyeria aphrodite</i>	Baltimore Checkerspot	G4	S2S4			
<i>Speyeria atlantis</i>	Band-winged Meadowhawk	G5	S3S4			
<i>Euphydryas phaeton</i>	Black Dash	G4	S3			
<i>Euphyes conspicuus</i>	Blue-tipped Dancer	G5	S1			
<i>Aeshna tuberculifera</i>	Broad-winged Skipper	G5T4	S1			
<i>Argia tibialis</i>	Bronze Copper	G5	SU			
<i>Somatochlora walshii</i>	Comet Darner	G5	S1S2			
<i>Anax longipes</i>	Creek Heelsplitter	G5	S2S3		CR	
<i>Lasmigona compressa</i>	Dion Skipper	G4	S1			
<i>Euphyes dion</i>	Eastern Pondmussel	G4	S1		N	
<i>Ligumia nasuta</i>	Elktoe	G4	S4		N	
<i>Alasmidonta marginata</i>	Eyed Brown	G4	S1S3			
<i>Aeshna verticalis</i>	Harpoon Clubtail	G4	S1S2			
<i>Hesperia sassacus</i>	Leonard's Skipper	G4	S3S4			
<i>Polites mystic</i>	Long-solid	G3	S1		PE	
<i>Fusconaia subrotunda</i>	Maine Snaketail	G4	S3			
<i>Enodia anthedon</i>	Northern Pygmy Clubtail	G4	S3S4			
<i>Boyeria grafiana</i>	Ocellated Darner	G5	S3			
<i>Utterbackia imbecillis</i>	Paper Pondshell	G5	S3S4		CU	
<i>Ophiogomphus carolus</i>	Riffle Snaketail	G5	S2S3			
<i>Calopteryx aequabilis</i>	River Jewelwing	G5	S2			
<i>Pleurobema sintoxia</i>	Round Pigtoe	G4G5	S2		PE	
<i>Gomphus rogersi</i>	Sable Clubtail	G4	S1			
<i>Somatochlora elongata</i>	Ski-tailed Emerald	G5	S2			
<i>Rhionaeschna mutata</i>	Spatterdock Darner	G4	S1			

INVERTEBRATES (CONTINUED)

Scientific Name	Common Name	Global Rank	State Rank	State Status	Proposed State Status	Federal Status
<i>Calopteryx amata</i>	Superb Jewelwing	G4	S2S3			
<i>Amblema plicata</i>	Three-ridge	G5	S2S3		PT	
<i>Lampsilis fasciola</i>	Wavy-rayed Lampmussel	G5	S4		N	
<i>Pieris virginiensis</i>	West Virginia White	G3G4	S2S3			
<i>Stylurus scudderi</i>	Zebra Clubtail	G4	S1			

VERTEBRATES

Scientific Name	Common Name	Global Rank	State Rank	State Status	Proposed State Status	Federal Status
<i>Lampetra appendix</i>	American Brook Lamprey	G4	S3	PC	CP	
<i>Culaea inconstans</i>	Brook Stickleback	G5	S3	PC	CP	
<i>Ichthyomyzon bdellium</i>	Ohio Lamprey	G3G4	S2S3	PC	CP	
<i>Crotalus horridus</i>	Timber Rattlesnake	G4	S3S4	PC	CA	
<i>Lota lota</i>	Burbot	G5	S1S2	PE	PE	
<i>Erimystax x-punctatus</i>	Gravel Chub	G4	S1	PE	PE	
<i>Glaucomys sabrinus</i>	Northern Flying Squirrel	G5	SU	PE		
<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S2B	PT	PT	
<i>Etheostoma camurum</i>	Bluebreast Darter	G4	S2	PT	PT	
<i>Percina copelandi</i>	Channel Darter	G4	S2	PT	PT	
<i>Percina evides</i>	Gilt Darter	G4	S1S2	PT	PT	
<i>Percina macrocephala</i>	Longhead Darter	G3	S2S3	PT	PT	
<i>Ichthyomyzon greeleyi</i>	Mountain Brook Lamprey	G3G4	S2	PT	PT	
<i>Phoxinus erythrogaster</i>	Southern Redbelly Dace	G5	S1	PT	PT	
<i>Etheostoma tippecanoe</i>	Tippecanoe Darter	G3G4	S2	PT	PT	
<i>Eumeces anthracinus</i>	Coal Skink	G5	S3			
<i>Ardea herodias</i>	Great Blue Heron	G5	S3S4B,S4N			
<i>Accipiter gentilis</i>	Northern Goshawk	G5	S2S3B,S3N		CR	
<i>Myotis septentrionalis</i>	Northern Myotis	G4	S3B,S3N		CR	
<i>Lasionycteris noctivagans</i>	Silver-haired Bat	G5	SUB		CR	
<i>Erimystax dissimilis</i>	Streamline Chub	G4	S3			

VERTEBRATES (CONTINUED)

Scientific Name	Common Name	Global Rank	State Rank	State Status	Proposed State Status	Federal Status
<i>Catharus ustulatus</i>	Swainson's Thrush	G5	S2S3B,S5N		CR	
<i>Sorex palustris albibarbis</i>	Water Shrew	G5T5	S3		CR	

PLANTS

Scientific Name	Common Name	Global Rank	State Rank	State Status	Proposed State Status	Federal Status
<i>Dryopteris clintoniana</i>	Clinton's Wood Fern	G5	S2	N	PT	
<i>Stellaria borealis</i>	Mountain Starwort	G5	S1S2	N	TU	
<i>Fraxinus profunda</i>	Pumpkin Ash	G4	S1	N	PE	
<i>Alopecurus aequalis</i>	Short-awn Foxtail	G5	S3	N	TU	
<i>Helianthus occidentalis</i>	Sunflower	G5	SH	N	PX	
<i>Deschampsia cespitosa</i>	Tufted Hairgrass	G5	S3	N	TU	
<i>Platanthera blephariglottis</i>	White Fringed-orchid	G4G5	S2S3	N	TU	
<i>Erythronium albidum</i>	White Trout-lily	G5	S3	N	TU	
<i>Carex retrorsa</i>	Backward Sedge	G5	S1	PE	PE	
<i>Carex bebbii</i>	Bebb's Sedge	G5	S1	PE	PE	
<i>Epilobium strictum</i>	Downy Willow-herb	G5?	S3	PE	PR	
<i>Carex pauciflora</i>	Few-flowered Sedge	G5	S1	PE	PE	
<i>Potamogeton hillii</i>	Hill's Pondweed	G3	S1	PE	PE	
<i>Spiranthes romanzoffiana</i>	Hooded Ladies'-tresses	G5	S1	PE	PE	
<i>Platanthera hyperborea</i>	Leafy Northern Green Orchid	G5	S1	PE	PE	
<i>Lonicera villosa</i>	Mountain Fly Honeysuckle	G5	S1	PE	PE	
<i>Mitella nuda</i>	Naked Bishop's-cap	G5	S1	PE	PE	
<i>Alisma triviale</i>	Northern Water-plantain	G5	S1	PE	PE	
<i>Matelea obliqua</i>	Oblique Milkvine	G4?	S1	PE	PE	
<i>Scheuchzeria palustris</i>	Pod-grass	G5	S1	PE	PE	
<i>Eriophorum tenellum</i>	Rough Cotton-grass	G5	S1	PE	PE	
<i>Eriophorum gracile</i>	Slender Cotton-grass	G5	S1	PE	PE	
<i>Cypripedium calceolus</i> var. <i>parviflorum</i>	Small Yellow Lady's-slipper	G5	S1	PE	PE	

PLANTS (CONTINUED)

Scientific Name	Common Name	Global Rank	State Rank	State Status	Proposed State Status	Federal Status
<i>Listera australis</i>	Southern Twayblade	G4	S1	PE	PE	
<i>Lonicera oblongifolia</i>	Swamp Fly Honeysuckle	G4	S1	PE	PE	
<i>Andromeda polifolia</i>	Bog-rosemary	G5	S3	PR	PR	
<i>Ledum groenlandicum</i>	Common Labrador-tea	G5	S3	PR	PR	
<i>Gaultheria hispidula</i>	Creeping Snowberry	G5	S3	PR	PR	
<i>Lupinus perennis</i>	Lupine	G5	S3	PR	PR	
<i>Aplectrum hyemale</i>	Puttyroot	G5	S3	PR	PR	
<i>Carex disperma</i>	Soft-leaved Sedge	G5	S3	PR	PR	
<i>Juncus filiformis</i>	Thread Rush	G5	S3	PR	PR	
<i>Viola appalachensis</i>	Appalachian Blue Violet	G3	S2	PT	TU	
<i>Salix serissima</i>	Autumn Willow	G4	S2	PT	PT	
<i>Poa paludigena</i>	Bog Bluegrass	G3	S3	PT	PR	
<i>Carex pauperula</i>	Bog Sedge	G5	S3	PT	PR	
<i>Carex diandra</i>	Lesser Panicked Sedge	G5	S2	PT	PT	
<i>Eleocharis intermedia</i>	Matted Spike-rush	G5	S2	PT	PT	
<i>Carex prairea</i>	Prairie Sedge	G5?	S2	PT	PT	
<i>Ribes triste</i>	Red Currant	G5	S2	PT	PT	
<i>Potamogeton richardsonii</i>	Red-head Pondweed	G5	S3	PT	PR	
<i>Scirpus pedicellatus</i>	Stalked Bulrush	G4	S1	PT	PT	
<i>Eriophorum viridicarinatum</i>	Thin-leaved Cotton-grass	G5	S2	PT	PT	
<i>Carex aquatilis</i>	Water Sedge	G5	S2	PT	PT	
<i>Lathyrus ochroleucus</i>	Wild-pea	G4G5	S1	PT	PT	
<i>Rhamnus alnifolia</i>	Alder-leaved Buckthorn	G5	S4	TU	DL	
<i>Poa languida</i>	Drooping Bluegrass	G3G4Q	S2	TU	PT	
<i>Lonicera hirsuta</i>	Hairy Honeysuckle	G4G5	S1	TU	PE	
<i>Viburnum trilobum</i>	Highbush-cranberry	G5T5	S3S4	TU	PR	
<i>Salix petiolaris</i>	Meadow Willow	G5	S4	TU	WATCH	
<i>Filipendula rubra</i>	Queen-of-the-prairie	G4G5	S1S2	TU	TU	
<i>Rosa virginiana</i>	Virginia Rose	G5	S1	TU	TU	

PLANTS (CONTINUED)

Scientific Name	Common Name	Global Rank	State Rank	State Status	Proposed State Status	Federal Status
Malaxis monophyllos var. brachypoda	White Adder's-mouth	G4Q	S1	TU	PE	

NATURAL COMMUNITIES

Scientific Name	Common Name	Global Rank	State Rank	State Status	Proposed State Status	Federal Status
High-gradient clearwater creek	High-gradient Clearwater Creek	GNR	S3			
Hemlock - mixed hardwood palustrine forest		GNR	S3S4			
Leatherleaf -cranberry peatland		GNR	S2S3			
Black spruce - tamarack peatland forest		GNR	S3			
Golden saxifrage - sedge rich seep		GNR	S2			
Sphagnum - beaked rush peatland		GNR	S3			
Acidic glacial peatland complex		GNR	SNR			
Buckthorn - sedge (carex interior) - golden ragwort fen		GNR	S1			

Basic Global Rank Codes and Definitions

Rank Code	Description	Definition
GX	Presumed Extinct	Believed to be extinct throughout its range. Not located despite intensive searches of historic sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
GH	Possibly Extinct	Known from only historical occurrences. Still some hope of rediscovery.
G1	Critically Imperiled	Critically imperiled globally because of extreme rarity or because of some factor(s) making it especially vulnerable to extinction. Typically 5 or fewer occurrences or very few remaining individuals (<1,000) or acres (<2,000) or stream miles (<10).
G2	Imperiled	Imperiled globally because of rarity or because of some factor(s) making it very vulnerable to extinction. Typically 6 to 20 occurrences or few remaining individuals (1,000 to 3,000) or acres (2,000 to 10,000) or stream miles (10 to 50).
G3	Vulnerable	Vulnerable globally either because very rare and local throughout its range, found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extinction. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals.
G4	Apparently Secure	Uncommon but not rare, and usually widespread. Possibly cause for long-term concern. Typically more than 100 occurrences and more than 10,000 individuals.
G5	Secure	Common, typically widespread and abundant. Typically with considerably more than 100 occurrences and more than 10,000 individuals.
G#G#	Range Rank	A numeric range rank (e.g., G2G3) is used to indicate uncertainty about the exact status of a taxon.
T	Intraspecific Taxon (trinomial)	The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank. Rules for assigning T ranks follow the same principles outlined above. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1. A T subrank cannot imply the subspecies or variety is more abundant than the species= basic rank (e.g., a G1T2 subrank should not occur). A population (e.g., listed under the U.S. Endangered Species Act or assigned candidate status) may be tracked as an infraspecific taxon and given a T rank; in such cases a Q is used after the T rank to denote the taxon's questionable taxonomic status.

Global Rank Qualifiers

Qualifier	Description	Definition
?	Inexact Numeric Rank	Denotes inexact numeric rank.
Q	Questionable Taxonomy	Taxonomic status is questionable; numeric rank may change with taxonomy.
C	Captive or Cultivated Only	Taxon at present is extant only in captivity or cultivation, or as a reintroduced population not yet established.

State Rank Codes and Definitions

Rank Code	Description	Definition
SX	Extirpated	Element is believed to be extirpated from the "state" (or province or other subnational unit).
SH	Historical	Element occurred historically in the state (with expectation that it may be rediscovered), perhaps having not been verified in the past 20 years, and suspected to be still extant. Naturally, an element would become SH without such a 20-year delay if the only known occurrences in a state were destroyed or if it had been extensively and unsuccessfully looked for. Upon verification of an extant occurrence, SH-ranked elements would typically receive an S1 rank. The SH rank should be reserved for elements for which some effort has been made to relocate occurrences, rather than simply ranking all Elements not known from verified extant occurrences with this rank.
S1	Critically Imperiled	Critically imperiled in the state because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state. Typically 5 or fewer occurrences or very few remaining individuals or acres.
S2	Imperiled	Imperiled in the state because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. Typically 6 to 20 occurrences or few remaining individuals or acres.
S3	Vulnerable	Vulnerable in the state either because rare and uncommon, or found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extirpation. Typically 21 to 100 occurrences.
S4	Apparently Secure	Uncommon but not rare, and usually widespread in the state. Usually more than 100 occurrences.
S5	Secure	Demonstrably widespread, abundant, and secure in the state, and essentially ineradicable under present conditions.
S?	Unranked	State rank is not yet assessed.

State Rank Codes and Definitions (continued)

Rank Code	Description	Definition
SU	Unrankable	Currently unrankable due to lack of information or due to substantially conflicting information about status or trends. NOTE: Whenever possible, the most likely rank is assigned and a question mark added (e.g., S2?) to express uncertainty, or a range rank (e.g., S2S3) is used to delineate the limits (range) of uncertainty.
S#S#	Range Rank	A numeric range rank (e.g., S2S3) is used to indicate the range of uncertainty about the exact status of the Element. Ranges cannot skip more than one rank (e.g., SU should be used rather than S1S4).
HYB	Hybrid	Element represents an interspecific hybrid.
SE	Exotic	An exotic established in the state; may be native in nearby regions (e.g., house finch or catalpa in eastern U.S.).
SE#	Exotic Numeric	An exotic established in the state that has been assigned a numeric rank to indicate its status, as with S1 through S5.
SA	Accidental	Accidental or casual in the state (i.e., infrequent and outside usual range). Includes species (usually birds or butterflies) recorded once or only a few times. A few of these species may have bred on the one or two occasions they were recorded. Examples include European strays or western birds on the East Coast and vice-versa.
SZ	Zero Occurrences	Not of practical conservation concern in the state because there are no definable occurrences, although the taxon is native and appears regularly in the state. This rank will generally be used for long distance migrants whose occurrences during their migrations have little or no conservation value for the migrant as they are typically too irregular (in terms of repeated visitation to the same locations), transitory, and dispersed to be reliably identified, mapped, and protected. Typically, the SZ rank applies to a non-breeding population in the subnation -- for example, birds on migration. An SZ rank may in a few instances also apply to a breeding population, for example certain Lepidoptera which regularly die out every year with no significant return migration. Although the SZ rank typically applies to migrants, it should not be used indiscriminately. Just because a species is on migration does not mean it receives an SZ rank. SZ only applies when the migrants occur in an irregular, transitory, and dispersed manner.
SP	Potential	Potential that Element occurs in the state but no extant or historic occurrences reported.

State Rank Codes and Definitions (continued)

Rank Code	Description	Definition
SR	Reported	Element reported in the state but without a basis for either accepting or rejecting the report. Some of these are very recent discoveries for which the program hasn't yet received first-hand information; others are old, obscure reports.
SRF	Reported Falsely	Element erroneously reported in the state (e.g., misidentified specimen) and the error has persisted in the literature
SSYN	Synonym	Element reported as occurring in the state, but state does not recognize the taxon; therefore the Element is not ranked by the state.
*		S rank has been assigned and is under review. Contact the individual state Natural Heritage program for assigned rank.
Not Provided		Species is known to occur in this state. Contact the individual state Natural Heritage program for assigned rank.

State Rank Qualifiers

Qualifier	Description	Definition
80	Breeding	Basic rank refers to the breeding population of the Element in the state.
N	Non-breeding	Basic rank refers to the non-breeding population of the Element in the state.
?	Inexact or Uncertain	Denotes inexact or uncertain numeric rank. For SE denotes uncertainty of exotic status. (The ? qualifies the character immediately preceding it in the SRANK.)
C	Captive or Cultivated	Element is presently extant in the state only in captivity or cultivation, or as a reintroduced population not yet established.

NOTE - A breeding status subrank is only used for species that have distinct breeding and/or non-breeding

Pennsylvania State Status - Invertebrates

Status	Description	Definition
N		No current legal status but is under review for future listing.

Pennsylvania Status Definitions - Plants

Status	Description	Definition
PE	Pennsylvania Endangered	Plant species which are in danger of extinction throughout most of their natural range within this Commonwealth, if critical habitat is not maintained or if the species is greatly exploited by man. This classification shall also include any populations of plant species that have been classified as Pennsylvania Extirpated, but which subsequently are found to exist in this Commonwealth.
PT	Pennsylvania Threatened	Plant species which may become endangered throughout most or all of their natural range within this Commonwealth, if critical habitat is not maintained to prevent their future decline, or if the species is greatly exploited by man.
PR	Pennsylvania Rare	Plant species, which are uncommon within this Commonwealth. All species of the native wild plants classified as Disjunct, Endemic, Limit of Range and Restricted are included within the Pennsylvania Rare classification.
	Disjunct	Significantly separated from their main area of distribution
	Endemic	Confined to a specialized habitat.
	Restricted	At or near the periphery of their natural distribution Found in specialized habitats or habitats infrequent in Pennsylvania.
PX	Pennsylvania Extirpated	Plant species believed by the Department to be extinct within this Commonwealth. These plants may or may not be in existence outside the Commonwealth.
PV	Pennsylvania Vulnerable	Plant species which are in danger of population decline within Commonwealth because of their beauty, economic value, use as a cultivar, or other factors which indicate that persons may seek to remove these species from their native habitats.
TU	Tentatively Undetermined	A classification of plant species which are believed to be in danger of population decline, but which cannot presently be included within another classification due to taxonomic uncertainties, limited evidence within historical records, or insufficient data.
N		No current legal status exists, but is under review for future listing.

Pennsylvania State Status - Wild Birds and Mammals

Status	Description	Definition
PE	Pennsylvania Endangered	Species in imminent danger of extinction or extirpation throughout their range in Pennsylvania if the deleterious factors affecting them continue to operate. These are: 1) species whose numbers have already been reduced to a critically low level or whose habitat has been so drastically reduced or degraded that immediate action is required to prevent their extirpation from the Commonwealth; or 2) species whose extreme rarity or peripherality places them in potential danger of precipitous declines or sudden extirpation throughout their range in Pennsylvania; or 3) species that have been classified as "Pennsylvania Extirpated", but which are subsequently found to exist in Pennsylvania as long as the above conditions 1 or 2 are met; or 4) species determined to be "Endangered" pursuant to the Endangered Species Act of 1973, Public Law 93 205 (87 Stat. 884), as amended.
PT	Pennsylvania Threatened	Species that may become endangered within the foreseeable future throughout their range in Pennsylvania unless the casual factors affecting the organism are abated. These are: 1) species whose populations within the Commonwealth are decreasing or have been heavily depleted by adverse factors and while not actually endangered, are still in critical condition; 2) species whose populations may be relatively abundant in the Commonwealth but are under severe threat from serious adverse factors that have been identified and documented; or 3) species whose populations are rare or peripheral and in possible danger of severe decline throughout their range in Pennsylvania; or 4) species determined to be "Threatened" pursuant to the Endangered Species Act of 1973, Public Law 93205 (87 Stat. 884), as amended, that are not listed as "Pennsylvania Endangered".
N		No current legal status but is under review for future listing.

Pennsylvania State Status - Fish, Amphibians, Reptiles, and Aquatic Organisms

Status	Description	Definition
PE	Pennsylvania Endangered	All species declared by: 1) the Secretary of the United States Department of the Interior to be threatened with extinction and appear on the Endangered Species List or the Native Endangered Species List published in the Federal Register; or 2) have been declared by the Pennsylvania Fish Commission, Executive Director to be threatened with extinction and appear on the Pennsylvania Endangered Species List published by the Pennsylvania
PT	Pennsylvania Threatened	All species declared by: 1) the Secretary of the United States Department of the Interior to be in such small numbers throughout their range that they may become endangered if their environment worsens, and appear on a Threatened Species List published in the Federal Register; or 2) have been declared by the Pennsylvania Fish Commission Executive Director to be in such small numbers throughout their range that they may become endangered if their environment worsens and appear on the Pennsylvania Threatened Species List published in the
PC		Animals that could become endangered or threatened in the future. All of these are uncommon, have restricted distribution or are at risk because of certain aspects of their biology.
N		No current legal status, but is under review for future listing.

Pennsylvania Biological Survey Suggested Status Definitions

Status	Description	Definition
PE	Pennsylvania Endangered	Species in imminent danger of extinction or extirpation throughout their range in Pennsylvania if the deleterious factors affecting them continue to operate. These are: 1) species whose numbers have already been reduced to a critically low level or whose habitat has been so drastically reduced or degraded that immediate action is required to prevent their extirpation from the Commonwealth; or 2) species whose extreme rarity or peripherality places them in potential danger of precipitous declines or sudden extirpation throughout their range in Pennsylvania; or 3) species that have been classified as "Pennsylvania Extirpated", but which are subsequently found to exist in Pennsylvania as long as the above conditions 1 or 2 are met; or 4) species determined to be "Endangered" pursuant to the Endangered Species Act of 1973, Public Law 93 205 (87 Stat. 884), as amended.

Pennsylvania Biological Survey Suggested Status Definitions (continued)

Status	Description	Definition
PT	Pennsylvania Threatened	Species that may become endangered within the foreseeable future throughout their range in Pennsylvania unless the casual factors affecting the organism are abated. These are: 1) species whose populations within the Commonwealth are decreasing or have been heavily depleted by adverse factors and while not actually endangered, are still in critical condition; 2) species whose populations may be relatively abundant in the Commonwealth but are under severe threat from serious adverse factors that have been identified and documented; or 3) species whose populations are rare or peripheral and in possible danger of severe decline throughout their range in Pennsylvania; or 4) species determined to be "Threatened" pursuant to the Endangered Species Act of 1973, Public Law 93205 (87 Stat. 884), as amended, that are not listed as "Pennsylvania Endangered".
PR	Pennsylvania Rare	Plant species which are uncommon within this Commonwealth. All species of the native wild plants classified as Disjunct, Endemic, Limit of Range and Restricted are included within the Pennsylvania Rare classification.
	Disjunct	Significantly separated from their main area of distribution
	Endemic	Confined to a specialized habitat.
	Limit of Range	At or near the periphery of their natural distribution
CP	Candidate Proposed	Species comprising taxa for which the Pennsylvania Biological Survey (PBS) currently has substantial information on hand to support the biological appropriateness of proposing to list as Endangered or Threatened.
CA	Candidate at Risk	Species that although relatively abundant now are particularly vulnerable to certain types of exploitation or environmental modification.
CR	Candidate Rare	Species which exist only in one of a few restricted geographic areas or habitats within Pennsylvania, or they occur in low numbers over a relatively broad area of the Commonwealth.
CU	Condition Undetermined	Species for which there is insufficient data available to provide an adequate basis for their assignment to other classes or categories.
PX	Pennsylvania Extirpated	Species that have disappeared from Pennsylvania since 1600 but still exist elsewhere.
DL	Delisted	Species which were once listed but are now cited for delisting.
N		No current legal status, but is under study for future listing.

Federal Status Codes and Definitions

LE	Listed Endangered	A species which is in danger of extinction throughout all or a significant portion of its range.
LT	Listed Threatened	Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
LELT	Listed Endangered in part of range; listed Threatened in the remaining part.	
PE	Proposed Endangered	Taxa proposed to be listed as endangered.
PT	Proposed Threatened	Taxa proposed to be listed as threatened
PEPT		Proposed Endangered in part of range; proposed Threatened in the remaining part.
C	Candidate for listing.	
E(S/A)		Treat as Endangered because of similarity of appearance.
T(S/A)		Treat as Threatened because of similarity of appearance.
XE	Essential Experimental population	
XN	Nonessential Experimental population	
"xy" (mixed status)		Status varies for different populations or parts of range.
"x" NL		Status varies for different populations or parts of range with at least one part not listed.

APPENDIX I. FISH AND WILDLIFE SPECIES

Common Name	Scientific name	Status
Amphibians		
American toad	<i>Bufo americanus</i>	
bullfrog	<i>Rana catesbeiana</i>	
Cope's gray treefrog	<i>Hyla chrysoscelis</i>	
dusky salamander	<i>Desmognathus fuscus</i>	
eastern hellbender	<i>Cryptobranchus alleganiensis</i>	Near Threatened
eastern newt	<i>Notophthalmus viridescens</i>	
four-toed salamander	<i>Hemidactylium scutatum</i>	
gray treefrog	<i>Hyla versicolor</i>	
green frog	<i>Rana clamitans</i>	
Jefferson salamander	<i>Ambystoma jeffersonianum</i>	
longtail salamander	<i>Eurycea longicauda</i>	
marbled salamander	<i>Ambystoma opacum</i>	
mountain dusky salamander	<i>Desmognathus ochrophaeus</i>	
northern leopard frog	<i>Rana pipiens</i>	
northern slimy salamander	<i>Plethodon glutinosus</i>	
northern two-lined salamander	<i>Eurycea bislineata</i>	
pickerel frog	<i>Rana palustris</i>	
red salamander	<i>Pseudotriton ruber</i>	
redback salamander	<i>Plethodon cinereus</i>	
spotted salamander	<i>Ambystoma maculatum</i>	
spring peeper	<i>Pseudacris crucifer</i>	
spring salamander	<i>Gyrinophilus porphyriticus</i>	
valley & ridge salamander	<i>Plethodon hoffmani</i>	
Wehrle's salamander	<i>Plethodon wehrlei</i>	
western chorus frog	<i>Pseudacris triseriata</i>	
wood frog	<i>Rana sylvatica</i>	
Woodhouse's toad	<i>Bufo woodhousii</i>	
Birds		
Acadian flycatcher	<i>Empidonax vireescens</i>	
alder flycatcher	<i>Empidonax alnorum</i>	
American bittern	<i>Botaurus lentiginosus</i>	
American black duck	<i>Anas rubripes</i>	
American coot	<i>Fulica americana</i>	
American crow	<i>Corvus brachyrhynchos</i>	
American goldfinch	<i>Carduelis tristis</i>	
American kestrel	<i>Falco sparverius</i>	
American redstart	<i>Setophaga ruticilla</i>	
American robin	<i>Turdus migratorius</i>	
American tree sparrow	<i>Spizella arborea</i>	

Common Name	Scientific name	Status
<i>Birds (continued)</i>		
American woodcock	<i>Scolopax minor</i>	
bald eagle	<i>Haliaeetus leucocephalus</i>	
Baltimore oriole	<i>Icterus galbula</i>	
bank swallow	<i>Riparia riparia</i>	
barn owl	<i>Tyto alba</i>	
barn swallow	<i>Hirundo rustica</i>	
barred owl	<i>Strix varia</i>	
belted kingfisher	<i>Ceryle alcyon</i>	
black vulture	<i>Coragyps atratus</i>	
black-and-white warbler	<i>Mniotilta varia</i>	
black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	
Blackburnian warbler	<i>Dendroica fusca</i>	
black-capped chickadee	<i>Poecile atricapillus</i>	
black-crowned night-heron	<i>Nycticorax nycticorax</i>	
blackpoll warbler	<i>Dendroica striata</i>	
black-throated blue warbler	<i>Dendroica caerulescens</i>	
black-throated green warbler	<i>Dendroica virens</i>	
blue grosbeak	<i>Passerina caerulea</i>	
blue Jay	<i>Cyanocitta cristata</i>	
blue-gray gnatcatcher	<i>Poliophtila caerulea</i>	
blue-headed vireo	<i>Vireo solitarius</i>	
blue-winged teal	<i>Anas discors</i>	
blue-winged warbler	<i>Vermivora pinus</i>	
bobolink	<i>Dolichonyx oryzivorus</i>	
bohemian waxwing	<i>Bombycilla garrulus</i>	
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	
broad-winged hawk	<i>Buteo platypterus</i>	
brown creeper	<i>Certhia americana</i>	
brown thrasher	<i>Toxostoma rufum</i>	
brown-headed cowbird	<i>Molothrus ater</i>	
bufflehead	<i>Bucephala albeola</i>	
Canada goose	<i>Branta canadensis</i>	
Canada warbler	<i>Wilsonia canadensis</i>	
canvasback	<i>Aythya valisineria</i>	
Carolina chickadee	<i>Poecile carolinensis</i>	
Carolina wren	<i>Thryothorus ludovicianus</i>	
cedar waxwing	<i>Bombycilla cedrorum</i>	
cerulean warbler	<i>Dendroica cerulea</i>	Vulnerable
chestnut-sided warbler	<i>Dendroica pensylvanica</i>	
chimney swift	<i>Chaetura pelagica</i>	
chipping sparrow	<i>Spizella passerina</i>	
cliff swallow	<i>Petrochelidon pyrrhonota</i>	

Common Name	Scientific name	Status
<i>Birds (continued)</i>		
common goldeneye	<i>Bucephala clangula</i>	
common grackle	<i>Quiscalus quiscula</i>	
common merganser	<i>Mergus merganser</i>	
common moorhen	<i>Gallinula chloropus</i>	
common nighthawk	<i>Chordeiles minor</i>	
common redpoll	<i>Carduelis flammea</i>	
common snipe	<i>Gallinago gallinago</i>	
common yellowthroat	<i>Geothlypis trichas</i>	
Cooper's hawk	<i>Accipiter cooperii</i>	
dark-eyed junco	<i>Junco hyemalis</i>	
downy woodpecker	<i>Picoides pubescens</i>	
eastern bluebird	<i>Sialia sialis</i>	
eastern kingbird	<i>Tyrannus tyrannus</i>	
eastern meadowlark	<i>Sturnella magna</i>	
eastern Phoebe	<i>Sayornis phoebe</i>	
eastern screech-owl	<i>Otus asio</i>	
eastern towhee	<i>Pipilo erythrophthalmus</i>	
eastern wood-pewee	<i>Contopus virens</i>	
evening grosbeak	<i>Coccothraustes vespertinus</i>	
field sparrow	<i>Spizella pusilla</i>	
fish crow	<i>Corvus ossifragus</i>	
glossy ibis	<i>Plegadis falcinellus</i>	
golden eagle	<i>Aquila chrysaetos</i>	
golden-crowned kinglet	<i>Regulus satrapa</i>	
golden-winged warbler	<i>Vermivora chrysoptera</i>	Near Threatened
grasshopper sparrow	<i>Ammodramus savannarum</i>	
gray catbird	<i>Dumetella carolinensis</i>	
gray-cheeked thrush	<i>Catharus minimus</i>	
great blue heron	<i>Ardea herodias</i>	
great crested flycatcher	<i>Myiarchus crinitus</i>	
great egret	<i>Ardea alba</i>	
great horned owl	<i>Bubo virginianus</i>	
green-winged teal	<i>Anas crecca</i>	
hairy woodpecker	<i>Picoides villosus</i>	
Henslow's sparrow	<i>Ammodramus henslowii</i>	Near Threatened
hermit thrush	<i>Catharus guttatus</i>	
herring gull	<i>Larus argentatus</i>	
hooded merganser	<i>Lophodytes cucullatus</i>	
hooded warbler	<i>Wilsonia citrina</i>	
horned lark	<i>Eremophila alpestris</i>	
house finch	<i>Carpodacus mexicanus</i>	
house wren	<i>Troglodytes aedon</i>	

Common Name	Scientific name	Status
Birds (continued)		
indigo bunting	<i>Passerina cyanea</i>	
Kentucky warbler	<i>Oporornis formosus</i>	
killdeer	<i>Charadrius vociferus</i>	
king rail	<i>Rallus elegans</i>	
Lapland longspur	<i>Calcarius lapponicus</i>	
lark sparrow	<i>Chondestes grammacus</i>	
least bittern	<i>Ixobrychus exilis</i>	
least flycatcher	<i>Empidonax minimus</i>	
lesser scaup	<i>Aythya affinis</i>	
little blue heron	<i>Egretta caerulea</i>	
loggerhead shrike	<i>Lanius ludovicianus</i>	
long-eared owl	<i>Asio otus</i>	
Louisiana waterthrush	<i>Seiurus motacilla</i>	
magnolia warbler	<i>Dendroica magnolia</i>	
mallard	<i>Anas platyrhynchos</i>	
marsh wren	<i>Cistothorus palustris</i>	
mourning dove	<i>Zenaida macroura</i>	
mourning warbler	<i>Oporornis philadelphia</i>	
Nashville warbler	<i>Vermivora ruficapilla</i>	
northern bobwhite	<i>Colinus virginianus</i>	Near Threatened
northern cardinal	<i>Cardinalis cardinalis</i>	
northern flicker	<i>Colaptes auratus</i>	
northern goshawk	<i>Accipiter gentilis</i>	
northern harrier	<i>Circus cyaneus</i>	
northern mockingbird	<i>Mimus polyglottos</i>	
northern parula	<i>Parula americana</i>	
northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	
northern saw-whet owl	<i>Aegolius acadicus</i>	
northern shoveler	<i>Anas clypeata</i>	
northern shrike	<i>Lanius excubitor</i>	
northern waterthrush	<i>Seiurus noveboracensis</i>	
olive-sided flycatcher	<i>Contopus cooperi</i>	Near Threatened
orchard oriole	<i>Icterus spurius</i>	
ovenbird	<i>Seiurus aurocapillus</i>	
pied-billed grebe	<i>Podilymbus podiceps</i>	
pileated woodpecker	<i>Dryocopus pileatus</i>	
pine grosbeak	<i>Pinicola enucleator</i>	
pine siskin	<i>Carduelis pinus</i>	
pine warbler	<i>Dendroica pinus</i>	
prairie warbler	<i>Dendroica discolor</i>	
prothonotary warbler	<i>Protonotaria citrea</i>	
purple finch	<i>Carpodacus purpureus</i>	

Common Name	Scientific name	Status
<i>Birds (continued)</i>		
purple martin	<i>Progne subis</i>	
red crossbill	<i>Loxia curvirostra</i>	
red-bellied woodpecker	<i>Melanerpes carolinus</i>	
red-breasted nuthatch	<i>Sitta canadensis</i>	
red-eyed vireo	<i>Vireo olivaceus</i>	
redhead	<i>Aythya americana</i>	
red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	Near Threatened
red-shouldered hawk	<i>Buteo lineatus</i>	
red-tailed hawk	<i>Buteo jamaicensis</i>	
red-winged blackbird	<i>Agelaius phoeniceus</i>	
ring-billed gull	<i>Larus delawarensis</i>	
rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	
rough-legged hawk	<i>Buteo lagopus</i>	
ruby-crowned kinglet	<i>Regulus calendula</i>	
ruby-throated hummingbird	<i>Archilochus colubris</i>	
ruddy duck	<i>Oxyura jamaicensis</i>	
ruffed grouse	<i>Bonasa umbellus</i>	
rusty blackbird	<i>Euphagus carolinus</i>	
savannah sparrow	<i>Passerculus sandwichensis</i>	
Say's phoebe	<i>Sayornis saya</i>	
scarlet tanager	<i>Piranga olivacea</i>	
sedge wren	<i>Cistothorus platensis</i>	
sharp-shinned hawk	<i>Accipiter striatus</i>	
short-eared owl	<i>Asio flammeus</i>	
snow bunting	<i>Plectrophenax nivalis</i>	
snowy egret	<i>Egretta thula</i>	
song sparrow	<i>Melospiza melodia</i>	
sora	<i>Porzana carolina</i>	
spotted sandpiper	<i>Actitis macularia</i>	
striated heron	<i>Butorides striatus</i>	
Swainson's thrush	<i>Catharus ustulatus</i>	
swamp sparrow	<i>Melospiza georgiana</i>	
tree swallow	<i>Tachycineta bicolor</i>	
tricolored heron	<i>Egretta tricolor</i>	
tufted titmouse	<i>Baeolophus bicolor</i>	
turkey vulture	<i>Cathartes aura</i>	
upland sandpiper	<i>Bartramia longicauda</i>	
veery	<i>Catharus fuscescens</i>	
vesper sparrow	<i>Pooecetes gramineus</i>	
Virginia rail	<i>Rallus limicola</i>	
warbling vireo	<i>Vireo gilvus</i>	
whip-poor-will	<i>Caprimulgus vociferus</i>	

Common Name	Scientific name	Status
Birds (continued)		
white ibis	<i>Eudocimus albus</i>	
white-breasted nuthatch	<i>Sitta carolinensis</i>	
white-crowned sparrow	<i>Zonotrichia leucophrys</i>	
white-eyed vireo	<i>Vireo griseus</i>	
white-throated sparrow	<i>Zonotrichia albicollis</i>	
white-winged crossbill	<i>Loxia leucoptera</i>	
wild turkey	<i>Meleagris gallopavo</i>	
willow flycatcher	<i>Empidonax traillii</i>	
winter wren	<i>Troglodytes troglodytes</i>	
wood duck	<i>Aix sponsa</i>	
wood thrush	<i>Hylocichla mustelina</i>	
worm-eating warbler	<i>Helmitheros vermivorus</i>	
yellow warbler	<i>Dendroica petechia</i>	
yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	
yellow-billed cuckoo	<i>Coccyzus americanus</i>	
yellow-breasted chat	<i>Icteria virens</i>	
yellow-crowned night-heron	<i>Nyctanassa violacea</i>	
yellow-rumped warbler	<i>Dendroica coronata</i>	
yellow-throated vireo	<i>Vireo flavifrons</i>	
Fish		
lampreys: Family Petromyzontidae		
ohio lamprey	<i>Ichthyomyzon bdellium</i>	Candidate
northern brook lamprey	<i>Ichthyomyzon fossor</i>	Endangered
mountain brook lamprey	<i>Ichthyomyzon greeleyi</i>	Threatened
least brook lamprey	<i>Lampetra aepyptera</i>	Candidate
sturgeons: Family Acipenseridae		
lake sturgeon	<i>Acipenser fulvescens</i>	Endangered
shovelnose sturgeon	<i>Scaphirhynchus platorynchus</i>	
paddlefish: Family Polyodontidae		
paddlefish	<i>Polyodon spathula</i>	
gars: Family Lepisosteidae		
spotted gar	<i>Lepisosteus oculatus</i>	Endangered
longnose gar	<i>Lepisosteus osseus</i>	Candidate
shortnose gar	<i>Lepisosteus platostomus</i>	
bowfin: Family Amiidae		
bowfin	<i>Amia calva</i>	Candidate
mooneyes: Family Hiodontidae		
goldeneye	<i>Hiodon alosoides</i>	Threatened
mooneye	<i>Hiodon tergisus</i>	Threatened
eels: Family Anguillidae		
American eel	<i>Anguilla rostrata</i>	

Common Name	Scientific name	Status
Fish (continued)		
herrings: Family Clupeidae		
skipjack herring	<i>Alosa chrysochloris</i>	Threatened
gizzard shad	<i>Dorosoma cepedianum</i>	
minnows: Family Cyprinidae		
bigeye chub	<i>Notropis amoenus</i>	
bigmouth shiner	<i>Notropis dorsalis</i>	Threatened
brassy minnow	<i>Hybognathus hankinsoni</i>	
blackchin shiner	<i>Notropis heterolepis</i>	Endangered
blacknose dace	<i>Rhinichthys atratulus</i>	
blacknose shiner	<i>Notropis heterolepis</i>	
bluntnose minnow	<i>Pimephales notatus</i>	
bullhead minnow	<i>Pimephales vigilax</i>	
central stoneroller	<i>Campostoma anomalum</i>	
common carp	<i>Cyprinus carpio</i>	
common shiner	<i>Luxilus cornutus</i>	
common carp	<i>Cyprinus carpio</i>	
common shiner	<i>Lucilus cornutus</i>	
creek chub	<i>Semotilus atromaculatus</i>	
cutlips minnow	<i>Exoglossum maxillingua</i>	
emerald shiner	<i>Notropis atherinoides</i>	
fathead minnow	<i>Pimephales promelas</i>	
ghost shiner	<i>Notropis buchmanii</i>	Endangered
golden shiner	<i>Notemigonus crysoleucas</i>	
goldfish	<i>Carassius auratus</i>	
grass carp	<i>Ctenopharyngodon idella</i>	
gravel chub	<i>Erimystax X. punctatus</i>	Endangered
hornyhead chub	<i>Nocomis biguttatus</i>	Candidate
longnose dace	<i>Rhinichthys cataractae</i>	
mimic shiner	<i>Notropis volucellus</i>	
pearl dace	<i>Margariscus margarita</i>	
popeye shiner	<i>Notropis ariommus</i>	
redfin shiner	<i>Lythrurus umbratilis</i>	Endangered
reidside dace	<i>Clinostomus elongatus</i>	
river chub	<i>Nocomis micropogon</i>	
river shiner	<i>Notropis blennioides</i>	Endangered
rosyface shiner	<i>Notropis rubellus</i>	
sand shiner	<i>Notropis stramineus</i>	
silver chub	<i>Macrhybopsis storeriana</i>	Endangered
silver shiner	<i>Notropis photogenus</i>	
silverjaw minnow	<i>Ericymba buccata</i>	
southern redbelly dace	<i>Phoxinus erythrogaster</i>	Threatened
spotfin shiner	<i>Cyprinella spiloptera</i>	

Common Name	Scientific name	Status
Fish (continued)		
herrings: Family Clupeidae (continued)		
spottail shiner	<i>Notropis hudsonius</i>	
streamline chub	<i>Erimystax dissimilis</i>	
striped shiner	<i>Luxilus chrysocephalus</i>	
tongue tied minnow	<i>Exoglossum laurae</i>	
suckers: Family Catostomidae		
black redbhorse	<i>Moxostoma duquesnei</i>	
blue sucker	<i>Cycleptus elongatus</i>	
golden redbhorse	<i>Moxostoma erythrurum</i>	
greater redbhorse	<i>Moxostoma valenciennesi</i>	
highfin carpsucker	<i>Carpionodes velifer</i>	
longnose sucker	<i>Catostomus catostomus</i>	Endangered
northern hogsucker	<i>Hypentelium nigricans</i>	
Ohio shorthead redbhorse	<i>M. macrolepidotum breviceps</i>	
quillback	<i>Carpionodes cyprinus</i>	
river carpsucker	<i>Carpionodes carpio</i>	
river redbhorse	<i>Moxostoma carinatum</i>	Candidate
shorthead redbhorse	<i>Moxostoma macrolepidotum</i>	
silver redbhorse	<i>Moxostoma anisurum</i>	
smallmouth buffalo	<i>Ictiobus bubalus</i>	Threatened
spotted sucker	<i>Minytrema melanops</i>	Threatened
white sucker	<i>Catostomus commersoni</i>	
catfishes: Family Ictaluridae		
blue catfish	<i>Ictalurus furcatus</i>	
black bullhead	<i>Ameiurus melas</i>	Endangered
brindled madtom	<i>Norurus miurus</i>	Threatened
brown bullhead	<i>Ameiurus nebulosus</i>	
channel catfish	<i>Ictalurus punctatus</i>	
flathead catfish	<i>Pylodictus olivaris</i>	
mountain madtom	<i>Noturus eleutherus</i>	Endangered
northern madtom	<i>Noturus stigmosus</i>	Endangered
stonecat	<i>Noturus flavus</i>	
tadpole madtom	<i>Noturus gyrinus</i>	Endangered
white catfish	<i>Ameiurus catus</i>	
yellow bullhead	<i>Ameiurus natalis</i>	
piques: Family Esocidae		
chain pickerel	<i>Esox niger</i>	
grass pickerel	<i>Esox americanus vermiculatus</i>	
muskellunge	<i>Esox masquinongy</i>	

Common Name	Scientific name	Status
Fish (continued)		
piques: Family Esocidae (continued)		
northern pike	<i>Esox lucius</i>	
mudminnows: Family Umbridae		
central mudminnow	<i>Umbra limi</i>	Candidate
trout: Family Salmonidae		
Atlantic salmon	<i>Salmo salar</i>	
brook trout	<i>Salvelinus fontinalis</i>	
brown trout	<i>Salmo trutta</i>	
rainbow trout	<i>Oncorhynchus mykiss</i>	
trout perch: Family Percopsidae		
trout perch	<i>Percopsis omiscomaycus</i>	
burbot: Family Gadidae		
burbot	<i>Lota lota</i>	Endangered
killifishes: Family Cyprinodontidae		
banded killifish	<i>Fundulus diaphanus</i>	
silversides: Family Atherinidae		
brook silverside	<i>Labidesthes sicculus</i>	Candidate
sticklebacks: Family Gasterosteidae		
brook stickleback	<i>Culaea inconstans</i>	Candidate
sculpins: Family Cottidae		
mottled sculpin	<i>Cottus bairdi</i>	
temperate basses: Family Percichthyidae		
white bass	<i>Morone chrysops</i>	
white perch	<i>Morone americana</i>	
sunfishes: Family Centrarchidae		
black crappie	<i>Pomoxis nigromaculatus</i>	
bluegill	<i>Lepomis macrochirus</i>	
green sunfish	<i>Lepomis cyanellus</i>	
largemouth bass	<i>Micropterus salmoides</i>	
longear sunfish	<i>Lepomis megalotis</i>	Endangered
orangespotted sunfish	<i>Lepomis humilis</i>	
pumpkinseed	<i>Lepomis gibbosus</i>	
rock bass	<i>Ambloplites rupestris</i>	
smallmouth bass	<i>Micropterus dolomieu</i>	
spotted bass	<i>Micropterus punctulatus</i>	
warmouth	<i>Lepomis gulosus</i>	Endangered
white crappie	<i>Pomoxis annularis</i>	
perches: Family Percidae		
banded darter	<i>Etheostoma zonale</i>	
blackside darter	<i>Percina maculata</i>	
bluebreast darter	<i>Etheostoma camurum</i>	Threatened
channel darter	<i>Percina copelandi</i>	Threatened

Common Name	Scientific name	Status
<i>Fish (continued)</i>		
perches: Family Percidae (continued)		
eastern sand darter	<i>Ammocrypta pellucida</i>	Endangered
fantail darter	<i>Etheostoma flabellare</i>	
gilt darter	<i>Percina evides</i>	Threatened
greenside darter	<i>Etheostoma blennioides</i>	
Iowa darter	<i>Etheostoma exile</i>	Endangered
Johnny darter	<i>Etheostoma nigrum</i>	
logperch	<i>Percina caprodes</i>	
longhead darter	<i>Percina macrocephala</i>	Threatened
rainbow darter	<i>Etheostoma camurum</i>	Threatened
river darter	<i>Percina shumardi</i>	
sharpnose darter	<i>Percina oxyrhyncha</i>	
sauger	<i>Sander canadense</i>	
spotted darter	<i>Etheostoma maculatum</i>	Threatened
tippecanoe darter	<i>Etheostoma tippecanoe</i>	Threatened
variegated darter	<i>Etheostoma variatum</i>	
walleye	<i>Sander vitreus</i>	
yellow perch	<i>Perca flavescens</i>	
drums: Family Sciaenidae		
freshwater drum	<i>Aplodinotus grunniens</i>	
<i>Mammals</i>		
American badger	<i>Taxidea taxus</i>	Lower Risk
American beaver	<i>Castor canadensis</i>	Lower Risk
American black bear	<i>Ursus americanus</i>	Lower Risk
Appalachian cottontail	<i>Sylvilagus obscurus</i>	
American mink	<i>Mustela vison</i>	
big brown bat	<i>Eptesicus fuscus</i>	Lower Risk
bobcat	<i>Lynx rufus</i>	
cinereus shrew	<i>Sorex cinereus</i>	Lower Risk
coyote	<i>Canis latrans</i>	
deer mouse	<i>Peromyscus maniculatus</i>	Lower Risk
eastern chipmunk	<i>Tamias striatus</i>	Lower Risk
eastern cottontail	<i>Sylvilagus floridanus</i>	Lower Risk
eastern fox squirrel	<i>Sciurus niger</i>	Lower Risk
eastern gray squirrel	<i>Sciurus carolinensis</i>	Lower Risk
eastern mole	<i>Scalopus aquaticus</i>	Lower Risk
eastern pipistrelle	<i>Pipistrellus subflavus</i>	Lower Risk
eastern small-footed myotis	<i>Myotis leibii</i>	Lower Risk
eastern woodrat	<i>Neotoma floridana</i>	Lower Risk
ermine	<i>Mustela erminea</i>	Lower Risk
gray fox	<i>Urocyon cinereoargenteus</i>	

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hairy-tailed mole	<i>Parascalops breweri</i>	Lower Risk
hoary bat	<i>Lasiurus cinereus</i>	Lower Risk
Indiana bat	<i>Myotis sodalis</i>	Endangered
least shrew	<i>Cryptotis parva</i>	Lower Risk
least weasel	<i>Mustela nivalis</i>	Lower Risk
little brown bat	<i>Myotis lucifugus</i>	Lower Risk
long-tailed shrew	<i>Sorex dispar</i>	Lower Risk
long-tailed weasel	<i>Mustela frenata</i>	Lower Risk
meadow jumping mouse	<i>Zapus hudsonius</i>	Lower Risk
meadow vole	<i>Microtus pennsylvanicus</i>	Lower Risk

Common Name	Scientific name	Status
Mammals (continued)		
muskrat	<i>Ondatra zibethicus</i>	Lower Risk
North American porcupine	<i>Erethizon dorsatum</i>	Lower Risk
northern flying squirrel	<i>Glaucomys sabrinus</i>	Lower Risk
northern long-eared bat	<i>Myotis septentrionalis</i>	
northern raccoon	<i>Procyon lotor</i>	Lower Risk
northern river otter	<i>Lontra canadensis</i>	
northern short-tailed shrew	<i>Blarina brevicauda</i>	Lower Risk
pygmy shrew	<i>Sorex hoyi</i>	Lower Risk
red bat	<i>Lasiurus borealis</i>	Lower Risk
red fox	<i>Vulpes vulpes</i>	
red squirrel	<i>Tamiasciurus hudsonicus</i>	Lower Risk
rock vole	<i>Microtus chrotorrhinus</i>	Lower Risk
Seminole bat	<i>Lasiurus seminolus</i>	Lower Risk
silver-haired bat	<i>Lasionycteris noctivagans</i>	Lower Risk
smoky shrew	<i>Sorex fumeus</i>	Lower Risk
snowshoe hare	<i>Lepus americanus</i>	Lower Risk
southern bog lemming	<i>Synaptomys cooperi</i>	Lower Risk
southern flying squirrel	<i>Glaucomys volans</i>	Lower Risk
southern red-backed vole	<i>Clethrionomys gapperi</i>	Lower Risk
star-nosed mole	<i>Condylura cristata</i>	Lower Risk
striped skunk	<i>Mephitis mephitis</i>	Lower Risk
Virginia opossum	<i>Didelphis virginiana</i>	Lower Risk
water shrew	<i>Sorex palustris</i>	Lower Risk
white-footed mouse	<i>Peromyscus leucopus</i>	Lower Risk
white-tailed deer	<i>Odocoileus virginianus</i>	Lower Risk
woodchuck	<i>Marmota monax</i>	Lower Risk
woodland jumping mouse	<i>Napaeozapus insignis</i>	Lower Risk
woodland vole	<i>Microtus pinetorum</i>	Lower Risk
Reptiles		
bog turtle	<i>Clemmys muhlenbergii</i>	Endangered
coal skink	<i>Eumeces anthracinus</i>	
common garter snake	<i>Thamnophis sirtalis</i>	
common map turtle	<i>Graptemys geographica</i>	
common musk turtle	<i>Sternotherus odoratus</i>	
Dekay's brown snake	<i>Storeria dekayi</i>	
eastern box turtle	<i>Terrapene carolina</i>	Lower Risk
eastern fence lizard	<i>Sceloporus undulatus</i>	
eastern hognose snake	<i>Heterodon platirhinos</i>	
eastern mud turtle	<i>Kinosternon subrubrum</i>	
eastern ribbon snake	<i>Thamnophis sauritus</i>	
five-lined skink	<i>Eumeces fasciatus</i>	

Common Name	Scientific name	Status
Reptiles		
milk snake	<i>Lampropeltis triangulum</i>	
northern water snake	<i>Nerodia sipedon</i>	
painted turtle	<i>Chrysemys picta</i>	
queen snake	<i>Regina septemvittata</i>	
racer	<i>Coluber constrictor</i>	
rat snake	<i>Elaphe obsoleta</i>	
red-bellied snake	<i>Storeria occipitomaculata</i>	
ring-necked snake	<i>Diadophis punctatus</i>	
short-headed garter snake	<i>Thamnophis brachystoma</i>	
smooth earth snake	<i>Virginia valeriae</i>	
smooth green snake	<i>Opheodrys vernalis</i>	
snapping turtle	<i>Chelydra serpentina</i>	
spotted turtle	<i>Clemmys guttata</i>	Vulnerable
timber rattlesnake	<i>Crotalus horridus</i>	
wood turtle	<i>Clemmys insculpta</i>	Vulnerable
worm snake	<i>Carphophis amoenus</i>	

Sources: World Wildlife Fund Species Finder, <http://gis.wwfus.org/wildfinder/> & PA Fish and Boat Commission, <http://www.fish.state.pa.us/pafish/fishhtms/chap2.htm>

APPENDIX J. RECREATIONAL & HISTORICAL RESOURCES

Parks	Location	Amenities
Community Park	Columbus, PA	Basketball court, VFD community hall, recycling center
Mather Park	Columbus, PA	Playground, ball fields, picnic areas, gazebo, portable toilet
City Park	Corry, PA	Historical monuments & benches located within three acres
Mead Park	Corry, PA	Several playgrounds, lodges, amphitheater, tennis courts, softball fields, hiking, fishing, and picnic facilities located within 50 acres
Buckaloons Recreation Area	Irvine, PA	Boat launch, campground, picnic areas, playground, shower house, electric hook-ups, dump station
Watts Flat Park	Watts Flat, NY	Basketball and volleyball courts, ball field, Town of Harmony pavilion, portable toilet
Hill Top Recreation Area	Youngsville, PA	Playground, picnic pavilions, swimming pool, portable toilet, volleyball court, parking
Island Park Recreation Area	Youngsville, PA	Tennis and basketball courts, ball field, playgrounds, picnic pavilion, handicapped fishing pier, potential canoe access, community building
Stewart Lane Ball Field and Picnic Area	Corry, PA	Ball field and picnic area
Friendship Field		Playground and ball field
Warren County Fairgrounds	Pittsfield, PA	Fairgrounds
Panama Rocks Scenic Park	Panama, NY	Admission fees, picnic grove, unique rock outcrop, restrooms, trail on 12 acres
Panama School Playground	Panama, NY	Playground
Brokenstraw Elementary School	Youngsville, PA	Playground

Trails	Size	Description
Seneca Interpretive Trail	1-mile	Loop around Buckaloons Recreation Area
Westside Overland Trail	24 miles	Travels through six town and four state forest in
Bicycle Route Y	409 miles	Follow Route 6 through the watershed and connects New
Corry Junction Greenway Trail	5.2 miles	Travels from Columbus, PA to Clymer, NY.

Golf Courses	Location	Amenities
North Hills Municipal Golf Course	Corry, PA	9-hole municipal course
Carter Heights Golf Course	Corry, PA	9-hole public course
Timber Creek Golf Course	Ashville, NY	9-hole public course
Corry Country Club	Corry, PA	18-hole private course, clubhouse, tennis courts
Spring Creek Frontier Golf Course	Spring Creek, PA	9-hole public course

Campgrounds & Other Accommodations	Location	Amenities
Harecreek Campground	Corry, PA	Swimming pool, basketball, volleyball, horseshoes, game
Brokenstraw Valley Campsites	Pittsfield, PA	Campground
Leisure Campground	Corry, PA	Campground

Campgrounds & Other

Location

Amenities

Accommodations

Buckaloons Recreation Area	Irvine, PA	Boat launch, campground, picnic areas, playground, shower
Victoria on Main	Corry, PA	Bed & Breakfast
Ottaway Inn	Corry, PA	Bed & Breakfast
Scotia Inn	Corry, PA	Motel
Edgewood Motel	Youngsville	Motel

State Lands

Size

Location

PA State Game Lands 143	8,177 acres	Garland, PA
PA State Game Lands 154	1,415 acres	Wheelock, PA
PA State Game Lands 197	1,556 acres	Columbus, PA
PA State Game Lands 263	668 acres	Corry, PA
PA State Game Lands 291	1,193 acres	Corry, PA
PA State Game Lands 306	892 acres	Corry, PA
Alder Bottom Wildlife Management Unit	800 acres	Clymer & Sherman, NY
Brokenstraw State Forest	951 acres	Harmony & Clymer, NY
Hill Higher State Forest	1,156 acres	Harmony, NY
Jaquins Pond Wildlife Management Unit	1,349 acres	Clymer, NY
North Harmony State Forest	2,561 acres	Harmony, North Harmony, & Sherman, NY
Panama State Forest	1,224 acres	Harmony, NY
Watts Flat Wildlife Management Unit	1,382 acres	Harmony, NY
Whalen Memorial Forest	1,325 acres	North Harmony & Sherman, NY

Historical Facilities

Location

Irvine United Presbyterian Church	Irvine, PA
Corry Armory	Corry, PA
Clymer Center Schoolhouse	Clymer, NY
Clinton Wilder Historical Museum	Youngsville, PA

Natural Features

Dole Swamp
Tamarack Swamp

Approved Trout Waters

Blue Eye Run
Brokenstraw Creek
Coffee Creek
East Branch Spring Creek
Little Brokenstraw Creek
Spring Creek

Class A Wild Trout Streams

Length

Trout Fishery

Section Limits

Spring Creek	2.6 miles	Brown Trout	State Route 3001 bridge to mouth
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Source: Hunting PA.com, NY DEC2, PFBC, 2008b

APPENDIX K. PUBLIC COMMENTS

Issue, concern, or comment	Action taken
<i>Public Meetings</i>	
Hold for draft public comments	

APPENDIX L. INTERVIEW AND SURVEY QUESTIONS

Key Individual Interview Questions

1. How has the watershed* changed in the past 10 years? Were these changes good, bad, indifferent?
*Note: “watershed” includes landscape features, ecological communities, & human infrastructure.

2. How do the following currently meet the needs of the watershed community?
(Are the quantities sufficient, insufficient, or satisfactory? Are they in good condition?) Please include your solution recommendations.
 - a. Transportation –area roads, public transportation
 - b. Infrastructure – water and sewer lines
 - c. Employment Opportunities
 - d. Educational Opportunities
 - e. Land Use Ordinances & Zoning

3. Do the recreational opportunities currently meet the needs of the watershed community?
(Are there too many, not enough, or a sufficient number? What condition are they in? Are they easy to access? Please include your solution recommendations.)
 - a. Parks/Picnic Sites
 - b. Hiking/Biking Trails
 - c. Off- Road Vehicle Riding
 - d. Scenic Vistas/Photography
 - e. Wildlife/Bird Watching
 - f. Hunting/Fishing
 - g. Boating/Swimming
 - h. Historical Sites/Structures
 - i. Other
 - j. Winter Recreation

4. What are some of the positive features of the watershed? (Please consider both the ecological and social community in your answer, from water quality to economics.)
5. What are some of the negative impacts currently affecting the land, water, and biological resources?
6. Do you have any specific projects or type of projects you would like to see identified in the plan?
7. What must the watershed conservation plan say to be successful?
8. What must the watershed conservation plan *not* say to be successful?
9. Do you know of any other people we should interview?
10. Do you have any other questions or comments before we conclude this interview?
11. Please confirm your contact information for the purposes of this project only, so that we may send you progress updates. Your information will NOT be shared with others.

Name: _____
Address 1: _____
Address 2: _____
City, State Zip: _____
Phone #: _____
Email: _____

Municipal Interview Questions

- 1.) Does your municipality have a comprehensive plan? **YES or NO**
If yes, what is the name of the plan(s) and when was it adopted?

- 2.) Does your municipality currently utilize zoning? **YES or NO**
Does your municipality currently utilizing subdivision ordinances? **YES or NO**
Does your municipality have floodplain ordinances? **YES or NO**

- 3.) Are there any municipal parks in your municipality? If yes, please list them?

- 4.) a. Does your municipality have any public water services in the project area? **YES or NO**
Supplier _____

b. Do you foresee the need to upgrade or establish a public water supply in your municipality in the project area within the next ten years? **YES or NO**

- 5.) a. Does your municipality have any public sewage systems in the project area? **YES or NO**
Treatment System _____

b. Do you foresee the need to upgrade or establish a public sewage system in your municipality in the project area within the next ten years? **YES or NO**

- 6.) Who provides emergency services, such as:
Police _____
Fire _____
EMS _____

- 7.) Is there anything unique, or well known about your municipality that you would like to have highlighted in the plan?

- 8.) Who provides emergency services for your community?
Fire _____
Police _____
EMS _____

- 9.) Could you please verify your contact information

Public Survey Questions

General Questionnaire

Continued

* Please use the following scale for the next three questions, each number can be used more than once. If numbers (other than the scale) or marks are used, they will be ranked neutral.

- 5 = Very Important
- 4 = Somewhat Important
- 3 = Neutral
- 2 = Not very Important
- 1 = Not Important

3. Please indicate the importance of the following watershed values.

- _____ Attractive Natural Settings
- _____ Community Activities
- _____ Educational Opportunities
- _____ New Business/Jobs
- _____ Preserving History/Culture
- _____ Recreation Opportunities
- _____ Residential Development
- _____ Water Quality

4. Please indicate the importance of the following recreational activities in the watershed.

- _____ ATV Riding
- _____ Biking
- _____ Bird/Wildlife Watching
- _____ Boating
- _____ Canoeing/Kayaking
- _____ Fishing
- _____ Hiking
- _____ Horseback Riding
- _____ Hunting
- _____ Organized Sports
- _____ Photography
- _____ Picnicking
- _____ Snowmobiles
- _____ Swimming
- _____ Visiting Public Parks
- _____ Visiting Public Vistas
- _____ Other _____

General Questionnaire

5. Please indicate the importance of addressing the following watershed issues.

- _____ Preserving Agricultural Lands
- _____ Eliminating Illegal ATV/Snowmobile Use and Conflicts
- _____ Providing ATV/Snowmobile Recreation Facilities
- _____ Improving Infrastructure (i.e. roads, water, sewage, etc.)
- _____ Enhancing Economic Development
- _____ Increasing Environmental Education
- _____ Reducing Erosion & Sedimentation
- _____ Reducing Flooding
- _____ Improving Forestry Techniques
- _____ Preserving Historical & Cultural Heritage
- _____ Preventing Illegal Dumping & Clean up Litter
- _____ Controlling Invasive Species
- _____ Reclamation of Mine Drainage/Mine Lands
- _____ Reducing Storm Water Runoff
- _____ Addressing Tourism Impacts
- _____ Managing Waste Sites/Hazardous Spills
- _____ Improving Water Quality
- _____ Ensuring Adequate Water Quantity
- _____ Improving Wildlife/Fisheries Habitats
- _____ Other _____

6. What are the top 3 services/amenities that are lacking within the watershed? (i.e. restaurants, public restrooms, gas stations, emergency services, etc.)

- 1. _____
- 2. _____
- 3. _____

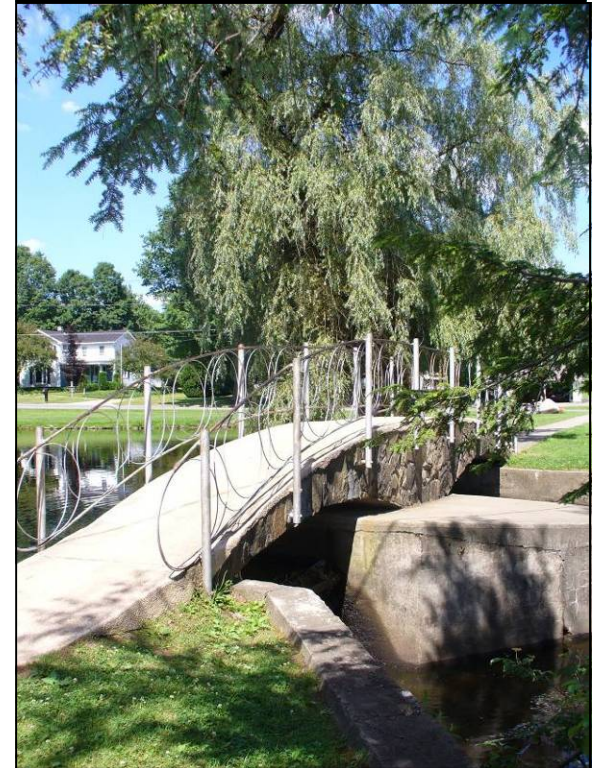
7. Other comments or concerns.

Thank you for completing this survey.

Return Instructions:

You may cut off and keep the informative panel with our contact information. Next, please refold the pamphlet, tape (do not staple), and place it in the mail with proper postage.

Brokenstraw Creek Watershed Conservation Plan



Complete a Survey and You Could Win!

Prize package includes donated items from local project partners

The goal of the Brokenstraw Watershed Conservation Plan is to promote and protect the health and wealth of the Brokenstraw Creek watershed through education and community cooperation leading to implementation of recommendations developed by private and public entities.

Residents Questionnaire

Only Individuals with Permanent Residence within the Brokenstraw Creek Watershed Area

Please Mark One

1. In what county and municipality do you reside?

County _____
Municipality _____

2. Near what part of the Brokenstraw Creek watershed do you reside?

- Brokenstraw
- Little Brokenstraw
- Spring Creek
- Don't Know
- Other _____

3. How long have you lived in the area?

- Less than 1 year
- 1-10 years
- 11-20 years
- 21-30 years
- 31-40 years
- 41-50 years
- 51-60 years
- 60+ years

4. How far do you travel to work?

- Less than 1 mile
- 1-15 miles
- 16-30 miles
- 31-45 miles
- 46-60 miles
- Farther _____

Please continue with "General Questionnaire" at far right



Visitors Questionnaire

Please Mark One

1. Do you own property in the watershed?

- Yes
- No

2. How far did you travel to visit?

- Less than 1 mile
- 1-30 miles
- 31-60 miles
- 61-90 miles
- 91-120 miles
- 121-150 miles
- 151-180 miles
- Farther _____

3. How long did you stay on this trip?

- Less than one day
- 1-2 days
- 3-4 days
- 5-6 days
- One week
- A week and a half
- Two weeks
- Longer _____

4. Approximately how much money did you spend?

- Less than 100 dollars
- 100-500 dollars
- 500-1,000 dollars
- 1,000-2,000 dollars
- 2,000-3,000 dollars
- 3,000-5,000 dollars
- 5,000+ dollars

5. What were your two biggest expenses? (other than travel/gas)

- Food
- Lodging
- Recreation/Supplies
- Souvenirs
- Other _____

6. What was your reason for visiting?

- Business
- Family/Friends
- Passing through
- Recreation/Vacation
- Visiting
- Other _____

7. How often do you visit?

- First time
- Seasonal
- Yearly
- Occasionally (every 2-5 years)
- Every 5+ years

General Demographics

(Optional)

1. What is your gender?

- Male
- Female

2. What is your age?

- 17 & under
- 18-25
- 26-45
- 46-65
- 66 & up

General Questionnaire

For Residents and Visitors

1. What do you think are the two most important land uses in the Brokenstraw Creek watershed area?

- Agricultural
- Commercial
- Forested
- Other _____
- Industrial
- Recreation
- Residential

2. Where did you obtain this survey?

- Business/Restaurant
- Event _____
- State park/state forest
- Watershed group
- Website
- Other _____

Please continue with "General Questionnaire"

* If you would like to be entered to win a prize package from our project sponsors and receive project updates, please complete the information below. Entries must be received by **June 30, 2009**.

Name _____
Address _____
E-mail _____
Home Phone _____
Work Phone _____

APPENDIX R. NATIVE PLANT GUIDE

Common Name(s)	Scientific Name	Dry Area Plant	Shady Area Plant	Shady Rain Garden Plant	Sunny Area Plant	Sunny Rain Garden Plant	Plant well suited for Banks	Cut Flower Garden Plant	Plant for near Lakes, Ponds or Streams	Soil Stabilizing Plant	Wet Area Plant	Plant for Wooded Areas	Deer Resistant Plant	Drought Tolerant Plant	Bee Attractant Plant	Bird Attractant Plant	Wildlife Attractant Plant	Butterfly Attractant Plant	Hummingbird Attractant Plant
balsam fir	<i>Abies balsamea</i>																X		
fraser fir	<i>Abies fraseri</i>																X		
box-elder	<i>Acer negundo</i>	X	X		X			X				X	X						
Norway maple	<i>Acer platanoides</i>																X		
red maple	<i>Acer rubrum</i>				X											X	X		
silver maple	<i>Acer saccharinum</i>		X	X		X	X		X			X							
sugar maple	<i>Acer saccharum</i>										X				X				
mountain maple	<i>Acer spicatum</i>			X	X	X		X	X		X		X						
maple	<i>Acer spp</i>											X					X		
common yarrow	<i>Achillea millefolium</i>				X														
monkshood	<i>Aconitum uncinatum</i>										X								
sweetflag	<i>Acorus americanus</i>	X			X												X		
doll's eyes, white bugbane, white baneberry	<i>Actaea pachypoda</i>		X		X	X						X							
black cohosh, black bugbane, black	<i>Actaea racemosa</i>											X	X			X			
red baneberry	<i>Actaea rubra</i>									X									
northern maidenhair fern, maidenhair fern	<i>Adiantum pedatum</i>				X														
bottlebrush buckeye	<i>Aesculus parviflora</i>				X														
red buckeye, buckeye	<i>Aesculus pavia</i>	X			X	X				X			X	X		X			
false foxglove	<i>Agalinis purpurea</i>											X	X						

Brokenstraw Creek Watershed Conservation Plan

Common Name(s)	Scientific Name	Dry Area Plant	Shady Area Plant	Shady Rain Garden Plant	Sunny Area Plant	Sunny Rain Garden Plant	Plant well suited for Banks	Cut Flower Garden Plant	Plant for near Lakes, Ponds or Streams	Soil Stabilizing Plant	Wet Area Plant	Plant for Wooded Areas	Deer Resistant Plant	Drought Tolerant Plant	Bee Attractant Plant	Bird Attractant Plant	Wildlife Attractant Plant	Butterfly Attractant Plant	Hummingbird Attractant Plant
blue giant hyssop, anise hyssop	<i>Agastache foeniculum</i>	X			X							X		X					
yellow giant hyssop	<i>Agastache nepetoides</i>		X																
giant purple hyssop	<i>Agastache scrophulariifolia</i>	X			X			X					X	X	X	X			
white snakeroot	<i>Ageratina altissima</i>												X						
small agrimony	<i>Agrimonia parviflora</i>				X	X					X					X			
red top	<i>Agrostis alba</i>	X			X														
hollyhock	<i>Alcea rosea</i>																X		
northern water plantain	<i>Alisma triviale</i>												X						
nodding onion, wild onion/leek	<i>Allium cernuum</i>									X									X
ramps, wild leeks	<i>Allium tricoccum</i>												X						
speckled alder	<i>Alnus rugosa</i>									X							X		
smooth alder	<i>Alnus serrulata</i>								X			X					X		
azalea	<i>Alnus serrulata</i>																X		
ragweed	<i>Ambrosia</i>																X		
downy serviceberry	<i>Amelanchier arborea</i>	X			X									X		X			
serviceberry, shadblow serviceberry, shadbush	<i>Amelanchier canadensis</i>														X			X	
allegheny serviceberry	<i>Amelanchier laevis</i>				X	X					X						X		
serviceberries, shadbush	<i>Amelanchier</i> spp.																X	X	
lead plant	<i>Amorpha canescens</i>			X	X		X		X			X					X		
Arkansas blue star flower	<i>Amsonia hubrectii</i>												X						
blue star, common blue star, eastern blue	<i>Amsonia tabernaemontana</i>						X					X						X	

Brokenstraw Creek Watershed Conservation Plan

Common Name(s)	Scientific Name	Dry Area Plant	Shady Area Plant	Shady Rain Garden Plant	Sunny Area Plant	Sunny Rain Garden Plant	Plant well suited for Banks	Cut Flower Garden Plant	Plant for near Lakes, Ponds or Streams	Soil Stabilizing Plant	Wet Area Plant	Plant for Wooded Areas	Deer Resistant Plant	Drought Tolerant Plant	Bee Attractant Plant	Bird Attractant Plant	Wildlife Attractant Plant	Butterfly Attractant Plant	Hummingbird Attractant Plant
big bluestem grass, turkeyfoot	<i>Andropogon gerardii</i>	X	X		X	X					X	X	X			X	X		
little bluestem grass	<i>Andropogon scoparius</i>	X			X	X		X				X	X	X	X	X			
broom sedge	<i>Andropogon virginicus</i>				X								X				X		
meadow anemone, Canada anemone	<i>Anemone canadensis</i>		X									X							
pasque flower	<i>Anemone patens</i>		X		X	X		X	X		X	X	X				X		
wood anemone	<i>Anemone quinquefolia</i>												X				X		
thimbleweed, tall anemone	<i>Anemone virginiana</i>		X		X														
pussytoes, woman's tobacco, plantain-leaved pussytoes	<i>Antennaria plantaginifolia</i>		X																
wild columbine, eastern columbine, Canadian columbine, indianhemp	<i>Aquilegia canadensis</i>										X						X	X	X
wild sarsaparilla	<i>Aralia nudicaulis</i>				X	X			X		X								
spikenard	<i>Aralia racemosa</i>					X									X	X	X		
bearberry	<i>Arctostaphylos uva-ursil</i>				X														
redtop grass	<i>Argostis gigantea</i>	X	X	X	X								X						
jack-in-the-pulpit	<i>Arisaema triphyllum</i>					X													
dutchmans pipevine	<i>Aristolochia macrophylla</i>														X			X	
red chokeberry	<i>Aronia arbutifolia</i>				X														
black chokeberry	<i>Aronia melanocarpa</i>											X							
goatsbeard, bride's feathers	<i>Aruncus dioicus</i>									X									
wild ginger	<i>Asarum canadense</i>		X									X							
poke milkweed, tall milkweed	<i>Asclepias exaltata</i>		X								X		X					X	

Brokenstraw Creek Watershed Conservation Plan

Common Name(s)	Scientific Name	Dry Area Plant	Shady Area Plant	Shady Rain Garden Plant	Sunny Area Plant	Sunny Rain Garden Plant	Plant well suited for Banks	Cut Flower Garden Plant	Plant for near Lakes, Ponds or Streams	Soil Stabilizing Plant	Wet Area Plant	Plant for Wooded Areas	Deer Resistant Plant	Drought Tolerant Plant	Bee Attractant Plant	Bird Attractant Plant	Wildlife Attractant Plant	Butterfly Attractant Plant	Hummingbird Attractant Plant
swamp milkweed, pink milkweed, white swamp milkweed	<i>Asclepias incarnata</i>	X																X	
purple milkweed	<i>Asclepias purpurascens</i>	X			X	X		X										X	
common milkweed	<i>Asclepias syriaca</i>		X											X			X	X	
butterflyweed, butterfly flower	<i>Asclepias tuberosa</i>					X					X					X		X	
whorled milkweed, horsetail milkweed	<i>Asclepias verticillata</i>		X				X					X						X	
pawpaw	<i>Asimina triloba</i>	X			X							X	X	X		X		X	
ebony spleenwort	<i>Asplenium platyneuron</i>				X	X		X					X	X					
blue wood aster, wood aster	<i>Aster cordifolius</i>					X					X		X		X			X	
white wood aster	<i>Aster divaricatus</i>	X	X								X	X						X	
heath aster	<i>Aster ericoides</i>				X						X							X	
smooth aster	<i>Aster laevis</i>	X						X					X						
dark leaf calico aster	<i>Aster lateriflorus</i>		X								X							X	
stiff-leaf aster, flaxleaf whitetop aster	<i>Aster linariifolius</i>										X			X					
big leaf aster	<i>Aster macrophyllus</i>		X		X				X										
New England aster	<i>Aster novae-angliae</i>				X						X		X			X	X	X	
New York aster	<i>Aster novi-belgii</i>					X					X							X	
aromatic aster	<i>Aster oblongifolius</i>		X									X	X					X	
purple-stemmed aster	<i>Aster puniceus</i>	X			X													X	
silky aster	<i>Aster sericeus</i>				X														
aster	<i>Aster spp</i>								X		X							X	
flat-topped aster	<i>Aster umbellatus</i>		X					X				X	X		X	X		X	

Brokenstraw Creek Watershed Conservation Plan

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lady fern	<i>Athyrium filix-femina</i>				X	X					X								
white wild indigo	<i>Baptisia alba</i>		X				X					X							
blue false indigo, wild indigo, false blue indigo	<i>Baptisia australis</i>												X					X	
cream wild indigo	<i>Baptisia leucophaea</i>		X										X			X			
dwarf wild indigo	<i>Baptisia minor</i>		X									X							
flare false indigo	<i>Baptisia solar</i>		X			X												X	
yellow wild indigo	<i>Baptisia sphaerocarpa</i>				X														
prairieblues wild indigo	<i>Baptisia starlite</i>		X									X	X	X		X		X	
yellow birch	<i>Betula alleghaniensis</i>																X		
birch	<i>Betula lenta</i>															X	X		
river birch	<i>Betula nigra</i>															X	X		
gray birch	<i>Betula populifolia</i>	X	X									X			X		X		
cross Vine	<i>Bignonia capreolata</i>	X			X			X					X	X		X			
boltonia, false aster	<i>Boltonia asteroides</i>	X			X														
sideoats grama	<i>Bouteloua curtipendula</i>												X				X		
bluejoint reedgrass	<i>Calamagrostis canadensis</i>	X	X		X								X						
American beautyberry	<i>Callicarpa americana</i>															X			
purple poppy mallow, winecups	<i>Callirhoe involucrata</i>							X											
bottlebrush	<i>Callistemon</i> spp.				X						X								
marsh marigold, marsh yellow marigold, cowslip	<i>Caltha palustris</i>				X	X	X				X		X		X				

Brokenstraw Creek Watershed Conservation Plan

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sweetshrub, Carolina allspice	<i>Calycanthus floridus</i>		X		X											X			
tall bellflower	<i>Campanula americana</i>				X														
creeping bellflower	<i>Campanula rapunculoides</i>	X	X		X	X						X	X			X		X	
trumpet vine, trumpet-creepe	<i>Campsis radicans</i>				X												X		
cut-leaf toothwort	<i>Cardamine concatenata</i>											X							
creek sedge	<i>Carex amphibola</i>											X			X				
appalachian sedge	<i>Carex appalachica</i>	X	X		X	X		X	X			X	X		X	X			
fringed sedge	<i>Carex crinita</i>	X	X		X			X				X							
bristleleaf sedge	<i>Carex eburnea</i>														X				
blue wood sedge	<i>Carex glaucoidea</i>														X				
gray's sedge	<i>Carex grayi</i>					X					X								
Ohio sedge	<i>Carex muskingumensis</i>								X										
Pennsylvania sedge	<i>Carex pensylvanica</i>				X	X					X								
plantainleaf sedge, seersucker sedge	<i>Carex plantaginea</i>				X														
silver sedge	<i>Carex platyphylla</i>					X					X								
broad-leaf sedge	<i>Carex siderosticha</i>	X			X								X	X					
sedges	<i>Carex spp.</i>				X												X		
owl-fruit sedge	<i>Carex stipata</i>				X											X			
upright sedge, tussock sedge	<i>Carex stricta</i>		X																
fox sedge	<i>Carex volpinoidea</i>		X		X					X			X				X		
American hornbeam, ironwood	<i>Carpinus caroliniana</i>		X		X		X					X	X		X				
hornbeam	<i>Carpinus spp.</i>				X													X	

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sweet pignut hickory	<i>Carya glabra</i>															X			
shagbark hickory	<i>Carya ovata</i>				X	X					X					X	X	X	
hickories	<i>Carya</i> spp.		X	X			X					X	X		X		X		
mockernut hickory	<i>Carya tomentosa</i>		X									X						X	
blue cohosh, papoose root	<i>Caulophyllum thalictroides</i>															X			
wild lilac or New Jersey tea	<i>Ceanothus americanus</i>				X													X	X
American bittersweet	<i>Celastrus scandens</i>		X	X	X	X			X		X	X	X				X	X	
hackberry, sugarberry	<i>Celtis occidentalis</i>	X			X				X		X		X				X	X	
buttonbush	<i>Cephalanthus occidentalis</i>		X		X	X		X	X		X		X	X		X	X		
eastern redbud	<i>Cercis canadensis</i>				X								X				X		
partridge pea	<i>Chamaecrista fasciculata</i>											X							
wild sensitive-plant	<i>Chamaecrista nictitans</i>				X			X						X					
atlantic white cedar	<i>Chamaecyparis thyoides</i>	X			X														
leatherleaf	<i>Chamaedaphne calyculata</i>	X																	
river oats, northern sea oats, indian woodoats	<i>Chasmanthium latifolium</i>		X										X			X			
white turtlehead	<i>Chelone glabra</i>															X			X
pink turtlehead	<i>Chelone lyonii</i>		X	X			X					X	X						
turtlehead	<i>Chelone</i> spp.	X			X	X		X	X		X		X		X				
fringetree	<i>Chionanthus virginicus</i>									X									
green-and-gold, gold star	<i>Chrysogonum virginianum</i>			X		X						X	X						
southern green and gold	<i>Chrysogonum virginianum var. australe</i>				X								X						

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Maryland golden aster, golden aster	<i>Chrysopsis mariana</i>		X								X	X	X						
hairy golden aster	<i>Chrysopsis villosa</i>											X							
chicory	<i>Cichorium intybus</i>		X		X	X				X			X	X		X			
mountain bugbane, American bugbane	<i>Cimicifuga americanus</i>	X	X					X	X					X					
fairy candles	<i>Cimicifuga racemosa</i>		X								X								
field thistle	<i>Cirsium discolor</i>		X									X	X			X			
spring beauty	<i>Claytonia virginica</i>	X	X				X						X		X			X	
virgin's bower, devil's darning needles, clematis	<i>Clematis virginiana</i>											X							
summersweet, sweet pepperbush	<i>Clethra alnifolia</i>	X			X														
bluebeard-lily, corn-lily	<i>Clintonia borealis</i>	X																	
blue-eyed mary	<i>Collinsia verna</i>		X		X	X			X		X	X	X			X		X	
sweet-fern	<i>Comptonia peregrina</i>		X									X	X			X			
blue mistflower	<i>Conoclinium coelestinum</i>											X							
sand coreopsis, lanceleaf tickseed	<i>Coreopsis lanceolata</i>										X								X
passion tickseed	<i>Coreopsis limerock</i>												X						X
prairie coreopsis	<i>Coreopsis palmata</i>		X		X	X			X		X	X	X			X			
tickseed	<i>Coreopsis pubescens</i>												X			X		X	
pink coreopsis, pink tickseed	<i>Coreopsis rosea</i>										X								
tickseed	<i>Coreopsis</i> spp.										X					X			
coreopsis, tall tickseed	<i>Coreopsis tripteris</i>		X				X		X			X	X		X				

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threadleaf coreopsis, threadleaf tickseed, whorled coreopsis	<i>Coreopsis verticillata</i>															X			
pagoda dogwood	<i>Cornus alternifolia</i>	X																	
silky dogwood	<i>Cornus amomum</i>	X			X								X				X		
flowering dogwood	<i>Cornus florida</i>												X				X		
swamp dogwood, stiff dogwood	<i>Cornus foemina</i>	X			X	X		X			X		X						
cornelian	<i>Cornus mas</i>																X		
gray dogwood, red paniced dogwood	<i>Cornus racemosa</i>		X									X	X			X	X		
red osier dogwood, redbud dogwood	<i>Cornus sericea</i>	X	X				X				X	X	X	X		X	X		
dogwoods	<i>Cornus</i> spp.																X		
yellow harlequin	<i>Corydalis flavula</i>																X		
rock harlequin	<i>Corydalis sempervirens</i>																X		
American hazelnut, American filbert	<i>Corylus americana</i>																X		
cockspur hawthorn	<i>Crataegus crusgalli</i>																X		
Washington hawthorn	<i>Crataegus phaenopyrum</i>	X			X												X		
dotted hawthorn	<i>Crataegus punctata</i>			X	X						X	X	X						
hawthorn	<i>Crataegus</i> spp.												X				X		
crocus	<i>Crocus</i> spp.																X		
orchard grass	<i>Dactylis glomerata</i>																X		
white prairie clover	<i>Dalea candida</i>		X		X	X		X	X		X	X	X		X				
tall larkspur	<i>Delphinium exaltatum</i>																X		
dwarf larkspur	<i>Delphinium tricorne</i>								X		X								

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hayscented fern	<i>Dennstaedtia punctilobula</i>							X											
hairgrass	<i>Deshampias flexuosa</i>		X				X					X	X						
sweet william	<i>Dianthus barbatus</i>				X	X										X			
squirrel corn	<i>Dicentra canadensis</i>	X										X				X			
dutchmans breeches	<i>Dicentra cucullaria</i>	X			X					X						X			
wild bleeding heart, turkeycorn, fringed bleeding heart	<i>Dicentra eximia</i>	X			X					X						X			
bush honeysuckle	<i>Diervilla lonicera</i>				X	X							X	X	X				
persimmon	<i>Diospyros virginiana</i>				X	X										X	X	X	
leatherwood	<i>Dirca palustris</i>				X	X					X		X			X			
shooting-star, American cowslips	<i>Dodecatheon meadia</i>	X													X				
parasol whitetop aster	<i>Doellingeria umbellata</i>				X						X								
goldie's wood fern	<i>Dryopteris goldiana</i>											X							
leather wood fern, marginal wood fern, evergreen wood fern, eastern wood fern	<i>Dryopteris marginalis</i>	X			X								X					X	
shield fern	<i>Dryopteris</i> spp.				X								X			X			
pale coneflower	<i>Echinacea pallida</i>											X	X						
yellow coneflower	<i>Echinacea paradoxa</i>					X							X						
purple coneflower	<i>Echinacea purpurea</i>			X	X	X							X		X	X	X		
coneflower	<i>Echinacea</i> spp.	X															X	X	
wild millet	<i>Echinochloa crus-galli</i>															X			
Canada wildrye	<i>Elymus canadensis</i>				X								X						

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bottlebrush grass	<i>Elymus hystrix</i>	X			X	X		X					X	X					
riverbank wild rye grass	<i>Elymus riparius</i>		X									X			X				
wild rye	<i>Elymus virginicus</i>	X																	
fireweed	<i>Epilobium angustifolium</i>				X														
horsetail	<i>Equisetum species</i>	X			X					X			X			X			
blue love grass	<i>Eragrostis elliottii</i>	X			X							X	X						
purple love grass, showy love grass	<i>Eragrostis spectabilis</i>										X							X	
daisy fleabane	<i>Erigeron strigosus</i>		X		X	X					X								
rattlesnake master	<i>Eryngium yuccifolium</i>				X	X		X			X	X	X			X		X	
trout lily, dogtooth violet, yellow trout lily, adder's tongue	<i>Erythronium americanum</i>																	X	
strawberry-bush	<i>Euonymus americanus</i>					X			X		X		X	X				X	
joe-pye weed, trumpetweed	<i>Eupatoriadelphus fistulosus</i>		X															X	
mistflower, blue mistflower, hardy ageratum	<i>Eupatorium coelestinum</i>				X	X		X			X		X	X				X	
little joe-pye weed	<i>Eupatorium dubium</i>				X	X					X		X	X	X	X		X	
hyssop-leaved boneset, thoroughwort	<i>Eupatorium hyssopifolium</i>	X			X			X						X				X	
gateway	<i>Eupatorium maculatum</i>											X							
spotted joe-pye weed	<i>Eupatorium maculatum</i>		X									X	X		X				
boneset, thoroughwort	<i>Eupatorium perfoliatum</i>												X			X			
purple joe-pyeweed, joe pye flower, sweetcented joe-pyeweed	<i>Eupatorium purpureum</i>		X		X	X							X			X			
snakeroot	<i>Eupatorium rugosm</i>		X			X					X		X						

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joe-pye-weed	<i>Eupatorium</i> spp.		X				X					X					X	X	
flowering spurge	<i>Euphorbia corollata</i>	X			X	X			X				X	X	X				
white wood aster	<i>Eurybia divaricata</i>				X							X	X		X			X	
flat-top goldentop	<i>Euthamia graminifolia</i>	X					X					X	X			X			
American beech	<i>Fagus grandiflora</i>		X			X		X	X			X	X				X		
beech	<i>Fagus</i> spp.	X															X		
queen-of-the-prairie	<i>Filipendula rubra</i>	X	X									X	X	X					
dwarf fothergilla	<i>Fothergilla gardenii</i>				X								X			X			
wild strawberry	<i>Fragaria virginiana</i>					X					X								
white ash	<i>Fraxinus americana</i>				X												X		
black ash	<i>Fraxinus nigra</i>															X			
green ash	<i>Fraxinus pennsylvanica</i>		X		X											X			
ash	<i>Fraxinus</i> spp.	X			X		X						X						
wandflower, beetleweed	<i>Galax urceolata</i>		X			X										X		X	
wintergreen, eastern teaberry	<i>Gaultheria procumbens</i>				X	X		X			X	X	X			X			
windflower	<i>Gaura lindheimeri</i>		X					X				X	X						
huckleberry	<i>Gaylussacia baccata</i>												X			X			
boxhuckleberry	<i>Gaylussacia brachycera</i>	X			X	X						X							
evening trumpet flower, Carolina jessamine	<i>Gelsemium sempervirens</i>		X		X						X	X				X			

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bottle gentian, closed gentian, blind gentian	<i>Gentiana clausa</i>				X	X										X			
wild geranium, wild cranesbill, wood geranium	<i>Geranium maculatum</i>				X													X	
cranesbill geranium	<i>Geranium sanguineum</i>																X		
prairie smoke	<i>Geum triflorum</i>	X			X	X		X					X			X		X	
American ipecac	<i>Gillenia stipulata</i>		X	X								X	X			X			
honey locust	<i>Gleditsia triacanthos</i>			X	X	X					X		X		X			X	
fowl mannagrass	<i>Glyceria striata</i>																X		
downy rattlesnake plantain	<i>Goodyera pubescens</i>		X									X						X	
Carolina silverbell	<i>Halesia carolina</i>	X	X		X								X			X		X	
witchhazel, American witch hazel	<i>Hamamelis virginiana</i>				X											X		X	
english ivy	<i>Hedera helix</i>																X		
helen's flower; common sneezeweed, dog-tooth daisy	<i>Helenium autumnale</i>		X												X				
sneezeweed, purple-headed helen's flower	<i>Helenium flexuosum</i>		X		X	X					X		X			X		X	
swamp sunflower	<i>Helianthus angustifolius</i>	X			X	X							X		X	X		X	
thin-leaf sunflower	<i>Helianthus decapetalus</i>	X														X		X	
woodland sunflower	<i>Helianthus divaricatus</i>	X	X		X		X					X		X		X			
tall sunflower, giant sunflower	<i>Helianthus giganteus</i>		X									X	X						
small-headed sunflower	<i>Helianthus microcephalus</i>				X														
western sunflower	<i>Helianthus occidentalis</i>				X							X			X				
dwarf perennial sunflower	<i>Helianthus salicifolius</i>		X																

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sunflower	<i>Helianthus</i> spp.	X	X									X	X	X			X		
oxeye daisy, smooth oxeye, false	<i>Heliopsis helianthoides</i>	X			X								X			X		X	
swamp pink	<i>Helonias bullata</i>		X		X								X						
daylily	<i>Heemerocallis</i>																X		
roundlobe hepatica, sharplobe hepatica	<i>Hepatica acutiloba</i>	X																	
alumroot, coral bells	<i>Heuchera americana</i>		X									X							
hairy alum root	<i>Heuchera villosa</i>	X																	
shuttleworth's ginger	<i>Hexastylis shuttleworthii</i>				X	X			X				X						
scarlet rose mallow	<i>Hibiscus cocceniis</i>				X	X					X		X			X			
swamp rose mallow, marsh hibiscus	<i>Hibiscus moscheutos</i>			X					X		X	X	X				X		
rattlesnake weed	<i>Hieracium venosum</i>											X							
bluets	<i>Houstonia caerulea</i>				X						X								
wood hyacinth	<i>Hyacinthoides hispanica</i>																X		
wild hydrangea	<i>Hydrangea arborescens</i>				X											X			
oakleaf hydrangea	<i>Hydrangea quercifolia</i>		X																
goldenseal, yellow root	<i>Hydrastis canadensis</i>						X					X		X					
maple-leaved waterleaf, broad-leaved waterleaf	<i>Hydrophyllum canadense</i>										X		X						
Virginia waterleaf, eastern waterleaf	<i>Hydrophyllum virginianum</i>		X						X			X	X						
saint john's wort	<i>Hypericum calycinum</i>			X	X	X					X		X	X		X			
dense hypericum	<i>Hypericum densiflorum</i>		X			X							X			X			
shrubby saint john's wort	<i>Hypericum prolificum</i>		X	X		X					X		X			X			

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great saint john's wort	<i>Hypericum pyramidatum</i>		X				X	X				X	X						
yellow star-grass	<i>Hypoxis hirsuta</i>		X	X	X				X					X		X			
inkberry	<i>Ilex glabra</i>				X	X											X		
American holly	<i>Ilex opaca</i>				X	X		X	X		X		X	X			X		
winterberry	<i>Ilex verticillata</i>						X					X	X				X		
jewelweed	<i>Impatiens capensis</i>														X				
pale jewelweed, touch-me-not	<i>Impatiens pallida</i>																X		
impatiens	<i>Impatiens</i> spp.																X		
crested iris	<i>Iris cristata</i>		X		X						X	X					X		
white crested iris	<i>Iris cristata alba</i>	X			X								X						
slender blue flag	<i>Iris prismatica</i>	X			X								X	X			X		
iris	<i>Iris</i> spp.																X		
blue flag iris, northern blue flag	<i>Iris versicolor</i>										X								
Virginia sweetspire, tassle-white	<i>Itea virginiana</i>	X			X						X			X			X		
twinleaf	<i>Jeffersonia diphylla</i>				X	X			X	X	X						X		
butternut	<i>Juglans cinerea</i>																	X	
black walnut	<i>Juglans nigra</i>	X	X									X							
Canada rush	<i>Juncus canadensis</i>			X	X				X						X				
soft rush	<i>Juncus effusus</i>	X																	
eastern red cedar	<i>Juniperus virginiana</i>				X												X	X	
mountain laurel	<i>Kalmia latifolia</i>				X												X		
june grass	<i>Koeleria cristata</i>	X								X									

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false boneset	<i>Kuhnia eupatorioides</i>				X														
flatpea	<i>Lathyrus sylvestris</i>	X			X	X									X				
rice cutgrass	<i>Leersia oryzoides</i>					X							X			X	X		
round headed bush clover	<i>Lespedeza capitata</i>				X			X	X										
fetterbush	<i>Leucothoe racemosa</i>			X	X	X		X	X		X							X	
rough blazing star	<i>Liatris aspera</i>	X			X								X						
cylindrical blazing star	<i>Liatris cylindracea</i>				X	X					X		X			X			
meadow blazing star	<i>Liatris ligulistylis</i>		X	X								X	X					X	
appalachian blazing star	<i>Liatris microcephala</i>			X			X												
prarie blazing star	<i>Liatris pycnostachya</i>	X			X							X	X	X				X	
northern blazing star	<i>Liatris scariosa</i>														X				
dense blazing-star, gayfeather, spike gayfeather	<i>Liatris spicata</i>				X													X	X
blazing-star, gayfeather	<i>Liatris</i> spp.	X	X															X	
button blazing star, scaly blazing star, gayfeather	<i>Liatris squarrosa</i>											X							
wood lily	<i>Lilium philadelphicum</i>				X													X	
lily	<i>Lilium</i> spp.																X		
turk's cap lily	<i>Lilium superbum</i>				X	X					X		X			X			
Canada lily, wild yellow	<i>Lillium canadense</i>			X					X							X		X	
spicebush	<i>Lindera benzoin</i>														X				
sweetgum	<i>Liquidambar styraciflua</i>	X			X		X						X	X					
tuliptree	<i>Liriodendron tulipifera</i>															X			X

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cardinal flower, red cardinal flower	<i>Lobelia cardinalis</i>														X		X		X
beechwood blend	<i>Lobelia cardinalis x siphilitica</i>	X	X									X	X					X	X
indian tobacco	<i>Lobelia inflata</i>	X																	
great blue lobelia	<i>Lobelia siphilitica</i>							X											X
pale spiked lobelia	<i>Lobelia spicata</i>		X		X								X				X		
trumpet honeysuckle, coral honeysuckle	<i>Lonicera sempervirens</i>					X			X	X	X						X	X	X
birdsfoot trefoil	<i>Lotus corniculatus</i>																X		
seedbox	<i>Ludwigia alternifolia</i>	X			X	X		X			X		X			X			
wild lupine, indian beet, old maids bonnets, blue lupine, sundial lupine	<i>Lupinus perennis</i>	X		X		X									X				
hairy woodrush, woodrush	<i>Luzula acuminata</i>	X			X							X	X		X				
magnolia	<i>Magnolia spp.</i>		X														X		
sweetbay magnolia	<i>Magnolia virginiana</i>	X																	
Canada mayflower	<i>Maianthemum canadense</i>	X	X				X					X	X				X		
feathery false lily of valley	<i>Maianthemum racemosum</i>		X		X												X		
American crabapple	<i>Malus glaucescens</i>																X		
apple	<i>Malus spp.</i>																X		
barbara's buttons	<i>Marshallia grandiflora</i>				X								X				X		X
ostrich fern	<i>Matteuccia struthiopteris</i>		X		X	X			X			X	X	X				X	
meehan's mint, creping ground mint	<i>Meehania cordata</i>											X						X	
Virginia bluebells	<i>Mertensia virginica</i>				X													X	

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sharpwing monkeyflower, winged monkey	<i>Mimulus alatus</i>		X									X	X						
monkey flower, square-stemmed monkey flower	<i>Mimulus ringens</i>															X		X	
partridgeberry	<i>Mitchella repens</i>				X														
bishops cap, mitrewort	<i>Mitella diphylla</i>		X		X						X			X					
basil balm	<i>Monarda clinopodia</i>	X			X														X
bee balm, oswego tea, bergamot, scarlet bee balm	<i>Monarda didyma</i>	X										X						X	X
wild bergamot, lavender bergamot, bee balm	<i>Monarda fistulosa</i>		X	X	X	X				X	X		X	X		X			X
purple bergamot	<i>Monarda media</i>		X	X		X		X	X			X	X						X
spotted bee balm	<i>Monarda punctata</i>				X	X			X		X		X						
beebalm, monarda	<i>Monarda</i> spp.	X															X		X
red mulberry	<i>Morus rubra</i>				X			X									X		
pink muhly grass	<i>Muhlenbergia capillaris</i>					X							X						
bayberry, northern bayberry	<i>Myrica pennsylvanica</i>		X								X	X					X		
black gum, tupelo, sour gum	<i>Nyssa sylvatica</i>	X															X		
sharp-leaved aster, whorled aster	<i>Oclemea acuminatus</i>		X	X			X					X	X						
evening primrose, common evening	<i>Oenothera biennis</i>											X							
sundrops, fireworks	<i>Oenothera fruticosa</i>				X				X	X									
stiff goldenrod	<i>Oligoneuron rigidum</i>				X												X		
sensitive fern	<i>Onoclea sensibilis</i>																X		

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pricklypear, eastern pricklypear cactus, devil's tongue	<i>Opuntia humifusa</i>				X				X		X		X			X			
aniseroot	<i>Osmorhiza longistylis</i>	X			X	X	X					X	X	X					
cinnamon fern	<i>Osmunda cinnamomea</i>				X														
interrupted fern	<i>Osmunda claytoniana</i>				X	X			X		X		X		X				
royal fern	<i>Osmunda regalis</i>	X				X							X						
hop-hornbeam	<i>Ostrya virginiana</i>											X				X			
sourwood	<i>Oxydendrum arboreum</i>															X			
allegheny pachysandra, allegheny spurge	<i>Pachysandra procumbens</i>				X														
goldenragwort	<i>Packera aurea</i>		X					X											
peony	<i>Paeonia</i> spp.																X		
American ginseng	<i>Panax quinquefolius</i>				X											X			
atlantic costal panic grass	<i>Panicum amarulum</i>															X			
panic grass	<i>Panicum</i> spp.																X		
switch grass, panic grass	<i>Panicum virgatum (amarum)</i>				X	X											X		
wild quinine	<i>Parthenium integrifolium</i>	X	X																
Virginia creeper	<i>Parthenocissus quinquefolia</i>		X								X		X				X		
wild passion vine	<i>Passiflora incarnata</i>				X	X							X		X			X	
passionflower	<i>Passiflora</i> spp.		X															X	
arrow arum	<i>Peltandra virginica</i>																X		
beardtongue, foxglove, white beardtongue, talus slope penstemon	<i>Penstemon digitalis</i>											X							X

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hairy beardtongue	<i>Penstemon hirsutus</i>				X													X	X
small's beardtongue	<i>Penstemon smallii</i>	X	X						X			X	X						
beardstongue	<i>Penstemon</i> spp.		X																X
ditch stonecrop	<i>Penthorum sedoides</i>				X														
Carolina phlox	<i>Phlox carolina</i>																X		
woodland phlox, wild sweet william, meadow phlox, blue wood phlox	<i>Phlox divaricata</i>	X	X						X			X	X						
meadow phlox	<i>Phlox maculata</i>											X							
summer phlox, garden phlox, perennial phlox	<i>Phlox paniculata</i>																X		X
downy phlox	<i>Phlox pilosa</i>	X			X	X					X				X	X			X
phlox	<i>Phlox</i> spp.																X		
creeping phlox, summer phlox	<i>Phlox stolonifera</i>																X		
moss phlox, mountain phlox, moss pink	<i>Phlox subulata</i>												X						
ninebark	<i>Physocarpus opulifolius</i>				X	X					X			X		X			
obedient plant, false dragonhead	<i>Physostegia virginiana</i>			X					X			X	X						
pokeweed	<i>Phytolacca dodecandra</i>																X		
shortleaf pine	<i>Pinus echinata</i>				X	X					X				X				
pond pine	<i>Pinus palustris</i>						X					X			X				
pitch pine	<i>Pinus rigida</i>	X			X			X					X		X	X	X		
pinus	<i>Pinus</i> spp.	X															X		
eastern white pine	<i>Pinus strobus</i>														X		X		
Virginia pine	<i>Pinus virginiana</i>							X											

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American sycamore	<i>Platanus occidentalis</i>		X								X	X							
Kentucky blue-grass	<i>Poa pratensis</i>																X		
roughstalk bluegrass	<i>Poa trivialis</i>										X								
mayapple, mandrake	<i>Podophyllum peltatum</i>		X					X				X	X				X		
greek valerian, jacob's ladder, greek valerian, spreading jacob's ladder	<i>Polemonium reptans</i>			X	X	X			X		X		X						
variegated native jacob's ladder	<i>Polemonium</i> spp.				X	X													
smooth solomon seal	<i>Polygonatum biflorum</i>				X														
solomon's seal, giant solomon's seal	<i>Polygonatum canaliculatum</i>		X		X				X		X		X						
downy solomon's seal	<i>Polygonatum pubescens</i>	X														X			
Pennsylvania smartweed	<i>Polygonum pennsylvanicum</i>																X		
christmas fern	<i>Polystichum acrostichoides</i>																X		
tassel fern	<i>Polystichum polyblephorum</i>																X		
pickerelweed	<i>Pontederia cordata</i>																X		X
aspen	<i>Populus</i> spp.																X		
bowman's root, indian physic, American ipecac	<i>Porteranthus trifoliata</i>																X		
long-leaf pondweed	<i>Potamogeton nodosus</i>																X		
sago pondweed	<i>Potamogeton pectinatus</i>																X		
prairie cinquefoil	<i>Potentilla arguta</i>				X														
bush cinquefoil, shrubby cinquefoil	<i>Potentilla fruticosa</i>				X	X					X						X		
Norwegian cinquefoil	<i>Potentilla norvegicia</i>	X			X								X	X			X		
three-toothed cinquefoil	<i>Potentilla tridentata</i>		X								X		X					X	

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common selfheal	<i>Prunella vulgaris</i>			X					X			X								
wild plum	<i>Prunus americana</i>	X										X								
pin cherry	<i>Prunus pensylvanica</i>		X											X						
black cherry, wild cherry	<i>Prunus serotina</i>				X					X	X					X	X			
cherries	<i>Prunus</i> spp.			X			X		X			X	X				X			
choke cherry	<i>Prunus virginiana</i>		X										X			X	X			
hoary mountain mint	<i>Pycnanthemum incanum</i>				X	X		X				X	X	X	X	X				
showy mountain mint, clustered mountain mint, mountain mint	<i>Pycnanthemum muticum</i>									X										
slenderleaf mountain mint	<i>Pycnanthemum tenuifolium</i>		X										X			X				
Virginia mountain mint	<i>Pycnanthemum virginianum</i>				X															
white oak	<i>Quercus alba</i>				X	X											X			
swamp oak, swamp white oak	<i>Quercus bicolor</i>	X			X		X						X		X		X			
scarlet oak	<i>Quercus coccinea</i>					X											X			
bur oak	<i>Quercus macrocarpa</i>	X																		
pin oak	<i>Quercus palustris</i>												X				X			
willow oak	<i>Quercus phellos</i>															X	X			
chestnut oak	<i>Quercus prinus</i>																X			
red oak	<i>Quercus rubra</i>				X	X		X	X		X		X			X	X			
oaks	<i>Quercus</i> spp.																X			
black oak	<i>Quercus velutina</i>															X				
prairie coneflower	<i>Ratibida pinnata</i>	X	X																	
Maryland meadow beauty	<i>Rhexia mariana</i>				X										X					

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meadow beauty, handsome hairy	<i>Rhexia virginica</i>	X			X						X								
sweet azalea	<i>Rhododendron arborescens</i>					X					X								
rosebay rhododendron	<i>Rhododendron maximum</i>		X									X						X	
swamp azalea	<i>Rhododendron viscosum</i>	X			X								X	X		X			
rhododendron	<i>Rhododendron</i> spp.																X		
swamp azalea	<i>Rhododendron viscosum</i>	X			X								X	X		X			
rhododendron	<i>Rhododendron</i> spp.																X		
fragrant sumac	<i>Rhus aromatica</i>															X			
dwarf-winged sumac	<i>Rhus copalina</i>				X					X							X		
smooth sumac	<i>Rhus glabra</i>				X												X		
sumacs	<i>Rhus</i> spp.	X			X			X						X		X	X		
staghorn sumac	<i>Rhus typhina</i>		X									X					X		
pasture rose, Carolina rose	<i>Rosa Carolina</i>		X		X		X					X	X	X	X		X		
swamp rose	<i>Rosa palustris</i>					X							X				X	X	
rose	<i>Rosa</i> spp.																X		
Virginia rose	<i>Rosa virginiana</i>	X	X											X			X		
common blackberry	<i>Rubus allegheniensis</i>		X									X	X				X		
flowering raspberry	<i>Rubus odoratus</i>	X			X			X						X			X		
thimbleberry	<i>Rubus parviflorus</i>		X			X					X		X			X			
blackberry, raspberry	<i>Rubus</i> spp.																X		
eastern coneflower, organe coneflower	<i>Rudbeckia fulgida</i>		X																
black-eyed susan	<i>Rudbeckia hirta</i>		X	X					X		X	X	X			X			

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green-headed coneflower, cutleaf coneflower	<i>Rudbeckia lanciniata</i>											X							
great coneflower	<i>Rudbeckia maxima</i>														X				
sweet coneflower	<i>Rudbeckia subtomentosa</i>	X	X		X		X					X	X	X				X	
brown-eyed-susan, three lobed coneflower	<i>Rudbeckia triloba</i>		X										X			X			
Carolina wild petunia	<i>Ruellia caroliniensis</i>										X								
fringe-leaved petunia, hairy wild petunia, wild petunia	<i>Ruellia humilis</i>		X				X		X		X	X	X		X				
limestone petunia	<i>Ruellia strepens</i>	X			X														
pussy willow	<i>Salix discolor</i>		X				X					X	X	X					
sandbar willow	<i>Salix exigua</i>		X					X				X	X			X			
black willow	<i>Salix nigra</i>			X	X			X				X	X	X			X		
silky willow	<i>Salix sericea</i>									X	X				X		X		
willow	<i>Salix spp.</i>																X		
lyreleaf sage, purple knockout	<i>Salvia lyrata</i>				X												X		
elderberry, American elder, common elderberry	<i>Sambucus canadensis</i>	X	X		X		X	X				X	X	X	X	X	X		
red-berried elder	<i>Sambucus racemosa ssp. pubens</i>	X																X	
bloodroot	<i>Sanguinaria canadensis</i>		X																
swamp burnet	<i>Sanguisorba canadense</i>	X																	
sassafras	<i>Sassafras albidum</i>										X							X	
water dragon, swamp lily, lizards tail	<i>Saururus cernuus</i>	X			X							X							
swamp saxifrage	<i>Saxifraga pensylvanica</i>														X				
early saxifrage	<i>Saxifraga virginensis</i>				X	X		X	X		X				X				

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little bluestem	<i>Schizachyrium scoparium</i>					X			X		X		X				X	X	
hardstem bullrush	<i>Scirpus acutus</i>		X		X												X		
black bullrush, green bullrush	<i>Scirpus atrovirens</i>		X									X							
wool grass, wool rush	<i>Scirpus cyperinus</i>				X														
three-square bullrush	<i>Scirpus pungens</i>											X					X		
softstem bullrush	<i>Scirpus tabermontanii</i>									X	X						X		
hoary skullcap, hyssop skullcap, skullcap	<i>Scutellaria incana</i>								X			X							
hyssop skullcap	<i>Scutellaria integrifolia</i>															X			
Allegheney skullcap	<i>Scutellaria serrata</i>				X	X			X		X								
sedum	<i>Sedum</i> spp.																X		
wild stonecrop, woodland stonecrop, stonecrop	<i>Sedum ternatum</i>															X			
golden ragwort, golden groundseal, squaw-weed	<i>Senecio aureus</i>											X						X	
northern wild senna, wild senna, American	<i>Senna hebecarpa</i>	X	X									X	X		X				
Maryland senna	<i>Senna marilandica</i>	X																	
bristlegrass	<i>Setaria</i> spp.																X		
wild pink, pink campion	<i>Silene caroliniana</i>				X	X				X			X			X		X	
royal catchfly	<i>Silene regia</i>	X																X	
starry campion	<i>Silene stellata</i>		X	X	X						X	X	X						
fire pink	<i>Silene virginica</i>		X									X	X						
compass plant	<i>Silphium laciniatum</i>												X						
cup plant	<i>Silphium perfoliatum</i>	X	X		X								X						

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prairie dock	<i>Silphium terebinthinaceum</i>														X				
whorled rosenweed	<i>Silphium trifoliatum</i>				X											X		X	
blue-eyed grass, select blue-eyed grass	<i>Sisyrinchium angustifolium</i>	X										X							
false solomon's seal	<i>Smilacina racemosa</i>						X					X						X	
greenbriar	<i>Smilax</i> spp.																X		
silverrod, white goldenrod	<i>Solidago bicolor</i>				X												X		
bluestem goldenrod, wreath goldenrod	<i>Solidago caesia</i>				X											X	X		
zigzag goldenrod	<i>Solidago flexicaulis</i>		X		X											X	X	X	
flat top goldenrod	<i>Solidago graminifolia</i>	X	X	X	X							X	X		X	X			
early goldenrod	<i>Solidago juncea</i>												X						
gray goldenrod	<i>Solidago nemoralis</i>				X														
anisescented goldenrod	<i>Solidago odora</i>		X				X												
roughleaf goldenrod	<i>Solidago patula</i>				X													X	
riddell's goldenrod	<i>Solidago reddellii</i>												X						
stiff goldenrod	<i>Solidago rigida</i>					X							X					X	
wrinkleleaf goldenrod, rough-stemmed goldenrod	<i>Solidago rugosa</i>				X												X		
seaside goldenrod	<i>Solidago sempervirens</i>												X						
blue-stemmed, grey, or showy goldenrod	<i>Solidago speciosa</i>			X			X					X							
short-pappus goldenrod, autumn goldenrod	<i>Solidago sphacelata</i>		X									X	X						
goldenrod	<i>Solidago</i> spp.	X			X								X				X	X	
American mountain ash	<i>Sorbus americana</i>																X		
indian grass	<i>Sorghastrum nutans</i>															X	X		

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American bur-reed	<i>Sparganium americanum</i>			X								X	X			X			
giant bur-reed	<i>Sparganium eurycarpum</i>									X							X		
prairie cord grass	<i>Spartina pectinata</i>		X	X							X	X	X		X	X			
indian pink	<i>Spigelia marilandica</i>				X				X		X								
meadowsweet	<i>Spiraea alba</i>		X									X							
steeplesh	<i>Spiraea tomentosa</i>	X																	X
nodding ladies tresses	<i>Spiranthes cernua</i>										X								
fragrant lady's tresses	<i>Spiranthes cernua var. odorata</i>	X			X									X	X			X	
lady's tresses orchid	<i>Spiranthes odorata</i>	X	X		X	X	X			X		X	X	X	X	X		X	
narrow-leaved meadowsweet	<i>Spirea alba</i>				X	X					X			X		X		X	
broad-leaved meadowsweet	<i>Spirea latifolia</i>		X																
tall dropseed, rough dropseed, meadow dropseed	<i>Sporobolus compositus</i>				X								X						
prairie dropseed	<i>Sporobolus heterolepis</i>															X		X	
American bladdernut	<i>Staphylea trifolia</i>															X			
porcupine grass	<i>Stipa spartea</i>				X											X			
stokes' aster	<i>Stokesia laevis</i>								X	X	X								
wood poppy, celandine poppy	<i>Stylophorum diphyllum</i>				X														
snowberry	<i>Symphoricarpos</i>	X			X							X		X					
coralberry	<i>Symphoricarpos orbiculatus</i>		X									X					X		
blue heart-leaved aster	<i>Symphotrichum cordifolium</i>				X											X			
crooked-stem aster	<i>Symphotrichum prenanthoides</i>				X											X		X	
purple-stemmed aster	<i>Symphotrichum puniceum</i>	X			X														

Brokenstraw Creek Watershed Conservation Plan

Common Name(s)	Scientific Name	Dry Area Plant	Shady Area Plant	Shady Rain Garden Plant	Sunny Area Plant	Sunny Rain Garden Plant	Plant well suited for Banks	Cut Flower Garden Plant	Plant for near Lakes, Ponds or Streams	Soil Stabilizing Plant	Wet Area Plant	Plant for Wooded Areas	Deer Resistant Plant	Drought Tolerant Plant	Bee Attractant Plant	Bird Attractant Plant	Wildlife Attractant Plant	Butterfly Attractant Plant	Hummingbird Attractant Plant
short's aster	<i>Symphotrichum shortii</i>					X					X	X		X	X	X			
reclining aster	<i>Symphotrichum ericoides</i>									X									
calico aster	<i>Symphotrichum lateriflorum</i>														X				
white or frost aster	<i>Symphotrichum porteri</i>											X	X						
skunk cabbage	<i>Symplocarpus foetidus</i>				X	X			X	X						X			
bald cypress	<i>Taxodium distichum</i>	X			X							X							
yew	<i>Taxus spp.</i>																X		
meadow rue	<i>Thalictrum aquilegifolium</i>																X		
early meadow rue	<i>Thalictrum dioicum</i>				X						X								
tall meadow rue	<i>Thalictrum pubescens</i>				X											X			
rue anemone	<i>Thalictrum thalictroides</i>										X								
New York fern	<i>Thelypteris noveboracensis</i>	X			X								X		X	X			
foamflower, creeping foamflower	<i>Tiarella cordifolia</i>					X													
American linden or basswood	<i>Tilia americana</i>					X											X		
Mexican sunflower	<i>Tithonia rotundifolia</i>																X		
poison ivy	<i>Toxicodendron radicans</i>																X		
Ohio spiderwort, spiderwort	<i>Tradescantia ohiensis</i>				X											X			
spiderwort, Virginia spiderwort, common spiderwort	<i>Tradescantia virginiana</i>				X														
tassel rue	<i>Trautvetteria caroliniensis</i>		X																
blue curls	<i>Trichostema dichotomum</i>	X	X		X		X			X			X	X					
purple-top	<i>Tridens flavus</i>		X		X											X			
red clover	<i>Trifolium pratense</i>																X		

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white dutch clover	<i>Trifolium repens</i>																X		
southern trillium	<i>Trillium cuneatum</i>	X										X							
purple trillium, red trillium, wake robin, stinking benjamin, squawroot	<i>Trillium erectum</i>				X							X	X			X		X	
declined trillium, white wake-robin, drooping trillium	<i>Trillium flexipes</i>															X			
showy trillium, large flowering trillium	<i>Trillium grandiflorum</i>	X	X		X		X						X	X					
yellow trillium, southern	<i>Trillium luteum</i>			X								X							
prairie trillium, bloody noses	<i>Trillium recurvatum</i>		X			X					X	X	X			X			
toadshade, toad trillium	<i>Trillium sessile</i>	X	X		X	X		X			X		X	X	X	X		X	
trillium	<i>Trillium</i> spp.				X				X	X							X		
spreading globeflower	<i>Trollius laxus</i>	X															X		
eastern hemlock	<i>Tsuga canadensis</i>				X											X	X		
hemlock	<i>Tsuga Carrière</i>																X		
tulip	<i>Tulipa</i> spp.																X		
showy merrybells, large-flowered bellwort, wild oats	<i>Uvularia grandiflora</i>		X															X	
bellwort, merrybells	<i>Uvularia perfoliata</i>	X		X	X	X											X		X
wild oats	<i>Uvularia sessilifolia</i>				X								X						
lowbush blueberry	<i>Vaccinium angustifolium</i>				X								X				X		
highbush blueberry	<i>Vaccinium corymbosum</i>				X								X			X	X		
blueberries	<i>Vaccinium</i> spp.												X				X		
deerberry	<i>Vaccinium staminium</i>				X	X					X					X	X		

Brokenstraw Creek Watershed Conservation Plan

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regal lingonberry	<i>Vaccinium vitis-idaea</i>										X								
wild celery	<i>Vallisneria Americana</i>																X		
purple vervain	<i>Verbena canadensis</i>				X					X	X					X			
blue vervain, simpler's joy, swamp verbena, blue verbena	<i>Verbena hastata</i>			X									X		X				
hoary vervain	<i>Verbena stricta</i>															X			
tall ironweed	<i>Vernonia gigantea</i>				X						X					X			
tawny ironweed, upland ironweed	<i>Vernonia glauca</i>											X							
New York ironweed, broadleaf ironweed	<i>Vernonia noveboracensis</i>												X						
culver's root	<i>Veronicastrum virginicum</i>															X			
giant ironweed	<i>Verononia gigantea</i>														X	X			
mapleleaf viburnum	<i>Viburnum acerifolium</i>		X													X			
witherod, wild raisin	<i>Viburnum cassinoides</i>				X								X						
arrowwood viburnum, southern arrowwood	<i>Viburnum dentatum</i>		X														X		
nannyberry viburnum	<i>Viburnum lentago</i>										X								
possumhaw, witherod viburnum	<i>Viburnum nudum</i>		X									X							
blackhaw viburnum, black haw	<i>Viburnum prunifolium</i>												X			X	X		
viburnums	<i>Viburnum spp.</i>		X		X											X	X		
cranberry bush, highbush cranberry	<i>Viburnum trilobum</i>			X	X							X					X		
white violet, Canada violet	<i>Viola canadensis</i>					X					X	X	X				X	X	
marsh blue violet	<i>Viola cucullaria</i>																	X	
halberdleaf yellow violet	<i>Viola hastata</i>																	X	
labrador violet	<i>Viola labradorica</i>																	X	

Brokenstraw Creek Watershed Conservation Plan

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common blue birdfoot violet	<i>Viola pedata</i>																		X	
smooth yellow violet	<i>Viola pensylvanica</i>																		X	
downy yellow violet	<i>Viola pubescens</i>																		X	
long-spurred violet	<i>Viola rostrata</i>																X	X		
wild blue violet	<i>Viola sororia</i>																		X	
pansy	<i>Viola spp.</i>																X			
creamy violet	<i>Viola striata</i>																X	X		
grape, wild grape	<i>Vitis spp.</i>																X			
barren strawberry	<i>Waldsteinia fragarioides</i>																		X	
Virginia chain fern	<i>Woodwardia virginica</i>																		X	
yellow root	<i>Xanthorhiza simplicissima</i>																		X	
golden alexanders, zizia	<i>Zizia aurea</i>																		X	
hosta																	X			

APPENDIX N: ENHANCING AQUATIC HABITATS

Habitat is defined as the place where an organism lives or is naturally found. Enhancing habitat in an aquatic ecosystem improves the overall health and quality of a given waterway. By doing so, it in turn benefits everyone who enjoys outdoor recreation whether it be fishing, boating, or just an outdoor enthusiast.

Aquatic habitat enhancement can be constructed in both streams and lakes and is designed to improve habitat for everything from fish to various reptiles. As well as having a wide range of organisms that habitat enhancement structures benefit there is also a diverse variety of artificial habitat purposes and designs that Pennsylvania Fish and Boat Commission (PFBC) has come up with to suit the needs of Pennsylvania's wildlife. In order to perform a Fish Habitat improvement project the proper permits must first be required from Pennsylvania's Department of Environmental Protection (PA DEP). Once the permits are acquired a lake sectioned plan is completed and grants are applied for to provide funding.

The primary objective of artificial fish habitat is to use resources such as wood and rock rubble to increase the abundance of submerged native habitat using designs engineered to mimic Pennsylvania's naturally occurring resources. Artificial fish habitat also provides excellent fishing opportunities for anglers if they are aware of the locations of the structures.

PFBC offers Lake Habitat Improvement Maps for all the state and federal owned lakes where habitat improvement projects have been completed. These maps show the general shape of the lake and indicate where all man made structures are located along with how many are present and the depth of their location. If read correctly these maps provide a very efficient way for anglers to navigate the structures and ultimately find fish (PFBC²).

Habitat Enhancing Structures for Cover

Man-made aquatic habitat structures are designed to serve several different purposes for aquatic life, each one being necessary for a successful aquatic environment. One purpose for artificial habitat is to provide smaller prey fish with cover from predators where preexisting cover is nonexistent. Most needs for this type of habitat structure is in the early man made lakes that can be found scattered across Pennsylvania. This is because in earlier years when many lakes were being formed it was thought that the lake bottom should be bare, therefore all debris was cleared from the area leaving little to no cover remaining for aquatic organisms. There are many variations for this form of habitat that use all types of materials ranging from wooden poles to large sandstone rocks. Examples of this type of habitat structure are the Porcupine Crib, Porcupine Crib Jr., Post Stump, Post Stump Plus, Post Cluster, Post Cluster Plus, Rock Star, Vertical Plank Structure, Spider Hump, Stake Tree, Felled Shoreline Tree, and Rock Rubble Humps.

Porcupine Crib and Porcupine Crib Jr.

Porcupine Crib and Porcupine Crib Jr. are two habitat structures that are very alike in their design. They are constructed using 4ft. 2x2 pieces of rough timber, 8x8x16 concrete blocks, nails, and a nylon banding strap with steel buckle. The 4 ft. pieces of wood are nailed to one another while slowly stepping inward in the shape of a pyramid with the concrete blocks placed at the bottom for weights and the nylon banding strap used for added strength. Once completed the cribs are placed at the bottom of the lake at a minimum depth of about 10 ft. and are normally placed in clusters. Once submerged the Porcupine Crib and Crib Jr. form what serves as a wooden cage like structure with openings between the boards allowing smaller bait fish to swim in and out ultimately providing them with cover. At the same time the Porcupine Crib provides places for predatory fish to hunt due to the large amounts of bait fish that are drawn to

them. Porcupine cribs serve as excellent areas for fishermen seeking various species of pan fish as well as the larger game fish species that are drawn in too feed on them (PFBC¹).

Post Stump and Post Stump Plus

The Post Stump and Post Stump Plus have a simple design which involves nothing more than two to three 4ft. sections of 6 inch wide aquatic posts and are normally placed at a depth of about 4ft. of water. The Post Stump is made by pounding two sections the aquatic posts into the lake bottom until they are submerged about two feet below the surface. The two pieces of post can be placed straight up and down or at an angle depending on preference. The Post Stump Plus is constructed the same way as the plain Post Stump but involves a laterally positioned post that is bolted to the vertical posts underneath the waters surface for added cover. This Habitat structure is designed to benefit an array of aquatic organisms. The submerged posts act as artificial submerged stumps providing cover for predatory and prey fish alike. Being that this type of habitat structure is placed in shallower waters it creates fishing sites for anglers that are accessing the lakes from shore banks (PFBC¹).

Post Cluster and Post Cluster Plus

The Post Cluster and Post Cluster Plus are very similar in design and purpose to the Post Stump and Post Stump Plus. This type of habitat is made with 8ft. long sections of 6 inch wide aquatic posts and normally involves the use of heavy equipment to build. The Post Cluster is placed in about 4ft. of water and is constructed by inserting the 8ft. sections of aquatic posts about two feet into the lakes bottom allowing the tops to protrude from the waters surface. The Post Cluster can include as many poles in each cluster as preferred and can be arranged in any shape that is desired. The Post Cluster Plus is constructed the same as The Post Cluster except it involves laterally positioned posts that are bolted to the vertical posts underneath the waters surface for added cover. Once completed the clusters of protruding posts replicate what acts as submerged woodland. This habitat structure is designed to benefit an array of aquatic organisms. As well as providing cover for fish of all sizes the exposed post above the surface of the water serve as excellent perch sites for fish hunting birds. Also the Post Clusters exposed portions tend to eventually attract aquatic plant growth such as lily pads which in turn attracts organisms like frogs and dragonflies that fish and other organisms can feed on. This type of habitat structure draws in all types of fish species thus providing favorable fishing for boating and shore fishermen alike. The post clusters also act as a barrier between the shore and open water by breaking up waves decreasing shore line erosion (PFBC¹).

Rock Star

The Rock Star is a man made habitat structure that involves the use of both rough cut timber and sandstone rocks. To construct this type of structure you need seven tons of sand stone, seven eight ft. 2×6 sections of rough cut timber, and nails. A rock star consists of a two ton pile of sandstone encircled by five surrounding one ton piles of sandstone that is connected by five sections of 2×6 rough timber in the general shape of a star. The connecting pieces of rough cut timber should be buried in the rock piles and elevated from the lakes bottom for aquatic organisms to use for cover. After the star shaped structure is completed the last two sections of eight ft. 2×6 are nailed into the others that are already placed connecting any two of the pieces of boards for additional cover. These structures can be placed at any depth and are designed to provide cover for all types of aquatic organisms. Rock Stars can also double as spawning sites for some species of fish (PFBC¹).

Vertical Plank Structure

The vertical Plank Structure is a wooden box designed to provide cover for large and small fish alike. The structure consists of 59 sections of rough cut timber that rang from 1×4×24 to 2×3×48, nine concrete blocks to allow it to sink to the bottom, and nails. Small conifer trees may also be placed in the box once built to add additional cover. This habitat structure is used much the same as the Porcupine crib.

Placement is normally at a minimum depth of 10ft. and more often than not they are placed in clusters. The main difference being the Vertical plank structure has openings that are much larger in size allowing larger fish and other aquatic organisms to enter them. If located the Vertical Plank structure is an excellent place for anglers to try their luck for not only does it provide cover for bait fish but larger sized fish as well (PFBC¹).

Spider Hump and Rock Rubble Hump

The Rock Rubble Hump is the simplest artificial habitat structure there is as far as its general design is concerned. It consists of a pile of sandstone rock that stands anywhere from one to three ft. high and can be placed at any depth that is preferred. The Spider Hump is a more complex modification of the Rock Rubble Hump that is constructed using sandstone rocks, spikes, and 8ft. aquatic posts. A square is built with 8ft. posts then fastened down with spikes. Then 16 more evenly spaced posts are laid in the square and fastened down with all of the bottoms meeting in the center of the box. Once the posts are all placed three tons of rock is dumped onto the center of the structure to form a rock pile with wooden posts protruding providing excellent cover for all types of aquatic organisms. These habitat enhancement structures also provide excellent areas for fish species that prefer spawning in rocky areas (PFBC¹).

Stake Tree

The Stake Tree is constructed using a five gallon plastic bucket, 2×2 wooden stakes (varying in length), and concrete. To create a Stake Tree simply arrange 6 to 8 wooden stakes in any random order in the bucket then pour in concrete to harden and hold them in place. When completed place it anywhere where it's deep enough for it to become totally submerged and once placed it will replicate a submerged tree with branches. The Stake Tree can be placed in level or slightly steeping areas and in normally situated in groups of 10 to 30 structures or 50 to 60 per acre in a circular arrangement. These structures are excellent for attracting pan fish such as crappie and bluegill and are sure to provide fishing hot spots (PFBC¹).

Felled Shoreline Tree

The Felled Shoreline Tree habitat enhancement uses trees surrounding a lake or other body of water, a chain saw, and a steel cable to create ideal aquatic habitat. A Felled Shoreline Tree is formed but cutting down a tree along the edge of a body of water and angling it so it falls into the water. Once cut down the tree is fastened to the stump that is remaining with the steel cable to keep it in place. Although this is already a naturally occurring process among aquatic ecosystems it speeds up the process and allows the person creating the habitat to place the downed trees in favorable locations. The Felled Shoreline Tree structure is to be placed where the tree will fall into water that has a steep droop off and has a minimum depth of 10ft. towards the where the top of the tree will fall. These structures provide habitat for fish of all species and sizes (PFBC¹).

Habitat Enhancing Structures for Spawning and Nesting

Another purpose that Habitat enhancement structures are designed to improve is spawning and nesting sites available to aquatic organisms. There are several types of structures that are designed to provide nesting areas for specific types of fish species in Pennsylvania. These types of structures include the Black Bass Nesting Structure, Fathead Minnow Spawning Cover, and Channel Catfish Spawning Box. These three types of habitat structures all are designed to enable specific species of fish to reproduce efficiently by building them the necessary habitat for each of their unique forms of breeding or nesting habits.

Black Bass Nesting Structure

The Black Bass Nesting Structure is built from wood, nails, and concrete blocks and when completed forms a table looking structure. It's constructed by building a base out of 4ft. pieces of 2×2 rough cut timber to place the concrete blocks in just as you would a porcupine box. Once the Blocks are in place for weights to make the structure sink to the bottom five 8ft. pieces of 1×8 rough cut timber are laid across the top with equal lengths of over hang on each side and nailed in place. The structures are placed in depths of about 5ft. and will provide ideal nesting sites for black bass species including the much sought after large mouth bass. The overhanging edges on opposing sides of the structure are about 14 inches from the bottom allowing bass to nest and lay their eggs underneath the cover it provides (PFBC¹).

Fathead Minnow Spawning Cover

The Fathead Minnow Cover habitat structure is very simple to construct and consists of nothing more than a 2ft. long 1×8 with one end being pointed and the other flat. To build Fathead Minnow Spawning Cover you use a sledge to pound the piece of 1×8 into the bank of a lake or other body of water at a depth of 1 to 2ft. The structure is to be driven into the substrate 3 to 6in. at a slight upward angle. For ideal success the recommended density of this structure is six per acre. Like most other fish species Fathead Minnows spawn seasonally occurring during the month of June therefore the structures may be removed once the spawning time period has expired (PFBC¹).

Channel Catfish Spawning Box

The Channel Catfish Spawning Box has one of the more complex structural designs, among the materials need to build this structure are 8ft. 1×8 boards, 16×16 concrete blocks, nails, and lag screws with washers. Using the boards a rectangle is constructed that is 32in. long 16in. wide and 10in. high. The box has a entrance hole 6in in diameter and two ½ in. air release holes on the top of the box towards the entrance hole. Two 16×16 concrete blocks are fastened to the bottom of the structure for anchors using the lag screws. Once completed the Channel Catfish Spawning Box is placed in 3 to 5ft. of water. When placed the structure will provide the Channel Catfish with a place to spawn or simply use for cover (PFBC¹).

Habitat Enhancing Structures for Basking

These types of structures are designed primarily for reptile species and are essentially small floating dock like structures anchored down to provide organisms like turtles with an island refuge from the water. Basking structures benefit more than just the organisms that use them for retreat from the water. They also provide cover for fish just the same as a boat dock would. There is one main type of basking structure design in Pennsylvania and it's called the Turtle Basking Platform.

Turtle Basking Platform

The Turtle Basking Platform involves quite a variety of materials to construct. Materials needed to build this structure are 2ft. and 4ft. 1×8 rough cut lumber, 4ft. 4×4 rough cut lumber, various screws and bolts, stainless steel rope wire and cable clamp, PVC pipe and caps, sealer, conduit hangers, and 8×8×16 cement blocks. A 4ft. × 4ft. dock like structure is constructed from the rough cut timber and two capped PVC pipes serving as floats. The steel cables are then attached to opposing sides of the structure and the cement blocks are attached to the steel cables acting as anchors. These structures are placed in about 5ft. of water and can be placed alone or in clusters (PFBC¹).

Habitat Enhancing Structures for Erosion Control

These types of structures are designed to eliminate shoreline erosion and act as wave deflectors. They also deplete the amount of sediment eroded into the water and create a buffer zone for nutrient

saturation. This is accomplished by laying seeded jute matting above the banks where the habitat enhancement is constructed. Jute Matting will reinforce the shoreline and add plant growth to absorb nutrients. Along with the water quality benefits this type of habitat enhancement offers it also provides more desirable cover for fish that prefer shallow waters along the shoreline. Therefore these structures benefit anglers that fish from shore as well as the aquatic organisms that live there. There are two types of erosion controlling or deflecting habitat enhancement designs in Pennsylvania, the Saw-Toothed Deflector and the Stone Framed Deflector.

Saw-Toothed Deflector and Stone Framed Deflector

These two types of structures are not only very similar in design and appearance but involve the use of all the same materials. Both are constructed using large sandstone or limestone boulders to form an outline and smaller sandstone or limestone rocks to fill in the interior of the structures. Also pre-seeded jute matting is used in the construction of these structures along the shore where rock meets dirt for accelerated plant growth and bank stability. The Saw-Toothed Deflector uses the rocks to form an irregular pattern along the shore where erosion is occurring. The Stone Framed Deflector places rocks in a triangular pattern consisting of a 30 degree angle from shore that meets a 90 degree angle coming back towards shore. The long face of the triangle should be facing the direction in which the wind and waves are coming from. Stone Framed Deflectors extend further out into the lake than Saw-Toothed Deflector thus provide more availability in the relation to fish habitat. Along with the construction of these habitat structures riparian buffers are often put in place where stone deflectors are located (PFBC¹).

Habitat Enhancement Structures for Streams

All of Pennsylvania's Rivers and streams are ever changing as the years go on. These changes develop naturally and can occur over the course of several years or just a couple days if flooding is severe enough. Changes among rivers and streams are caused by the systems natural urge to find equilibrium or the most stable direction of flow. This natural urge can cause the river or stream to wind back and forth and ultimately ruin the systems livability for more demanding aquatic organisms like trout. This is because constant bends and breaks in a running waterway causes it to become shallow, slow moving, and can in turn limit livable space for aquatic organisms. For this reason the Pennsylvania Fish and Boat Commission along with other conservation groups have developed ways to improve the course of a moving system while respecting the desired course of the waterway at the same time. These improvements often involve the use of heavy equipment and are constructed from natural materials such as wood and rock. A common solution that man made habitat enhancement structures provide for a moving aquatic ecosystems is straightening of its natural flow. By straightening the systems flow the river or stream will eventually move faster and deepen over the span of several years in turn providing more livable space and desirable habitat. Many of the created habitat structures also serve a double purpose for aquatic organisms by offering cover for them to hide amongst (Lutz, 2007).

There are various aquatic enhancements and habitat structures that are installed in Pennsylvania's streams and river systems. Sometimes they just involve stream bank stabilization or placement of woody debris for fish cover, but there are several man made habitat structures that involve quite elaborate designs and a lot of work to construct. All habitat structures require proper permits to build and place just as the habitat structures constructed for lakes. The most common types of structures that are constructed within streams are deflectors and Vanes. Both are mainly constructed to divert channel flow. There are also channel blocking structures that are made to block off side channels that drain from the main flow. And lastly there structures designed to provide habitat cover for aquatic organisms. These consist of Water Jacks, Cribs, and random rock or log structures (Lutz, 2007).

Channel Deflecting Structures

Deflectors are triangular structures of all different sizes that serve several purposes and can be constructed from all sorts of materials ranging from rocks to brush and even tree roots. One thing that a deflector does for a stream is adjust the main current back to the center of the waterway. While doing so the deflector narrows the channel of flow and collects substrate and debris along the bank below the structure which also deepens the waterway. Deflectors also provide some habitat cover for aquatic species such as fish. Another type of habitat structure designed for streams are Vanes. A Vane serves the same purpose as a Deflector and is constructed from basically the same materials. Types of Vane and Deflector structures include Saw-Toothed Deflectors, Stone Deflectors, Stone Deflector with Single Log, Log framed Deflector, Overhead Deflector, Log Faced Stone Deflector, Stacked Deflector, Brush Deflector, Root Wad Deflector, Single Log Vane, Single Log Vane with Root Wad, Multi-Log Vane, Rock Vane, Rock Vane with J Hook, Log Cross Vane, Rock Cross Vane.

Saw-Toothed Deflectors, Stone Deflectors, and Stone Deflector with Single Log

Saw-Toothed Deflectors are made from stone and are the simplest of the deflectors to construct. This habitat structure is made by dumping rock in the formation of triangles along the stream bank with a 30 degree angle facing the upstream end to center the current. They are to extend 5ft. out into the stream and are placed in groups of anywhere from three to as many needed. Stone Deflectors are built the same as the Saw-Toothed but tend to be larger and are placed alone instead of in groups. The Stone Deflector with Single Log is modified slightly from the others having a log buried in the rock pile that protrudes out from the tip of the deflector angling upstream against the flow. This is just to provide additional cover for fish and other aquatic organisms (PFBC¹).

Log framed Deflector, Overhead Deflector, Log Faced Stone Deflector, and Stacked Deflector

The Log Framed Deflector is designed to serve the same purpose as the Stone Deflector and is constructed the same way just with a triangular frame built from logs. The main log is placed along the face against the flow at a 30 degree angle and the brace log is put along the back side. The two logs are buried in the bank on the shore side and are pinned down at the tip with rebar. The Overhead Deflector is the same design but uses planking to fill in the deflector before the rock placed as filler. As for the Log Faced Stone Deflector it's nothing more than a Stone Deflector one or two logs placed on the 30 degree face of the structure that diverts the current. The face log or logs are fastened to sills that are buried under the stone inside the structure. All three of these habitat enhancement structures are designed for current diversion and can double as cover for fish and other organisms like macro invertebrates (PFBC¹).

Brush Deflector and Root Wad Deflector

The Brush Deflector is a type of deflector that has many benefits. It's constructed from wooded stakes and brushy debris. This type of deflector is built by pounding the stakes into the bottom of the stream leaving about 2x2ft. square spaces in between. The stakes should form a triangle pointing towards the middle of the stream and each stake should protrude about 6 inches from the stream's surface. Once the stakes are in place the spaces between stakes are stuffed with bundles of brush until it's built up to above normal water level. This structure will eventually develop growth over of the brush pile and become land that can be walked on forming a permanent deflector. The Root Wad Deflector is simply a root wad or lower portion of a tree that is placed with the root mass in the water and the trunk buried within the stream's bank. This habitat structure acts as a deflector for current but serves more as a cover provider. Aquatic Organisms use the entangled mass of roots for cover from predators (PFBC¹).

Single Log Vane, Single Log Vane with Root Wad, and Multi-Log Vane

The Single Log Vane and Single Log Vane with Root Wad are current deflecting structures and are designed to center the streams flow, prevent stream bank erosion, and provide cover for aquatic organisms. These habitat structures are constructed from logs and rock. A Single Log Vane is built by burying a log in the stream bank then pouring stone over the end that is stuck in the bank to hold it in place. A larger stone is also placed behind the tip of the log in the stream for added strength. The log is to be pointed upstream against the flow at a 20 to 30 degree angle. Single Log Vane with Root Wad is the same structure with a root wad deflector added on the downstream side of the structure for added cover and current deflection. The Multi-Log Vane is another similar structure that is built the same as the single log vane but as the name states multiple logs are placed in the stream bank to protrude into the stream instead of a single log. This structure may be used when there are stronger currents or larger streams for added stability (PFBC¹).

Rock Vane and Rock Vane with J Hook

The Rock Vane and Rock Vane with J Hook are two other vane structures that are constructed from only rock. A Rock Vane is built by making a line of larger stone out into the stream at a 90 degree angle. Then the upstream side of the structure is filled in with smaller rock forming a triangle. The Rock Vane with J Hook is the same structure just with a hook made from stone coming off the tip of the vane that curves downstream. These structures tend to deflect the current and form deep slow pools for aquatic habitat (PFBC¹).

Log Cross Vane and Rock Cross Vane

The Log Cross Vane and Rock Cross Vane are designed to center flow and create a deepened pool with a fast moving current on the down stream end of the structure. These can form damming barriers in low water conditions but when water levels are normal to high the water is carried over the structure and cuts into the bottom forming deep holes that are desirable for anglers. These structures are nothing more than two vanes built on opposing sides of a stream with their tips meeting in the middle to be fastened down. Log Cross Vane being made up of two opposing Single Log Vanes and the Rock Cross Vane being made up of two opposing Rock Vanes (PFBC¹).

Channel Blocking Structures

Channel blocking structures are habitat structures that are constructed to divert the flow of a stream back to its main channel. Over time streams can develop side channels from flooding that can deplete the amount of water as well as strength of current from the main channel. This can cause poor habitat for fish and other organisms that desire cool fast flowing waters and at the same time can impact the health of the stream. Channel blocking structures use natural materials to block these side channels off and correct the flow. There are two types of channel blocking structures these being the Stone Channel Block and The Log Frame Channel Block.

Stone Channel Block and Log Frame Channel Block

The Stone Channel Blocker is simply a wall build from piling rock to block off side channels. A pile of larger rock is dumped right where the side channel flows out then a layer of smaller rock and another layer of the larger rock. The rocks are piled slightly higher than the normal water level and should not be piled higher than the surrounding stream banks. The Log Framed Channel Blocker is built in the same way but involves log frame for added strength. The log frame consists of 2 logs placed across the side channel perpendicularly that are connected by several brace logs that are fastened down with rebar. Once the frame is in place large rocks are poured over the edges and along the structures down stream face in the side channel. Then smaller filler rocks are dumped on to fill in the frame and other remaining space.

These structures keep the main flow of the stream going in the proper direction improving the overall quality of the stream (PFBC¹).

Cover Providing Structures

There are several different variations of habitat structures that provide aquatic organisms with cover. The simplest forms of these structures are the Random Boulder Placement and the Half Log Structure. Both are quick and easy to construct and their soul purpose is to provide cover for organisms such as fish. Another type of habitat structure that is designed to provide cover is the cribbing structure. There are several different types of these structures including Bank Cover Cribbing, Bank Cover Cribbing with Root Wad, Mud Sill Cribbing, and Modified Mud Sill Cribbing all of which including the same basic design. These structures are designed to be placed along stream banks to allow fish and other organisms to swim under them for cover while also doubling as bank stabilizers.

Random Boulder Placement and Half Log Structure

Random Boulder structures are just as they sound. The Structures consist of boulders that are large enough to withstand flooding conditions being placed in the middle third of the wetted width of a stream. The boulders should protrude from the water's surface and should not be placed in a way that they would deflect the current of the stream towards the bank causing erosion. These habitat structures are very basic and easy to construct. The Half Log Structure consists of rebar, two 6 to 8 inch spacer logs, and a 3 to 4 foot long half log to be placed as the top. To construct this habitat structure the spacers and top are put in place and then fastened into place by pounding rebar through the top piece and spacer right into the stream bottom using preexisting drilled holes. The structure is to be placed parallel to the flow of the stream with the top slightly protruding from the water's surface. Both of these habitat structures are excellent for providing fish cover as well as cover for other aquatic organisms (PFBC¹).

Brookie Water Jack and Water Jack

The Water Jack and Brookie Water Jack are similar structures that basically serve the same purpose. Both are designed to dam up and center stream flow eventually creating a deepened pool on the down stream side of the structure for organisms to live in. The Brookie Water Jack is smaller and a little simpler to construct because it is designed to be built in small fast moving streams that inhabit brook trout thus giving it the name. These structures are built from logs, rock, and a sheet of hemlock planking. A single log is placed across the stream and buried in the ground on both sides for strength. Then the sheet of planking is placed on the upstream face of the structure forcing the water to flow up and over. A notch is also to be cut in the middle of the sheet of planking so that water is still able to flow in low water conditions and when high will center the streams flow. On each side of the log along the bank rock deflectors are placed over the log to center the flow and add strength. The Basic Water Jack is a more elaborate habitat structure designed to be placed in larger streams yet is designed to serve the same purpose. It consists of the same materials the Brookie Water Jack does but it uses more logs. At the center two logs are placed along the stream perpendicular to the flow and another is placed up stream in the same way. Then the piece of wooden planking is placed over the logs at an upward steeping angle connection the gap to force the flow of water up and over the structure. Once this part is completed wing logs are placed along the sides forming structures similar to Log Framed Deflectors that keep the flow of the stream centered and the stream banks from eroding. The water jack structures provide deep pools of cold fast moving water for all sorts of aquatic organisms to thrive in. these structures also server as bank erosion controllers and channel deflecting structures. Overall they are very beneficial to a streams habitat and are very beneficial (PFBC¹).

Bank Cover Cribbing and Bank Cover Cribbing with Root Wad

Cribbing structures are made from logs rock and planking boards. A Bank Cover Crib is constructed along the bank of the stream and is designed to act as an undercut bank for fish to hide under. This habitat structure is build by taking planking boards and driving them into the stream bank in a row to form a platform that extends out over the stream about 2 feet. With the platform in place a logs are fastened to the top and bottom of the platforms edge that hangs over the stream. The portions of the logs that extend further then the platform are buried in the ground for added support. Once there is a sturdy overhanging platform structure completed rocks are dumped over the plank platform to build it up to level with the stream bank. The Bank Cover Cribbing with Root Wad is build the same way as the Bank Cover Cribbing but has root wads protruding from under the structure for added cover. The root wads are buried in the stream bank and extend out from underneath the providing excellent habitat for aquatic organisms to hide amongst (PFBC¹).

Mud Sill Cribbing and Modified Mud Sill Cribbing

The Mud Sill and Modified Mud Sill Cribbing are similar I design to Bank cover Cribbing structures. The Mud Sill Cribbing is built in 8ft. sections and is made from oak planking, logs, and rock. To construct this type of habitat structure you must first dig ditches in the stream bank for the logs to lie in. Once the logs have been laid a platform is built over the part of the structure that hangs over the stream using the oak planking. When the platform is completed rocks are dumped over the top of the structure at an angle leveling it off with the stream bank. The Modified Mud Sill Cribbing it constructed in the same fashion but instead of being designed so the current can freely flow underneath the structure the up stream and down stream ends of the structure are brought down all the way to the bottom of the stream just leaving an undercut that can be gotten under from the front. Also a log is placed protruding into the water on the downstream end of the structure to deflect the current back under the structure and create an undercut. These habitat structures are very efficient in creating cover for organisms like trout and other fish species serving as good fishing spots for anglers. The Mud Sill and Modified Mud Sill Cribbing structures also prevent stream bank erosion and provide bank stability (PFBC¹).

References:

Lutz, K.J. (2007). *Habitat improvement for trout streams*. Retrieved August 24, 2010 from Pennsylvania Fish and Boat Commission website: http://fishandboat.com/water/streams/habitat_improve_trout.pdf.

Pennsylvania Fish and Boat Commission¹. (n.d.).Habitat improvement. Retrieved August 24, 2010 from Pennsylvania Fish and Boat Commission website: <http://fishandboat.com/habitat.htm>.

Pennsylvania Fish and Boat Commission². (n.d.). PFBC cooperative fish habitat management programs for lakes. Retrieved August 24, 2010 from Pennsylvania Fish and Boat Commission website: http://fishandboat.com/water/habitat/mgmt_plans/lake/intro_lake_hab.htm.

APPENDIX O. FUNDING SOURCES

Sponsoring Organization	Description / Restrictions	Contact
BMP		
State Conservation Commission-Dirt and Gravel Roads Maintenance	Available to local municipalities and state agencies for projects dealing with the BMPs for erosion and sedimentation control problems and fugitive dust in watersheds; dirt and gravel road jurisdiction required.	www.pacd.org
Community		
Pittsburgh Foundation	Economic, community development and the environment. Activities that increase employment, build strong neighborhoods, and promote civic engagement by all segments of the population. Funds for quality of life.	www.pittsburghfoundation.org
Energy		
DEP - Alternative Fuels	The Alternative Fuels Incentive Grants program continues to fund a considerable number of projects that use alternative fueled energy sources to reduce air pollution and our dependence on foreign oil. Alternative fuels include compressed natural gas.	www.dep.state.pa.us
Environmental		
Beldon II Fund	Support environmental organizations working at the state-level. Some grants are made to regional and national organizations for efforts that support the work of state level groups.	www.beldon.org
Ben & Jerry's Foundation	Grant applications need to demonstrate that the project will lead to environmental change, address the root causes of environmental problems, and must help ameliorate an unjust or destructive situation by empowering constituents and facilitating leadership.	www.benjerry.com
Eddie Bauer	Fund projects in certain local areas that support environmental goals such as clean rivers and streams or beautifying parks and school grounds. Must be 501(c) 3 and proposal should be kept between 2-3 pages.	www.eddiebauer.com

Sponsoring Organization	Description / Restrictions	Contact
Environmental (continued)		
Howard Heinz Endowment	This program promotes environmental quality and sustainable development by supporting efforts to eliminate waste, harness the power of the market, and create a restorative economy. Should Promote sustainable urban design. Concentrated in Western Pennsylvania.	www.heinz.org
Raymond Proffitt Foundation	The foundation's purpose is to protect and restore the quality of the natural and human environment by informing and educating the general public about the impact of human endeavors upon the natural environment. The RPF strives to advance this understanding.	www.rayproffitt.org
Surdna Foundation	The foundation's goal is to prevent damage to the environment and to promote more efficient, economically sound, environmentally beneficial, and equitable use of land and natural resources. Does not fund environmental education, sustainable agriculture, food production or toxic and hazardous waste.	www.surdna.org
Vira I Heinz Endowment	This program promotes environmental quality and sustainable development by supporting efforts to eliminate waste, harness the power of the market, and create a restorative economy. The program's goal is to promote sustainable urban design. Western Pennsylvania watersheds only.	www.heinz.org

Environmental/Watershed

EPA-Clean Water State Revolving Fund	May also contact: Beverly Reinhold (717) 783-6589. Infrastructure Investment Authority, Keystone Building 22 South Third Street, Harrisburg, PA 17101. email: breinhold@state.pa.us or Peter Slack, (717) 772-4054; DEP 400 Market Street, Harrisburg, PA 17105	(717) 772-4054
WREN - Conference/Training Scholarships	The activities funded must be educational and relate to drinking water source protection or watershed education. Applicant is required to provide a five percent match.	www.pa.lwv.org/wren
River Network Watershed Assistance Grants	Watershed projects and group start-ups.	www.rivernetwork.org
Foundation for Pennsylvania Watersheds	Provides funding to grassroots organizations and watershed associations for specific watershed remediation in Pennsylvania.	

Sponsoring Organization	Description / Restrictions	Contact
Environmental Education		
Captain Planet	Supports hands-on environmental projects for children and youth to encourage innovative programs that empower children and youth around the world to work individually and collectively to solve environmental problems. Only for environmental education of children. Online only.	www.turner.com/cpf
DEP Environmental Education Grants	Open to schools, conservation districts, and non-profits. Open in summer, awarded in spring. Final application due dates vary. Application available online. Requires twenty percent match and reimbursement program.	www.dep.state.pa.us
Education Mini Projects Program	Small grants for Pennsylvania-based grassroots educational projects that address non-point source watershed concepts.	(717) 236-1006
Emerson Charitable Trust	Strong emphasis on cultural aspects and youth education, also science and education.	(314) 553-3722
EPA Environmental Education Grants Region III	Grants awarded to small non-profit groups for various projects in Region III.	(215) 566-5546
National Environmental Education and Training Foundation	To increase environmental awareness, environmental education, partnerships, etc. May also be reached at (202) 261-6464. Proposal deadlines: Jan. 1, March 1, July 15, and Sept. 1	(202) 833-2933
PACD - Mini Projects	The objectives of the Educational Mini-Project must promote the We All Live Downstream message by: stimulating an awareness of and interest in Pennsylvania's non-point source water pollution problems and solutions; salaries are not an approved expenditure.	www.pacd.org
Project Wild	Project Wild is an interdisciplinary supplementary environmental and conservation program for educators of children in grades K-12. Small grants only.	www.projectwild.org
The Dunn Foundation	Promote the issues of the negative effect that sprawl, visual pollution, and poorly planned development have on the visual environment of communities and the resulting loss of quality of life. Encourage dialogue within and between communities. Do not fund property acquisition, capital improvement projects, capital campaigns, endowments, individuals, religious groups, or political organizations.	www.dunnfoundation.org

Sponsoring Organization	Description / Restrictions	Contact
Environmental Education (continued)		
The Pathways to Nature Conservation Fund - National Fish and Wildlife Foundation	A partnership between the more than 270 Wild Birds Unlimited, Inc. franchises and the National Fish and Wildlife Foundation. The Pathways to Nature Conservation Fund offers grants to enhance environmental education activities and bird and wildlife viewing opportunities at significant sites.	www.nfwf.org
Water Resources Education Network - LWV	Funding to develop education programs for water issues facing communities. Local contact is shrenehess@yourinter.net, Indiana PA, 724-465-2595. Must be 501(c)3	www.pa.lwv.org/wren
WREN - Opportunity Grants	The activities funded must be educational and relate to drinking water source protection or watershed education.	www.pa.lwv.org/wren

Environmental Justice

EPA-Environmental Justice Small Grant Program	The program provides financial assistance to eligible affected local community-based organizations working on or planning to work on projects to address local environmental and/or public health concerns.	(202) 564-0152
Nathan Cummings Foundation	The foundation's purpose is to facilitate environmental justice and environmentally sustainable communities by supporting the accountability of corporations, governments, and other institutions for their environmental practices. Does not fund individuals, scholarships, or capital or endowment campaigns.	www.ncf.org
Norman Foundation	Support efforts that strengthen the ability of communities to determine their own economic, environmental, and social well-being, and that help people control those forces that affect their lives. Only fund in U.S. They do not fund individuals, universities, conferences, scholarships, research, films, media, arts projects, capital campaigns, fundraising drives, or direct social service programs.	www.normanfdn.org

Environmental Planning

Coldwater Heritage Partnership	Grants for prioritizing watersheds in need of protection, for assessment of coldwater ecosystems, and for the development of watershed conservation plans.	(717) 787-2316
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Sponsoring Organization	Description / Restrictions	Contact
Environmental Planning (continued)		
DEP Nonpoint Source Control	Grants for planning and non-point source pollution control projects.	(717) 787-5259
DCNR - Community Conservation Partnership Program	Available to organizations that conserve and enhance river resources. Planning grants are available to identify significant natural and cultural resources, threats, concerns, and special opportunities, and the development of river	www.dcnr.state.pa.us
NRCS Watershed Surveys and Planning	Providing assistance for planning in water and coordinated water and related land resource programs in watersheds and river basins. Types of surveys and plans funded include watershed plans, river basin surveys and studies, flood hazard analyses, and floodplain studies.	www.nrcs.usda.gov

Flood Protection

DEP Flood Protection Grant Program	Open to communities that need to perform non-routine maintenance or improvements to already existing flood protection projects. Also applies to the purchase of specialized equipment. Open to communities that have flood protection projects that are deemed operable.	(717) 787-7432
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General

Archer-Daniels-Midland Foundation	Proposals can be sent in letter form containing: 1) Description of the organization applying. 2) Description of the project/What funding would be used for. 3) A budget including how much is going to administrative costs. Emphasis is given to corporate operating locations.	www.admworld.com
Audrey Hillman Fisher Foundation, Inc.	Must refer to Application Procedures for more information. Preference given to southwestern Pennsylvania and central New Hampshire.	(412) 338-3466
Eureka Company	No specific interest, but, general focus is on social services, health, and the environment (wildlife, fisheries, habitat, and sustainable community development)	www.electrolux.se
Henry Hillman Foundation	Preference is given to organizations in the Pittsburgh/southwestern Pennsylvania area.	www.guidestar.org
Patagonia, Inc. Environmental Grants Program	Supports small grassroots organizations. Does not fund land acquisition.	www.patagonia.com

Sponsoring Organization	Description / Restrictions	Contact
General (continued)		
The Boeing Company	Provides contributions for capital campaigns, seed money (one-time grants) for new programs or projects that address community needs and priorities, and one-time grants to buy equipment, improve facilities, or enable special projects.	www.boeing.com/community
The Education Foundation for America	EFA's priorities include supporting the monitoring of the utility restructuring process as it impacts the environment, combating the growth of the "wise-use" movement, opposing large-scale live-stock confinement, and cutting federal "pollution." Letter limited to two pages.	www.efaw.org
The Prospect Hill Foundation	The foundation's environmental grant making concentrates on habitat and water protection in the northeastern region of the United States. Must have 501(c)3. The organization does not fund individuals, basic research, sectarian religious	http://fdncenter.org/grantmaker/prospecthill/

GIS

DEP-GIS Software Grant	The grants consist of the latest commercial release of ArcView GIS software; several texts about utilizing GIS for environmental applications and land-use planning; CD-ROM containing spatial data about the commonwealth. Only issue 10 per quarter.	www.dep.state.pa.us
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Habitat

General Challenge Grant Program -National Fish and Wildlife Foundation	Requires non-federal match of 2:1. Address actions promoting fish and wildlife conservation and habitat; should involve conservation and community interest; leverage available funding and evaluate project outcomes.	www.nwf.org
Keep the Wild Alive (KWA) Species Recovery Fund	Fund on-the-ground projects that directly improve conditions for the endangered species highlighted in the KWA campaign. Current National Wildlife Federation employees are ineligible and applications must be submitted in English.	www.nwf.org/wildalive
Small Grants Program - National Fish and Wildlife Foundation	Address priority actions promoting fish and wildlife conservation and the habitats on which they depend; work proactively to involve other conservation and community interest; leverage available funding, and evaluate project outcomes. A 2:1 match of non-federal funds is required.	www.nwf.org

Sponsoring Organization	Description / Restrictions	Contact
Internship		
Office of Surface Mining Intern Program	Candidates must organize their work, work well with community groups and on their own, quickly internalize the requirements of acid mine drainage remediation and the national Clean Streams program, write well and enjoy public presentations. Academic credit. Can be undergraduate or graduate student. Positions available in AL, IL, IN, IA, KY, MD, MS, OH, OK, PA, TN, VA, WV. Must provide housing for interns.	(202) 208-2836
Land Protection		
DCNR Community Conservation Partnership Program	Conserve and enhance river resources by offering planning grants, technical assistance, implementation grants, development grants, and acquisition grants.	www.dcnr.state.pa.us
Lowes Charitable Foundation	Environmental initiatives that support the continued enhancement of the natural landscape, natural environment enhancers, and/or park improvement projects. Must apply online. Must be a 501(c)3.	www.lowes.com
Michael D. Ferguson Charitable Foundation	General environment, wildlife, fisheries, habitat, sustainable community, and development.	n/a
Nationals Parks Service - Land & Water Conservation Fund	Provide federal grants for land acquisition and conservation to federal and state agencies.	(303) 969-2500
The Wilderness Society	To preserve wilderness and wildlife, protect America's prime forest, parks, rivers, and shore lands, and foster an American land ethic. Alternate address Montana Regional Office, 105 West Main St., Suite E, Bozeman, MT 59715-4689	www.wilderness.org
Town Creek Foundation	Environmental issues of interest to the foundation include: 1) Preserving the ecological richness of our natural heritage, with a major focus on our federal public lands. 2) Promoting policies and practices to protect the land, estuaries, and coastal bays.	www.towncreekfdn.org

Sponsoring Organization	Description / Restrictions	Contact
Loan		
Environmental Loan Fund	The loan can be used for membership development, creating and implementing a workplace giving program, cause-related marketing, donor development, special events, direct mail campaigns, mission related business enterprises, or capital campaign work.	www.envsc.org
Pennsylvania Infrastructure Investment Authority Drinking Water Loans	Must show water quality impact, must have qualified loan candidate. Loans to stormwater projects and non-point source projects. Interest is 1-2.8 percent over 20 years.	(717) 787-813

Multiple

Acorn Foundation	Interested in small and innovative community-based projects which preserve and restore habitats supporting biological diversity and wildlife, and advocate for environmental justice. Does not fund the following: direct services, capital expenditure, construction or renovation programs, programs undertaken by tax-supported institutions or government initiatives, emergency funding, scholarship funds, or other individual aid.	www.commoncounsel.org/pages/foundation.html
Allegheny Foundation	The Allegheny Foundation concentrates its giving in the western Pennsylvania area and confines its grant awards to programs for historic preservation, civic development, and education. No event sponsoring. Does not fund individuals.	www.scaife.com
Anne & George Clapp Charitable & Educational Trust	Fields of interest include education, social services, youth and child welfare, and aging. Limited support for cultural programs, historic preservation, and conservation. Southwestern Pennsylvania only; grants are not made to individuals. No grants are made for medical research, research projects, filmmaking, conferences, or field trips.	(412) 234-1634
Charlotte and Donald Teast Foundation	Sustainable communities, arts, humanities, civic and public affairs, education, the environment, health, and social services.	(214) 373-6039
Ford Foundation	Interested in general/operating support, continuing support, endowment funds, program development, conferences/seminars, professorships, publication, seed money, fellowships, internships, research, technical assistance, consulting services, and program-related investments.	http://jefferson.village.virginia.edu/readings/ford.html

Sponsoring Organization	Description / Restrictions	Contact
Multiple (continued)		
Max and Victoria Dreyfus Foundation	Consider support for museums, schools, educational and skill training projects, programs for youth, seniors, and the handicapped. Must be located in the U.S.	(914) 682-2008
National Fish and Wildlife Fund -Five Star Restoration Challenge	Projects must involve diverse partnerships of, ideally, five organizations that contribute funding, land, technical assistance, workforce support, and/or other in-kind services. Projects involving only research, monitoring, or planning are not eligible. No mitigation work.	www.nfwf.org
National Parks Foundation	Education, training, preservation, and conservation. The grants that are available change often. See the website for current funding opportunities. Projects must connect with National Parks, be located on or next to National	www.nationalparks.org
Native Plant Conservation Initiative - National Fish and Wildlife Foundation	Through this initiative, grants of federal dollars will be provided to non-profit organizations and agencies at all levels of government to promote the conservation of native plants. There is a strong preference for "on-the-ground" projects that involve local communities and citizen volunteers in the restoration	www.nfwf.org
Public Welfare Foundation	The Public Welfare Foundation supports organizations that address human needs in disadvantaged communities, with strong emphasis on organizations that include service, advocacy and empowerment in their approach: service that remedies specific problems; advocacy that addresses those problems in a systemic way through changes in public policy; and strategies to empower	www.publicwelfare.org
Robert Shaw Charitable Foundation	Money to assist those organizations who work to enhance the educational, health and welfare, cultural, youth development, social welfare, and community development needs of the area. Only one grant per year will be	(724) 832-7578
Scaife Family Foundation	Grants awarded will support programs that strengthen families, address the health and welfare of women and children, or promote animal welfare. No event sponsorships, endowments, capital campaigns, renovations, or government agencies. No grants to individuals.	www.scaife.com
The French Foundation	Environment, and natural resources	n/a
The Lawrence Foundation	The mission of The Lawrence Foundation is to make a difference in the world by providing contributions and grants to organizations that are working to solve pressing educational, environmental, health, and other issues.	wwwthelawrencefoundation.org

Sponsoring Organization	Description / Restrictions	Contact
Multiple (continued)		
The Max and Anna Levinson Foundation	Interested in the environment, including preservation of ecosystems and biological diversity, but also environmental justice, alternative energy, alternative agriculture, and toxics. Must have 501(c)3 status. Rarely fund organizations with budgets in excess of \$500,000.	www.levinsonfoundation.org
Turner Foundation	Supports activities to preserve the environment, conserve natural resources, protect wildlife, and develop and implement sound population policies. Interested in protecting rivers, lakes, wetlands, aquifers, oceans. Does not provide funding for buildings, land acquisition, endowments, start-up funds, films, books, magazines, or other specific media projects. Alternate Phone: 404-681-0172.	www.turnerfoundation.org

Natural Resources

Beneficia Foundation	Only applications for projects focusing on conservation of the environment or the arts will be considered. Beneficia has no geographic preferences, but favors requests for project support over general support and does not look favorably	n/a
Canaan Valley Institute	Promotes the development and growth of local associations committed to improving or maintaining the natural resources of their watersheds in the Mid-	www.canaanvi.org
Charles A. and Anne Morrow Lindburgh Foundation	Grants awarded for the conservation of natural resources and water resource management. Grants are awarded to individuals for research and educational programs, not to organizations for institutional programs.	www.lindberghfoundation.org
Dana Corporation	Will consider funding air quality, environment, general, and water resources projects. Emphasis is given to areas where the corporation operates.	www.dana.com
Home Depot	Assistance is provided to non-profit organizations that direct effort toward protecting our natural systems. The grant program focuses on forestry and ecology, clean up, and recycling, green building design, and lead poisoning prevention.	www.homedepot.com
W. Alton Jones Foundation, Inc.	The goals of the foundation are to build a sustainable world by developing new ways for humanity to interact responsibly with the planet's ecological systems, and build a secure world by eliminating the possibility of nuclear war by	www.wajones.com

Sponsoring Organization	Description / Restrictions	Contact
Natural Resources (continued)		
Leo Model Foundation	Grants for habitat conservation, watershed conservation, and species preservation in the U.S.	(215) 546-8058
National Fish and Wildlife Fund Challenge Grants for Conservation	The foundation, in partnership with the NRCS and NACD (National Association of Conservation Districts) provides challenge grants. Primary goal of the program is to support model projects which positively engage private landowners.	www.nfwf.org
Rivers, Trails and Conservation Assistance Program	Grants to work with National Park Service to conserve land and river resources, and provides funding for various projects dealing with the conservation of these resources, including the development of trails and greenways.	(215) 597-1581
The River Restoration - NOAA	Submittal by email whenever possible. Encourage contact to discuss project prior to submitting application. Formal non-federal matches not required, but encouraged. Dam removal and fish passage. Available in northeast, Mid-Atlantic, and California.	www.amrivers.org/feature/restorationgrants.htm
The Watershed Protection and Flood Prevention Act	Plan development for natural resource concerns within a watershed area; cost sharing available to carry out plan.	(717) 782-4429
The William C. Kenney Watershed Protection Foundation	Protecting the remaining wild rivers of the west and ensuring the effectiveness of small environmental organizations.	www.kenneyfdn.org

Other

Charles Stewart Mott Foundation	The environmental program is devoted to reform of international lending and trade policies. Projects must be part of a national demonstration when out of the Flint, Michigan area.	www.mott.org
North American Fund for Environmental Cooperation	Funds community based projects in Canada, Mexico and the U.S. to enhance regional co-operation, prevent environmental and trade disputes, and to	(514) 350-4357
PA DEP Brownfields Inventory	Grantees will be paid \$1,000 for each site registered into the PA Site finder. Municipalities and economic development agencies may apply for the grant by submitting an application.	(717) 783-7816
Retired and Senior Volunteer Program (RSVP)	Provides a variety of opportunities for people aged 55+ to volunteer in the management of trails, rivers, and open space. Grants can be used for staff	www.nationalservice.org/senior/index.html

Sponsoring Organization	Description / Restrictions	Contact
Plantings		
National 4-H Council	Grants are used to stimulate community tree planting and/or reforestation projects. Awarded to communities in support of on-going community planting/reforestation project or to stimulate new and creative youth-led projects. Organization must secure matching funds or in-kind contributions from other sources equal to the amount requested.	www.fourhcouncil.edu
National Gardening Association	One hundred grants to be awarded to start-up programs involving children, and 300 will be awarded to established programs. Covers tools, seeds, plant materials, products, and educational resources. Grant restricted to programs involving children. There is a \$10.00 administrative fee.	www.kidsgardening.com
Plant Material Centers	American Indian Liaison Resource Conservation and Community Assistance Division of USDA/NRCS. PMC select and grow plants that grow naturally and provide them to those people who wish to grow native plants.	(202) 720-8576

Remediation/Restoration

Abandoned Mine Land Reclamation Program - Office of Surface Mining	Applications accepted anytime. Provides for the restoration of eligible lands and waters that have been mined, abandoned, or left inadequately restored. Two different grants are available. Protects land and corrects environmental damage caused by coal mining.	www.osmre.gov
AMD Watershed Assessment - Bureau of Mining and Reclamation	Must be a municipality, municipal authority or incorporated non-profit. AMD projects only.	(717) 787-7007
American Canoe Association CFS Grants	For grassroots organizations to improve waterways. Cleanups, riparian corridor, and water quality monitoring projects. Very flexible as long as it is improving waterways and fish habitat. Can not be used to pay staff. However, it can be used to pay a contractor. Must use volunteer help.	www.acnet.org
PA DEP - BAMR Abandoned Mine Reclamation Grants	Funds must be used for project development, design, construction, and directly related expenses. Site chosen must be located in a watershed or area with an approved rehabilitation plan. No administrative cost. Must be a municipality, municipal authority, or incorporated 501(c)3.	(814) 472-1800
Bring Back the Natives - National Fish and Wildlife Foundation	Supports on-the-ground habitat restoration projects that benefit native aquatic species in their historic range.	www.nfwf.org

Sponsoring Organization	Description / Restrictions	Contact
Remediation/Restoration (continued)		
Community Foundation	Projects related to abandoned mine drainage remediation, alkaline discharges, streambank preservation, removal of spoil piles, and other issues related to water quality are of interest to the foundation's board of advisors.	(814) 669-4847
EPA - Nonpoint Source Implementation Grants	Funds are provided to the state to carry out non-point source projects and programs pursuant to Section 319 of the Clean Water Act as amended by the Water Quality Act of 1987. Grants are awarded to a single agency in each state, designated by the governor. 40 percent non-federally funded match required. Only one administered to each state.	www.cfda.gov/static/p66460.htm
NOAA Fish Habitat Restoration Program	Financial assistance for community-based habitat restoration projects, to	n/a
Office of Surface Mining Clean Stream Initiative	This grant is used to treat AMD. Design and administration is covered but the bulk of funding must go into construction. Must have funding partners. Applications available upon request. Review period takes 2.5-3 months, depending on eligibility. Must be a cooperative agreement.	(717) 782-2285
PA DEP -Stream Improvement Project Reimbursements	Provides assistance in an instance where a stream is posing a treat to structures, such as homes or businesses. Must pose threat to structure. Must be applied for by a conservation group or municipality.	(717) 783-7480
PA Fish and Boat Commission	Habitat improvement and technical assistance.	(814) 359-5158
Partnership with the U.S. Army Corps of Engineers	To foster cooperation on projects of mutual interest, such as fish and wildlife habitat restoration, non-structural flood control opportunities, wetland restoration, and endangered species protection.	www.nfwf.org
Pinellas County Environmental Foundation National Fish and Wildlife Foundation	A partnership between Pinellas County and the National Fish and Wildlife Foundation. These two groups share the common goals of actively pursuing the protection, restoration and enhancement of fish and wildlife habitat, and developing creative and sustainable solutions to natural resource issues.	www.nfwf.org

Sponsoring Organization	Description / Restrictions	Contact
Research		
Conservation & Research Foundation at Connecticut College	The conservation and enlightened use of the earth's resources to encourage research to deepen the understanding of the intricate relationship between people and the environment. Will support higher education, individuals, museums, non-profits, and research. Unsolicited proposals are not accepted; however, letters of inquiry including a budget may be sent.	n/a
USDA - Nutrient Science for Improved Watershed Management	Funds for integrated research in extension management of nutrients on a watershed level. Nutrients of interest are nitrogen and phosphorous. Please note that a research foundation maintained by a college or university is not eligible. These grants are for research.	http://www.reeusda.gov/1700/funding/ourfund.htm
Stormwater Management		
DEP Stormwater Management Program	Watershed planning for stormwater control and implementation of programs at local levels.	(717) 772-4048
Streambank Fencing		
Ducks Unlimited - PA Stewardship Program	Provides strong incentives to landowners to create wooded stream buffers, create wider than minimum buffers, and fence cattle out of the stream. Grant is available for fencing and tree planting.	(814) 386-3458
Fish America Foundation	Grants awarded for streambank stabilization materials, instream habitat improvements, contracted heavy equipment, and stream morphology work. Match not required, but is highly recommended.	www.asafishing.org
Partners for Fish and Wildlife Program	The Partners for Fish and Wildlife Program provides technical and financial assistance to private landowners for habitat restoration on their lands. A variety of habitats can be restored to benefit Federal trust species (for example, migratory birds and fish and threatened and endangered species.) Normally the cost share is 50 percent (the Service and the landowner each pay half of the project costs), but the percentage is flexible. Services or labor can qualify for cost-sharing.	(724) 938-4215
US Fish and Wildlife Service	Assists landowners in installation of high-tensile electric fence to exclude livestock from streams and wetlands. No buffer requirements.	www.fws.gov

Sponsoring Organization	Description / Restrictions	Contact
Streambank Fencing		
USDA Conservation Reserve Program	Statewide costshare program for creating stream buffers. A 40 percent practice incentive as well as a \$10/acre incentive. Buffers of 35-180 feet per side of the stream. Land must have been pasture.	Regional USDA office
USDA - Environmental Quality Incentives Program	A statewide program based on environmental problems. It addresses all environmental problems on a farm. They fund BMPs.	Regional USDA office
USDA Project Grass	A co-operative effort of local farmers, conservation districts, with assistance from USDA, to improve agriculture productivity in southwestern Pennsylvania. For local contacts see information brochure on file. Contact: james.harrold@pasomerset.fsc.usda.gov	Regional USDA office
Technical Assistance		
Watershed Assistance Grants	Funding supports organizational development and capacity building for watershed partnerships with diverse membership. Match requested but not required. Non-profits, tribes, and local government only.	www.rivernetnetwork.org
Volunteers		
3M Foundation	3M sponsors a volunteer program called Community Action Retired Employee Service (CARES). Company favors projects that impact 3M communities. Alternate Phone: 612-737-3061	www.mmm.com
Wetlands		
U.S. Fish and Wildlife Service	For wetland Conservation projects. Must have 50 percent non-federal match in small-grant program with North American Wetlands Conservation Council.	www.fws.gov
Wetlands Reserve Program USDA Natural Resources Conservation Service	Restore and protect wetlands on private property; provide landowners with financial incentives to enhance wetlands in exchange for retiring marginal agricultural land.	Regional USDA office

APPENDIX P. USEFUL WEBSITES

Source	Data	Website
Project Area Characteristics		
Bureau of Labor Statistics	Unemployment Rate	http://www.bls.gov/home.htm
Free Demographics	Population and Economic Data	http://www.freedemographics.com
Green Media Toolshed	Pollution in Your Community	http://www.scorecards.com
Natural Lands Trust	Conservation by Design	http://www.natlands.org
Pa. Department of Community and Economic	Zoning and Comprehensive Planning	http://www.elibrary.state.pa.us
Pa. Department of Education	School Report Cards	http://www.paprofiles.org
Smart Growth Partnership	Smart Growth	http://www.smartgrowth.org
United States Census Bureau	Population and Economic Data	http://www.census.gov

Land Resources

Conservation Reserve Enhancement Program	Conservation Practices	http://www.creppa.org
Natural Resources Conservation Service	Soil Characteristics	http://www.nrcs.usda.gov/technical/efotg
Pa. Department of Environmental Protection	Permits, Violations	http://www.dep.state.pa.us/efacts/default.asp
Pa. Geological Survey	Environmental Geology	http://www.dcnr.state.pa.us/topogeo/pub/environmental.aspx
Pa. Geological Survey	Geological Characteristics	http://www.dcnr.state.pa.us/topogeo/index.aspx
Pa. Geological Survey	Mineral Resources	http://www.dcnr.state.pa.us/topogeo/pub/mineral.aspx
Pa. Geological Survey	Environmental Geology for Land Use Planning	http://www.dcnr.state.pa.us/topogeo/education/landuse/landuseplan.aspx
Pa. Spatial Data Access (PASDA)	Geographic Information System Data	http://www.pasda.psu.edu/
United States Environmental Protection Agency	Brownfields	http://www.epa.gov/brownfields
United States Environmental Protection Agency	Superfund	http://www.epa.gov/superfund
United States Environmental Protection Agency -	Enforcement and Compliance History	http://www.epa-echo.gov/echo/
United States Environmental Protection Agency - Envirofacts	Federal Permits, Violations, Wastesites	http://www.epa.gov/enviro/

Water Resources

Center for Dirt & Gravel Road Studies		http://www.mri.psu.edu/centers/cdgrs/Index.html
Coldwater Heritage Partnership		http://www.coldwaterheritage.org/
Environmental Protection Agency	Surf Your Watershed	http://cfpub.epa.gov/surf/huc.cfm?huc_code=05030105
Federal Emergency Management Agency	National Flood Insurance Program	http://www.fema.gov/business/nfip/

Brokenstraw Creek Watershed Conservation Plan

Source	Data	Website
Water Resources (continued)		
Keystone Chapter Soil and Water Conservation Society		http://www.keystoneswcs.com/index.html
League of Women Voters	Groundwater Primer for Pa.ns	http://pa.lwv.org/wren/pubs/primer.html
Pa. American Water		http://www.amwater.com/awpr1/paaw/default.html
Pa. Department of Environmental Protection	Stormwater Management Program	http://www.depweb.state.pa.us/watershedmgmt/cwp/view.asp?a=1437&Q=518682&PM=1
Pa. Department of Environmental Protection	Water Resources Plan	http://www.dep.state.pa.us/dep/deputate/watermgt/wc/subjects/WaterResources/docs/WaterResourcesExecutiveSummary.htm
Pa. Department of Environmental Protection	Watershed Management	http://www.depweb.state.pa.us/watershedmgmt/site/default.asp
Pa. Department of Environmental Protection	State Water Planning Resource Center	http://www.dep.state.pa.us/dep/deputate/watermgt/wc/act220/default.ht
Pa. Fish and Boat Commission	Wild Trout Waters	http://www.fish.state.pa.us/classa98.htm
Pa. Geological Survey	Water Resources Reports	http://www.dcnr.state.pa.us/topogeo/groundwater/gwlist.aspx
Pa. Geological Survey	Geology of Groundwater in Pa.	http://www.dcnr.state.pa.us/topogeo/education/es3.pdf
Pa. Geological Survey	Hydrogeologic and well-construction characteristics of the rocks of Pa.	http://www.dcnr.state.pa.us/topogeo/pub/w69recent.aspx
Pa. Geological Survey	Pa. Groundwater Information System	http://www.dcnr.state.pa.us/topogeo/groundwater/PaGWIS/PaGWISMenu.asp?c=t
Pa. Lake Management Society		http://www.palakes.org/
Pa. Trout	Wilderness Trout Streams	http://www.patrou.org/wildernesstroutstreams.htm
Stroud Water Research Center		http://www.stroudcenter.org/
U.S. Geological Survey	Water Resources Links	http://water.usgs.gov/lookup/getwatershed?05030105
United States Environmental Protection Agency	Water Quality Trading	http://www.epa.gov/owow/watershed/trading.htm
University of Pittsburgh	Regional Water Management Task Force	http://www.iop.pitt.edu/water/index.htm

Biological Resources

Biodiversity

Ecological Society of America	Biodiversity	http://www.esa.org/
NatureServe	Biodiversity	http://www.natureserve.org/
Pa. Biodiversity Partnership	Biodiversity	http://www.pabiodiversity.org/index.html
Pa. Biological Survey (PABS)	Biodiversity	http://alpha.dickinson.edu/prorg/pabs/index.htm
Pa. GAP Analysis Project	Biodiversity	http://www.orser.psu.edu/PAGAP/gappage.htm

Source	Data	Website
Biological Resources (continued)		
<i>Invasive Species</i>		
Aquatic Invasive Species of Pa.	Invasive Species	http://www.pserie.psu.edu/seagrant/ais/
Common Invasive Plant in Riparian Areas	Invasive Species	http://www.dep.state.pa.us/dep/deputate/watermgmt/wc/subjects/streamrel/eaf/Docs/Invasive%20Plants.pdf
Invasive Plants of Pa.	Invasive Species	http://www.dcnr.state.pa.us/forestry/wildplant/invasive.aspx
Invasive Plants of the Eastern United States	Plant Invaders of Mid-Atlantic Natural Areas	http://www.invasive.org/eastern/midatlantic/intro.html
Invasive Species	Invasive Species	www.invasive.org
Invasive Species in Pa.	Invasive Species	http://www.biodiversitypartners.org/invasive/factsheets/PA.pdf
Mid-Atlantic Exotic Pest Plant Council		http://www.ma-eppc.org/
U.S. Department of Agriculture:	National Agricultural Library – Pa. Invasive Species Resources	http://www.invasivespeciesinfo.gov/unitedstates/pa.shtml

Native Plants and Landscaping

American Chestnut Foundation	Pa. Chapter	www.patacf.org
Arbor Day Foundation	Backyard Woods	http://www.arborday.org/backyardwoods/guide.cfm
Arbor Day Foundation	Tree City U.S.A.	http://www.arborday.org/programs/treeCityUSA.cfm
Carnegie Library of Pittsburgh	Books on Native Plants	http://www.carnegielibrary.org/subject/gardening/nativeplants.html
Ernst Conservation Seeds	Native Plant Sales and Landscaping Information	www.ernstseed.com
Pa. Department of Conservation and Natural Resources	Pa. Community Forests	http://www.dcnr.state.pa.us/forestry/pucfc/
Pa. Flora Database		http://www.paflora.org/Web3/Speciesbywatershed_search_form.asp
Pa. Native Plant Society	Useful Links and Information Regarding Native Plants	http://www.pawildflower.org/04_links/links.htm
Sylvania Natives	Native Plant Sales	www.sylvanianatives.com
U.S. Department of Energy	Energy Efficient Landscaping	http://www.eere.energy.gov/consumer/your_home/landscaping/index.cfm/mytopic=11910
Western Pa. Audubon Society	List of plants native to Allegheny County and surrounding region	http://www.aswp.org/files/allegheny_county_Pa._native_plants_aswp.pdf
Pa. Invertebrate Biodiversity Project		http://www.ento.psu.edu/home/frost/pinbiop/about.html
Pa. Natural Heritage Program		http://www.naturalheritage.state.pa.us/

Brokenstraw Creek Watershed Conservation Plan

Source	Data	Website
Biological Resources (continued)		
<i>Wildlife</i>		
U.S. Environmental Protection Agency	Ecoregions	http://www.epa.gov/wed/pages/ecoregions/reg3_eco.htm
Animal Rescue League of Western Pa.	Wildlife Rehabilitation	http://www.pawildlifecenter.org/about-pwc.htm
Audubon Society	Important Bird Areas	http://pa.audubon.org/iba/maps.html
Carnegie Museum of Natural History	2nd Pa. Breeding Bird Atlas	http://www.carnegiemnh.org/atlas/about_book.htm
Carnegie Museum of Natural History	Pa. Mammals	http://www.carnegiemnh.org/mammals/index.html
Field Guides		http://www.enature.com/fieldguides/index.asp
National Biological Information Infrastructure		http://www.nbio.gov/portal/server.pt
National Wildlife Federation		http://www.nwf.org/nationalwildlife/article.cfm?articleid=292&issueid=
North American Pollinator Protection Campaign		http://www.nappc.org/
Pa. Audubon		http://pa.audubon.org/
Pa. Biological Survey	Important Mammal Areas	http://www.pawildlife.org/imap.htm
Pa. Department of Conservation and Natural Resources	Endangered and Threatened Species of Pa.	http://www.dcnr.state.pa.us/wrcf/contents.aspx
Pa. Fish and Boat Commission	Pa. Fishes	http://www.fish.state.pa.us/pafish/fishhtms/chapindx.htm
Pa. Wildlife Federation		http://www.pawildlife.org/
Species Profiles		http://www.fcps.edu/StratfordLandingES/Ecology/mpages/organism_m
The Wildlife Society		http://joomla.wildlife.org/?CFID=13824013&CFTOKEN=85052420
Wildbird Recovery	Songbird Rehabilitation Center	http://www.stormpages.com/wildbird/index.html
New York Department of Environmental Conservation	Species of Lizards and Snakes Found in New York	http://www.dec.ny.gov/animals/7483.html

Cultural Resources

National Parks Service	National Register of Historic Places	http://www.nps.gov/history/nr/research/nris.htm
PA Roots	Historical Information	http://www.pa-roots.com/
Pa. Department of Education	Environment and Ecology Standards	http://www.pde.state.pa.us/k12/lib/k12/envec.pdf
Pa. Fish and Boat Commission	Fishing Regulations	http://www.fish.state.pa.us/regs_fish.htm
New York Department of Environmental Conservation	Places to go-Western New York	http://www.dec.ny.gov/outdoor/7786.html
New York Department of Environmental Conservation	New York State Forests	http://www.dec.ny.gov/lands/34531.html
New York Department of Environmental Conservation	New York State Wildlife Management Areas	http://www.dec.ny.gov/outdoor/8297.html

APPENDIX Q. RESOURCE GUIDE

Conservation Groups

Allegheny Guide Service

175 Alpine Way
Warren, Pa 16365
Phone: 814-723-5912
Fax: 814-688-2309
Website:
[http://www.alleghenyguideservice.com/
index.shtml](http://www.alleghenyguideservice.com/index.shtml)

Allegheny National Fish Hatchery

P.O. Box 1050
Hemlock Road
Warren, PA 16365

Allegheny Outdoor Club

19 Adams Court
Warren, Pa 16365

Allegheny Watershed Network

Phone: 412-481-9400
Fax: 412-481-9401
Website: <http://www.alleghenywatershed.org>

Audubon Center and Sanctuary

1600 Riverside Road
Jamestown, NY 14701
Phone: 716-569-2345

Black Ash Sportsmen

8410 Clark Road
Guys Mills, PA 16327
Phone: 814-333-9967

**Brokenstraw Fish and Game Club, Warren
County Council of Sportsmen's Clubs**

1075 Lauger Road
Youngsville, PA 16371
Phone: 814-563-7621

**Brokenstraw Fish and Game Club, Warren
County Council of Sportsmen's Clubs,
Trout Unlimited**

Dunns Eddy Road
Irvine, PA 16329
Phone: 814-563-9877

Brokenstraw Watershed Council

959 Cemetary Road
Spring Creek, PA 16436
Phone: 814-664-4050
Website: [http://www.brokenstraw.org/
BWC2008color.html](http://www.brokenstraw.org/BWC2008color.html)

Caldwell Creek Chapter of Trout Unlimited

10 Erie Street
P.O. Box 16
Columbus, PA 16405
Phone: 814-664-2124

Chautauqua Watershed Conservancy

413 North Main Street
Jamestown, NY 14701
Phone: 716-664-2166
Website: <http://chautauquawatershed.org/>

**Chief Cornplanter Council #538 Boy Scouts
of America**

316 Fourth Ave.
Warren, PA 16365
Phone: 814-723-6700

Conewango Creek Watershed Association

609 Rouse Ave., Suite 203
Youngsville, PA 16371
Phone: 814-563-3117
Fax: 814-563-3412

**Ducks Unlimited - Edinboro 164 -
Conneaut Flyway**

111 Erie Street
Edinboro, PA 16412
Phone: 800-648-2701
Website: [http://www.ducks.org/Pennsylvania/
PACContent/274/ErieCountyPADucksUnlimite
d.html](http://www.ducks.org/Pennsylvania/PACContent/274/ErieCountyPADucksUnlimited.html)

Erie National Wildlife Refuge

11296 Wood Duck Lane
Guys Mills, PA 16327
Phone: 814-789-3585
Fax: 814-789-2909
Website: <http://www.fws.gov/northeast/erie/>

Conservation Groups (continued)

Jamestown Audubon Society, Inc.

1600 Riverside Road
Jamestown, NY 14701
Phone: 716-569-2345
Website: <http://www.jamestownaudubon.org/>

Kalbfus Rod & Gun Club

Chapman Dam Road
Clarendon, PA 16313

Kinzua Allegheny Walleye Association

1255 Dutchman Run Rd.
Clarendon, PA 16313
Website: <http://www.kinzua-walleye.com/>

Kinzua Dam & Allegheny Reservoir

1205 Kinzua Road
Warren, PA 16365
Phone: 814-726-0661
Website: <http://www.lrp.usace.army.mil/rec/lakes/kinzuala.htm>

Meadville Sportsmen's Club

20600 Ryan Rd
Meadville, PA 16335
Phone: 814-336-2505

Northcountry Outfitters and Charter Services

1315 Brown Run Rd.
Clarendon, PA 16313
Phone: 814-726-1570
Website: <http://www.northcountryfish.com/>

**Northern Allegheny Project
University of Pittsburgh at Titusville**

206 McKinney Hall
504 East Main Street
Titusville, PA 16354
Phone: 814-432-2187

Northwest PA Great Outdoors Visitors Bureau

175 Main Street
Brookville, PA 15825
Phone: 814-849-5197

Northwest Regional Planning and Development Commission

395 Seneca Street
Oil City, PA 16301
Phone: 814-677-4800
Fax: 814-677-7663
Website: <http://www.nwcommission.org>

PA Wilds Planning Team

268 Wright Lane
Tionesta, PA 16353
Phone: 1-814-723-3763

Pennsylvania Lake Management Society

P.O. Box 111
Huntington Mills, PA 18622
Website: <http://www.palakes.org/>

Presque Isle Audubon Society

Tom Ridge Environmental Center
301 Peninsula Drive, Suite 8
Erie, Pa 16505
Website: <http://www.presqueisle.org/audubon/>

Historical Societies

Allegheny Musarium Association

P.O. Box 554
Warren, PA 16365

Busti Historical Society

3443 Lawson Road
Jamestown, NY 14701
Phone: 716-326-2977

Chautauqua County Historical Society

P.O. Box 7
Westfield, NY 14787

Clymer Historical Society

P.O. Box 114
Clymer, NY 14724

Corry Area Historical Society

P.O. Box 107
Corry, PA 16407

Historical Societies (continued)

Crawford County Historical Society

Helene Barco-Duratz Cultural Center
411 Chestnut Street
Meadville, PA 16335
Phone: 814-724-6080
Website: <http://www.crawfordhistorical.org/>

Route 6 Heritage Corridor

P.O. Box 180
Galeton, PA 16922
Phone: 814-435-7706
Website: <http://www.paroute6.com/>

The Roger Tory Peterson Institute of Natural History

311 Curtis Street
Jamestown, NY 14701
Phone: 716-665-2473
Website: <http://www.rtpi.org/>

Warren Historical Society

210 Fourth Avenue
Warren, PA 16365
Phone: 814-723-1795
Website: <http://www.warrenhistory.org/>

Regional Planning Commissions

Northwest Regional Planning and Development Commission

395 Seneca Street
Oil City, PA 16301
Phone: 814-677-4800
Fax: 814-677-7663
Website: <http://www.nwcommission.org>

State Agencies

Chapman State Park

4790 Chapman Dam Road
Clarendon, PA 16313
Phone: 814-723-0250
Website: <http://www.dcnr.state.pa.us/stateparks/parks/chapman.aspx>

Cornplanter State Forest

323 North State Street
North Warren, PA 16365
Phone: 814-723-0262

DCNR - Bureau of Forestry - District 14

323 North State Street
Warren, PA 16365
Phone: 814-723-0262

DCNR - Region 6 - Northwest - Erie

Regional Office
230 Chestnut Street
Meadville, Pa 16335-3481
Phone: 814-332-6190

DEP Northwest Regional Office

230 Chestnut Street
Meadville, PA 16335-3481
Phone: 814-332-6176

PA Geological Survey

3240 Schoolhouse Road
Middletown, PA 17057-3534
Phone: 717-702-2045
Fax: 717-702-2065
Website: <http://www.dcnr.state.pa.us/topogeo/>

PA Wilds Planning Team

268 Wright Lane
Tionesta, PA 16353
Phone: 1-814-723-3763

Penn State Cooperative Extension

1305 Hull Hill Road
Youngsville, PA 16371

Pennsylvania Department of Education

333 Market Street
Harrisburg, PA 17126
Phone: 717-783-6788
Website: www.pde.state.pa.us/

PA Department of Emergency Management

Eastern Area Office
Hamburg Center
Hamburg, PA 19526
Phone: 610 562-3003
Fax: 610 562-7222
Website: www.pema.state.pa.us/

State Agencies (continued)

PA Department of Labor and Industry

Room 1700
651 Boas Street
Harrisburg, PA 17121
Phone: 717-787-5279
Website: www.dli.state.pa.us/

PA Department of Community and Economic Development

400 Forum Building, Room 357
Harrisburg, PA 17120
Phone: 717-783-8950
Website: <http://www.dced.state.pa.us/>

PA Department of Health

Health & Welfare Building
7th & Forster Streets
Harrisburg, PA 17120
Phone: 1-877-PA-HEALTH
Website: www.portal.state.pa.us/portal/server.../department_of_health.../17457

PA Historical and Museum Commission

State Museum Building
300 North Street
Harrisburg, PA 17120
Phone: 717-787-3362
Fax: 717-783-9924
Website: www.phmc.state.pa.us/

PennVEST

22 S. Third Street
Harrisburg, PA 17101
Phone: 717-783-6798
Website: www.portal.state.pa.us/portal/server.pt/.../pennvest/9242

State Legislators

(Representatives and Senator in office 2010; see State General Assembly website: www.legis.state.pa.us for current information)

House of Representatives – District 6

Hon. Brad Roae

900 Water Street, Downtown Mall
Meadville, PA 16335
(814) 336-1136
Fax: (814) 337-7680
Website: <http://www.reproae.com>

House of Representatives – District 6

Hon. Kathy L. Rapp

404 Market Street
Warren, PA 16365
(814) 723-5203
Fax: (814) 728-3564
Website: <http://www.reprapp.com>

Federal Agencies

Allegheny National Forest

222 Liberty Street
Warren, PA 16365
Phone: (814) 728-6163
Fax: (814) 726-1465

U.S. Army Corps of Engineers – Headquarters

441 G. Street, NW
Washington, DC 20314-1000
Phone: 202-761-0011
www.usace.army.mil

U.S. Department of Agriculture (USDA) – Headquarters

1400 Independence Ave., S.W.
Washington, DC 20250
Phone: 202-720-2791
www.usda.gov

USDA Animal and Plant Health Inspection Service (APHIS) – Pennsylvania Wildlife Services

P.O. Box 60827
Harrisburg, PA 17106
Phone: 717-236-9451
Fax: 717-236-9454
www.aphis.usda.gov

USDA Farm Service Agency

Pennsylvania State Farm Service Agency

1 Credit Union Place
Harrisburg, PA 17110
Phone: 717-237-2117
www.fsa.usda.gov

Federal Agencies (continued)

USDA Natural Resources Conservation Service (NRCS) – Pennsylvania State Office
One Credit Union Place, Suite 340
Harrisburg, PA 17110
Phone: 717-237-2100
Fax: 717-237-2238
www.pa.nrcs.usda.gov

USDA-NRCS State Soil Survey Office
USDA-NRCS
One Credit Union Place, Suite 340
Harrisburg, PA 17110-2993
Edgar A. White, Jr., State Soil Scientist
Phone: 717-237-2207
<http://soils.usda.gov/>

**United States Department of Energy
Pennsylvania Public Utility Commission**
Commonwealth Keystone Building
400 North Street
P.O. Box 3265
Harrisburg, PA 17105
www.puc.state.pa.us

**United States Department of Energy
National Energy Technology Laboratory**
Pittsburgh Research Center
626 Cochran Mill Road, P.O. Box 10940
Pittsburgh, PA 15236
Phone: 412-386-6569
Fax: 412-386-5917
www.netl.doe.gov

**U.S. Environmental Protection Agency –
Headquarters**
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Phone: 202-272-0167
www.epa.gov

**U.S. Environmental Protection Agency –
Region 3 (DC, DE, MD, PA, VA, WV)**
1650 Arch Street
Philadelphia, PA 19103
Phone: 215-814-5000
Fax: 215-814-5103
<http://www.epa.gov/region03/>

**United States Fish and Wildlife Service
Pennsylvania Field Office**
315 South Allen Street, Suite 322
State College, PA 16801
Phone: 814-234-4090
Fax: 814-234-0748
www.fws.gov

**Chautauqua County
Chautauqua County Executive**
Gerace Office Building, Room 341
3 North Erie Street
Mayville, NY 14757
Phone: 716-753-4211
Website: [http://www.co.chautauqua.ny.us/
exec/execframe.htm](http://www.co.chautauqua.ny.us/exec/execframe.htm)

Chautauqua County Legislature
Gerace Office Building
3 North Erie Street
Mayville, NY 14757
Phone: 716-661-7215
Website: [http://www.co.chautauqua.ny.us/
legis/legisframe.htm](http://www.co.chautauqua.ny.us/legis/legisframe.htm)

Chautauqua County Parks Department
2105 South Maple Avenue
Ashville, NY 14710

Chautauqua County Planning Board
200 Harrison Street
Jamestown, NY 14701
Phone: 716-664-3262

**Chautauqua County Soil & Water
Conservation District**
Frank W. Bratt Agricultural Center
3542 Turner Road
Jamestown, NY 14701
Phone: 716-664-2351 Ext 3
Website: <http://www.soilwater.org/>

Chautauqua County Visitors Bureau
P.O. Box 1441
Chautauqua Main Gate, Rt. 394
Chautauqua, NY 14722
Website: <http://www.tourchautauqua.com/>

Chautauqua County (continued)

Town of Busti

121 Chautauqua Avenue
Lakewood, NY 14750
Phone: 716-763-8561
Fax: 716-763-2953

Town of Clymer

P.O. Box 274
Clymer, NY 14724
Phone: 716-355-9933

Town of French Creek

9252 Route 474
Clymer, NY 14724

Town of Harmony

P.O. Box 186
Panama, NY 14767
Phone: 716-782-3430
Fax: 716-782-3173

Town of North Harmony

Town Hall / Community Building
3445 Old Bridge Road
Stow, NY 14785
Phone: 716-789-3445
Fax: 716-789-9308

Town of Sherman

P.O. Box 568
122 Park Street (Fire Hall)
Sherman, NY 14781
Phone: 716-761-6770

Crawford County

Crawford County Commissioners

903 Diamond Square
Meadville, PA 16335
Phone: 814-333-7400

Crawford County Conservation District

Woodcock Creek Nature Center
21742 German Road
Meadville, PA 16335
Phone: 814-763-5269
Website:
<http://www.crawfordconservation.com/>

Crawford County Planning Commission

903 Diamond Park
Courthouse, 3rd Floor
Meadville, PA 16335
Phone: 814-333-7341

Sparta Township

24650 Highway 89
Spartansburg, PA 16434
Phone: 814-654-7526

Erie County

Corry, City of

100 South Center Street
Corry, PA 16407
Phone: 814-663-7041

Concord Township

12677 Ormsbee Rd
Corry, PA 16407
Phone: 814-664-2213
Fax: 814-664-7945

Erie County Conservation District

1927 Wager Road
Erie, PA 16509
Phone: 814-825-6403
Website: http://www.erieconservation.com/Home_Page.php

Erie County Council

Erie County Courthouse Room 116
140 West Sixth St.
Erie, PA 16501
Phone: 814-451-6350

Erie County Department of Planning

140 West Sixth St.
Erie, PA 16501
Phone: 814-451-7001
Website: <http://www.eriecountyplanning.org/>

Erie County Executive

Erie County Courthouse
140 West Sixth St.
Erie, PA 16501
Phone: 814-451-6000

Erie County (continued)

Wayne Township

17395 Sciota Rd
Corry, PA 16407
Phone: 814-663-1663
Fax: 814-664-8619

Warren County

Bear Lake Borough

Box 41
Bear Lake, PA 16402
Phone: 814-664-2133

**Borough of Youngsville
Revitalization of Youngsville**

301 East Main Street
Youngsville, PA 16371
Phone: 814-563-7870

Brokenstraw Township

770 Rouse Avenue
Youngsville, Pa 16371
Phone: 814-563-7681

Columbus Township

P.O. Box 291
Columbus, PA 16405
Phone: 814-664-2711

Eldred Township

2915 Newton Road
Pittsfield, Pa 16340
Phone: 814-436-7654

Conewago Township

4 Fireman St.
Warren, Pa 16365
Phone: 814-723-6410

Deerfield Township

250 Main Street
Tidioute, PA 16351
Phone: 814-484-3051

Freehold Township

139 Lottsville Niobe Road
Bear Lake, Pa 16402
Phone: 814-489-3806

Pittsfield Township

371 Nelson Hill Road
Pittsfield, PA 16340
Phone: 814-563-4691

Spring Creek Township

P.O. Box 7
Spring Creek, PA 16436
Phone: 814-664-3021

Sugar Grove Township

195 Creek Road
Sugar Grove, PA 16350
Phone: 814-489-7809

**Warren County Chamber of Business and
Industry**

308 Market Street
P.O. Box 942
Warren, PA 16365
Phone: 814-723-3050
Fax: 814-723-6024
Website: <http://www.wccbi.org/>

Warren County Commissioners

204 4th Ave.
Warren, PA 16365
Phone: 814-728-3406

Warren County Conservation District

300 Hospital Drive, Suite D
Warren, PA 16365
Phone: 814-563-3117
Website: www.warrenpa.org

Warren County Planning and Zoning

204 4th Ave.
Warren, PA 16365
Phone: 814-728-3512

Youngsville Borough

40 Railroad St.
Youngsville, Pa 16371
Phone: 814-563-4604

Tourism Promotion Agencies

Brokenstraw Antique Tractor Association
645 Clymer Sherman
Clymer, NY 14724
Phone: 716-355-6357

Tourism Promotion Agencies (continued)

Cherry Ridge Lodge

20 Riverside Drive
Warren, PA 16365
Phone: 814-728-9493
Website: [http://www.cherryridge.com/
Welcome.html](http://www.cherryridge.com/Welcome.html)

Chautauqua Rails-To-Trails

Route 394 in the Train Depot
P.O. Box 151
Mayville, NY 14757
Phone: 716-269-3666
Website: [http://www.cecomet.net/
~crtt/index.html](http://www.cecomet.net/~crtt/index.html)

Girl Scouts of America

418 College Street
Youngsville, PA 16371
Phone: 814-563-3468

Kinzua Dam & Allegheny Reservoir

1205 Kinzua Road
Warren, PA 16365
Phone: 814-726-0661
Website: [http://www.lrp.usace.army.mil/
rec/lakes/kinzuala.htm](http://www.lrp.usace.army.mil/rec/lakes/kinzuala.htm)

Northwest PA Great Outdoors Visitors Bureau

175 Main Street
Brookville, PA 15825
Phone: 814-849-5197

PA Route 6 Tourist Association

P.O. Box 180
Galeton, PA 16922

Providence Pastures Farm

1456 Sample Flats Road
Corry, PA 16407
Phone: 814-663-0556

Route 6 Heritage Corridor

P.O. Box 180
Galeton, PA 16922
Phone: 814-435-7706
Website: <http://www.paroute6.com/>

The Seneca Nation of Indians, Allegheny Reservation

G.R. Plummer Building
P.O. Box 231
Salamanca, NY 14779
Phone: 716-945-1790
Website: <http://www.sni.org/>

Warren County Visitors Bureau

22045 Route 6
Warren, PA 16365

Schools

Allegheny Valley Elementary School

P.O. Box 277
100 N. Main Street
Clarendon, 16313
Phone: 814-723-4991
Website: [http://www.wcsdpa.org/allegheny-
valley.cfm](http://www.wcsdpa.org/allegheny-valley.cfm)

Beatty-Warren MS

2 E 3rd Ave
Warren, PA 16365
Phone: 814-723-5200
Website: [http://www.wcsdpa.org/beaty-
warren.cfm](http://www.wcsdpa.org/beaty-warren.cfm)

Beaver Valley Amish School

Rr 4 Box 241
Sugar Grove, PA 16350

Bethel Baptist Christian Academy

200 Hunt Road
Jamestown, NY 14701
Phone: 716-484-7420

Britton Run Amish School

23666 Britton Run Rd
Spartansburg, PA 16434

Brush Run Amish School

45047 Farrington Rd
Spartansburg, PA 16434

Calvary Chapel Christian

P.O. Box 579
Russell, PA 16345
Phone: 814-757-8744

Schools (continued)

Carlyle C. Ring Elementary School

333 Buffalo Street
Jamestown, NY 14701
Phone: 716-483-4407

Cherry Ridge School

Rr 2
Spartansburg, PA 16434
Phone: 812-664-9905

Chase Road School

42837 Chase Road
Spartansburg, PA 16434
Phone: 814-654-2455

Clinton V. Bush

150 Pardee Avenue
Jamestown, NY 14701
Phone: 716-483-4401

Columbus Elementary School

100 W Main St
Corry, PA 16407
Phone: 814-665-9491

Concord Elementary School

230 E South St
Corry, PA 16407
Phone: 814-665-9642

Conelway Elementary School

18700 Conelway Rd
Corry, PA 16407
Phone: 814-665-9512

Corry Area HS

534 E Pleasant Street
Corry, PA 16407
Phone: 814-665-8297

Corry Elementary School

249 Mead Avenue
Corry, PA 16407
Phone: 814-664-8740

Eisenhower M/HS

3700 Route 957
Russell, PA 16345
Phone: 814-757-8878
Website: <http://www.wcsdpa.org/eisenhower.cfm>

Falconer HS

2 East Avenue
Falconer, NY 14733
Phone: 716-665-6624

Frewsburg JSHS

26 Institute Street
Frewsburg, NY 14738
Phone: 716-569-3255

Gustavus Adolphus Learning Center

200 Gustavus Ave
Jamestown, NY 14701
Phone: 716-665-2772

Harvey C. Fenner Elementary School

2016 East Main Street Ext
Falconer, NY 14733
Phone: 716-665-6627

Holy Family Catholic School

1135 North Main Street
Jamestown, NY 14701
Phone: 716-483-3245

Home Street Elementary School

200 Home St
Warren, PA 16365
Phone: 814-723-4230

Jamestown Community College

525 Falconer Street, P.O. Box 20
Jamestown, NY 14702
Phone: 716-665-5220
Website: <http://www.sunyjcc.edu/jamestown/jamestown.html>

Schools (continued)

Jamestown Community College, Warren Center
Curwen Building
185 Hospital Drive
Warren, PA 16365
Phone: 814/723-3577
Website: <http://www.sunyjcc.edu/warren/warren.html>

Jamestown HS
350 East Second Street
Jamestown, NY 14701
Phone: 716-483-3470

Jamestown S D A School
130 McDaniel Ave
Jamestown, NY 14701
Phone: 716-487-3178

Jefferson Elementary School
200 Conewango Ave
Warren, PA 16365
Phone: 814-723-9061

Jefferson MS
195 Martin Road
Jamestown, NY 14701
Phone: 716-483-4411

Lake View School
7736 Church St
Panama, NY 14767
Phone: 716-355-8867

Levant Christian School
Route 394
P.O. Box 449
Falconer, NY 14733
Phone: 716-665-2422

Lincoln Elementary School
301 Front Street
Jamestown, NY 14701
Phone: 716-483-4412

Little Ash Amish School
Rr 1 Box 40a
Sugar Grove, PA 16350

Log Cabin School
42843 Canadohta Lake Rd
Spartansburg, PA 16434

Market Street Elementary School
120 Market St
Warren, PA 16365
Phone: 814-723-9030

Milton J. Fletcher Elementary School
301 Cole Avenue
Jamestown, NY 14701
Phone: 716-483-4404

**Northern Allegheny Project
University of Pittsburgh at Titusville**
206 McKinney Hall
504 East Main Street
Titusville, PA 16354
Phone: 814-432-2187

North Warren Elementary School
110 S State St
North Warren, PA 16365
Phone: 814-723-6370

Oil Creek School
41922 Glynden Rd
Spartansburg, PA 16434

Panama HS
41 North Street
Panama, NY 14767
Phone: 716-782-2455

Persell MS
375 Baker Street
Jamestown, NY 14701
Phone: 716-483-4406

Pleasant Township Elementary School
84 McKinley Ave
Warren, PA 16365
Phone: 814-723-6970

Red Oak School
44509 Buells Corners Rd
Spartansburg, PA 16434

Schools (continued)

Robert H. Jackson Elementary School

135 Ivory Street
Frewsburg, NY 14738
Phone: 716-569-5630

Rovillus R. Rogers Elementary School

41 Hebner Street
Jamestown, NY 14701
Phone: 716-483-4408

Russell Elementary School

250 Route 62
6820 Market Street
Russell, PA 16345
Phone: 814-757-4507
Website: <http://www.wcsdpa.org/russell.cfm>

Samuel G. Love Elementary School

50 East 8th Street
Jamestown, NY 14701
Phone: 716-483-4405

South Street Elementary School

713 Pennsylvania Ave E
Warren, PA 16365
Phone: 814-723-9340

Southwestern HS

600 Hunt Road W.E.
Jamestown, NY 14701
Phone: 716-664-6273

Sparta Elementary School

Water Street Box 518
Spartansburg, PA 16434
Phone: 814-654-7812

St. Joseph Catholic

608 Pennsylvania Ave W
Warren, PA 16365
Phone: 814-723-2030

St Thomas Elementary School

229 West Washington St
Corry, PA 16407
Phone: 814-665-7375

Sugar Grove Elementary School

101 School Street
Sugar Grove, PA 16350
Phone: 814-489-7851
Website: <http://www.wcsdpa.org/sugarGrove.cfm>

Tidioute Elementary School

241 Main St
Tidioute, PA 16351
Phone: 814-484-3888

Valley View Amish School

7736 Church St
Panama, NY 14767
Phone: 716-761-7240

Valley View School

Canadota Lake Road
Spartansburg, PA 16434

Warren Area Elementary Center

343 East Fifth Avenue
Warren, PA 16365
Phone: 814-723-9061
Website: 814-723-9061

Warren Area HS

345 E 5th Ave
Warren, PA 16365
Phone: 814-723-3370
Website: <http://www.wcsdpa.org/warren-high.cfm>

Warren County AVTS

347 E 5th Ave
Warren, PA 16365
Phone: 814-726-1260

Warren County Christian

Route 6 West
Youngsville, PA 16371
Phone: 814-563-4457

Washington MS

159 Buffalo Street
Jamestown, NY 14701
Phone: 716-483-4413

Schools (continued)

Wright Elementary School

426 Wright St
Corry, PA 16407
Phone: 814-665-6341

Youngsville Elementary/Middle School

232 2nd St
Youngsville, PA 16371
Phone: 814-563-7207
Website: <http://www.wcsdpa.org/youngsville-elementary.cfm>

Youngsville HS

227 College St
Youngsville, PA 16371
Phone: 814-563-7573
Website: <http://www.wcsdpa.org/youngsville.cfm>

Media/Outreach

Classy 100, WXKC-FM

471 Robison Road
Erie, PA 16509
Phone: 814-868-5355
Fax: 814-868-1876

Corry Journal

Phone: 888-665-8291

Erie Times News

Phone: 814-870-1600

The Chautauqua Region Word

P.O. Box 363
Chautauqua, NY 14722

The Meadville Tribune

947 Federal Court
Meadville, PA 16335
Phone: 814-724-6370
Fax: 814-724-8755

The Post-Journal

P.O. Box 3386
15 West Second Street
Jamestown, NY 14702
Phone: 716-487-1111
Fax: 716-664-3119

Times Observer

P.O. Box 188
205 Pennsylvania Ave.
Warren, PA 16365
Phone: 814-723-8200
Fax: 814-723-6922
Website: <http://timesobserver.com/>

WFXP Fox 66

8455 Peach St.
Erie, PA 16509
Phone: 814-864-2400

WICU 12

3514 State St.
Erie, PA 16508
Phone: 814-454-8812
Fax: 814-454-3753

WJET-TV 24

8455 Peach St.
Erie, PA 16509
Phone: 814-864-2400
Fax: 814-868-3041

WKZA 106.9 KISS-FM

106 W. Third Street, Suite 106
Jamestown, NY 14701
Phone: 716-487-1106
Fax: 716-488-2169

WNAE-WRRN-WKNB

P.O. BOX 824
310 2nd Avenue
Warren, PA 16365
Phone: 814-723-1310
Fax: 814-723-3356

WSEE Television

1220 Peach Street
Erie, PA 16501
Phone: 814-455-7575

WXTA-FM - Country 98

471 Robison Road
Erie, PA 16509
Phone: 814-868-5355
Fax: 814-868-1876

Media/Outreach (continued)

Youngsville News

Revitalization of Youngsville

207 High Street

Youngsville, PA 16371

Phone: 814-730-1571

Z1023, WQHZ

471 Robison Road

Erie, PA 16509

Phone: 814-868-5355

Fax: 814-868-1876