

Environmental Resources Inventory of Upper Dublin Township

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Descriptions of the Map Layers for the Township Web site:

- **Base Map**

This map displays creeks, roads and highways, rail line, rail station, and township boundaries. These data layers have been used as a background in every other map of this inventory.

Source: Pennsylvania Spatial Data Access (PASDA), Upper Dublin Township, and Center for Sustainable Communities, Temple University

Year of Publication: Various

- **Ortho-Photo**

Description: An ortho-photo is an aerial photograph that has been rectified to the equivalent size of a map of the same scale.

Source: Delaware Valley Regional Planning Commission (DVRPC)

Year of Publication: 2005

- **Hydrology and Geology**

- **Small Watershed Boundaries**

Description: A region or area bounded peripherally by a divide and draining ultimately to a particular body of water, for example to a river or estuary. The boundary is usually between two river systems. The watershed marks the divide between drainage basins, and usually runs along the highest points of the interfluves.

Source: Environmental Resources Research Institute (ESRI), Pennsylvania Department of Environmental Protection (PADEP), and the Center for Sustainable Communities, Temple University

Year of Publication: 1997

- **Stormwater Management Facilities**

Description: Stormwater is a term used to describe water that originates during precipitation events. Because impervious surfaces (parking lots, roads, buildings) do not allow rain to infiltrate into the ground, more runoff is generated than in the undeveloped condition. This additional runoff can erode streams and rivers as well as cause flooding when stormwater collection systems are overwhelmed by the additional flow. Stormwater management attempts to control the peaks and volumes of runoff. Poor stormwater management leads to frequent flooding, erosion, sedimentation build-up, pounding on adjacent properties, non-point source pollution, and damage to roads, bridges and other infrastructure.

The Stormwater Management Facilities map includes several of the basic facility categories: Outlets, Bridges, Culverts, Detention and Dry Detention Basins, Inlets and Drop Inlets, Outfalls, Ponds, Twin Pipes, Wetlands, Outflow pipes, other survey points, as well as stream sections and areas of interest for stormwater improvements*.

Source: Environmental Resources Research Institute (ESRI), Pennsylvania Department of Environmental Protection (PADEP), Philadelphia Water Department (PWD), Upper Dublin Township, and the Center for Sustainable Communities, Temple University

Year of Publication: 2007 and 2008

*Note: Existing facility data inside the Sandy Run Watershed portion of the township was taken from the 'Fort Washington Area Flooding and Transportation Improvement Study', completed by the Center for Sustainable Communities, Temple University. The basin data for the Wissahickon Creek Watershed portion of the township was taken from the 'Wissahickon Creek Watershed Stormwater Detention Basin Inventory and Retrofit Program Study', (found at the following URL: <http://www.watershedscience.info/basininventory.html>) completed by the Office of Watersheds, Philadelphia Water Department.

- **Basin**
 Description: A drainage basin is a region of land where water from rain or snow-melt drains downhill into a body of water. The drainage basin includes both streams and rivers that convey water, as well as the land surfaces from which water drains into those channels. It also includes groundwater, which provides the base flow for streams.
Sources: Upper Dublin Township, Philadelphia Water Department (PWD), and Center for Sustainable Communities, Temple University
Year of Publication: 2007

- **Floodplain**
 Description: A floodplain is the relatively level area of land bordering a stream channel and inundated during moderate to severe floods. The 100 year floodplain is defined as the outer boundary from a flood with a 1 percent chance of occurrence in any one year. The floodplain layer was derived through combining the newly available data for Sandy Run watershed (created by Temple University) and existing data for Wissahickon Creek watershed (created by FEMA).
Source: Federal Emergency Management Agency (FEMA), and the Center for Sustainable Communities, Temple University
Year of Publication: 1996 and 2008

- **Riparian Buffers**
 Description: A riparian zone is the interface between land and a surface water body. It is a zone of protection made up of trees and other vegetation that grow along the banks of a waterway. Riparian forest buffers help keep a stream healthy by reducing stream bank erosion and acting as a natural soil filter. The purpose of this dataset is to identify stream banks lacking riparian forest buffers. A stream bank is classified as having a forested buffer if it is determined to have a 50 foot wide buffer of trees and 50 percent canopy cover. Each stream bank was analyzed independently.
Source: Heritage Conservancy
Year of Publication: 2002

- **Soil**
 Description: The top layer of the earth's surface, consisting of rock and mineral particles mixed with organic matter. The structure and composition of each particular soil type determines its fertility and suitability for various kinds of land development.
Source: Pennsylvania Spatial Data Access (PASDA)
Year of Publication: Unknown

- **Wetlands**
 Description: Wetlands are land areas seasonally or permanently waterlogged by either fresh or salt water. They can also be defined as lowland areas, such as marshes or swamps, saturated with moisture. Wetlands are areas where water saturation is the dominant factor that determines the nature of soil development and the types of plant and animal communities living in the soil and on its surface.
Source: Upper Dublin Township
Year of Publication: Unknown

- **Hydrologic Soil**
 Description: Hydrologic soil is a soil classification that is categorized by the water infiltration and runoff characteristics. A hydrologic group is a group of soils having similar runoff potential under similar storm and land cover conditions. Soils with a low runoff potential have high rates of infiltration and are deep and well-drained. Conversely, soils with high runoff potential have low infiltration rates and are thin and poorly-drained. The soils are usually placed into four groups, A, B, C and D.

Source: Pennsylvania Department of Conservation and Natural Resources (DCNR)

Year of Publication: Unknown

- **Bedrock Geology**

Description: Bedrock is the native consolidated rock underlying the Earth's surface, which underlies loose material, such as soil, sand, clay, or gravel. A bedrock map will show bands of differing rock type exposure, i.e., rock that would be exposed at the surface if all soils were removed. The different rock strata or layers that are indicated may be a result of either nonparallel (sloping) surface erosion at the edges of flat strata or normal surface erosion of tilted strata that has removed the upper portions of higher layers.

Sources: Pennsylvania Bureau of Topographic and Geologic Survey and Pennsylvania Department of Conservation and Natural Resources (DCNR)

Year of Publication: 2001

- **Land Features and Vegetation**

- **Surface Elevation**

Description: A digital elevation model (DEM) is a representation of a portion of the earth's surface, and includes features such as vegetation, buildings, bridges, etc. A DEM refers to any digital representation of a topographic surface and these data represent the elevation of the land surfaces.

Source: Upper Dublin Township and Center for Sustainable Communities, Temple University

Year of Publication: 2007; original data creation date: unknown

- **Topography**

Description: A topographic map (contour map) uses contour lines to join points of equal elevation (height) and thus show valleys, hills, and the steepness of slopes. Contours represent the vertical, or third dimension, on a topographic map. They show the shape and size of physical land surfaces.

Source: Upper Dublin Township

Year of Publication: Unknown

- **Steep Slope**

Description: Slope is the measurement of the steepness, incline, gradient, or grade of an area. A higher slope value indicates a steeper incline. Steep slopes represent transitional areas in the landscape, for example a transition from higher terrain to a lower terrain like stream corridors. Steep slopes have a number of implications for community development and the environment. Slopes in excess of 25% present serious limitations for development, often requiring extensive and costly engineering and construction.

Source: The Natural Lands Trust with input data from the Pennsylvania Department of Environmental Protection (PADEP)

Year of Publication: 2006

- **Landuse**

Description: Landuse is how land is developed and classified by the types of activities allowed, such as, agriculture, residences, industries, institutions, vacant land, water, open space, recreation, etc. Landuse and land management practices have a major impact on natural resources including water, soil, nutrients, plants, and animals. Landuse information can be used to develop solutions for natural resource management issues such as flooding and water quality.

Sources: Delaware Valley Regional Planning Commission (DVRPC)

Year of Publication: 2000

- **Woodlands**
Description: Land covered with trees or woods plays a vital role in many ecosystem functions, including habitats for threatened and endangered species, reduction of pollution, and enhancement of groundwater recharge capacities.
Source: Delaware Valley Regional Planning Commission (DVRPC)
Year of Publication: 2000
- **Parks and Open Space**
Description: Land within a developed area, which is left undeveloped and serves as an amenity to surrounding occupants. Open space includes any area that is characterized by natural scenic beauty or whose condition or quality is such that it will enhance the present or potential value of surrounding developed lands, or enhance the conservation of natural or scenic resources. Open space may include publicly or privately held undeveloped lands used for the preservation or protection of natural resources.
Source: Upper Dublin Township
Year of Publication: Unknown
- **Impervious Surfaces**
Description: Impervious surfaces are artificial structures, such as pavements and building footprints, which replace naturally pervious soil with impervious construction materials. Impervious surface cannot be effectively penetrated by water, thereby resulting in stormwater runoff. Examples are pavement (asphalt, concrete, etc), buildings/structures, driveways/roadways, parking lots, and sidewalks.
Source: Dr. Toby Carlson, Pennsylvania State University
Year of Publication: 2000
- **Fractional Vegetative Coverage**
Description: Vegetation serves many important ecological functions related to species habitat and water quality. Hydrologically, plant cover reduces the amount and velocity of rainfall hitting the surface, thus reducing erosional forces. Plant cover also intercepts sun light reducing thermal emission from the soil surface. Fractional vegetation coverage is a biophysical variable that describes the percent of vegetation covering the area of a raster cell based on satellite imagery. It is used as an input to hydrologic, meteorologic, and plant growth models.
Source: Dr. Toby Carlson, Pennsylvania State University
Year of Publication: 2000
- **Tree Canopy Coverage**
Description: Tree canopy is the layer of leaves, branches, and stems of trees that cover the ground when viewed from above. Land cover and land use maps designate these areas as "forested" but do not estimate canopy density. Additionally, tree canopy coverage may occur in pixels not classified as "forested" in landuse classifications. Tree canopy coverage estimates canopy density for each 30-meter pixel, based on satellite imagery. These data are useful in a number of ecological and hydrological models. Tree canopy represents different classes based on the size of diameter at breast height or DBH (the average diameter of a tree 4.5 feet above mean ground level). The following five tree canopy classes were created in this map:
<10% 1-4" DBH
10-24% 5-8" DBH
25-44% 9-14" DBH
45-64% 15-20" DBH
65-100% >=20" DBH
Source: National Land Cover Database Zone 60, US Geological Survey (USGS)
Year of Publication: 2001

- **Conservation**

- **Historical Sites**

- Description: A list of historically significant buildings, structures, objects, and districts.

- Sources:** Upper Dublin Township, and Center for Sustainable Communities, Temple University

- Year of Publication:** 2007

- **Environmentally Sensitive Areas**

- This map displays several environmentally sensitive areas overlaid on the township zoning districts.

- The data sets used in this map include: schools, historical sites, stormwater management facilities, zoning, floodplains, wetlands, open space, steep slope, and land use. The map also shows base data layers such as roadways, rail lines, rail stations, creeks, parcels, and municipal boundaries.

- Source:** Upper Dublin Township, Natural Lands Trust, Pennsylvania Department of Environmental Protection (PADEP), Delaware Valley Regional Planning Commission (DVRPC), Philadelphia Water Department (PWD), Federal Emergency Management Agency (FEMA), and the Center for Sustainable Communities, Temple University.

- Year of Publication:** Various

- **Suitability Study Map**

- The suitability study map presents the output from the suitability model created by the Center for Sustainable Communities (see appendix A). The purpose of this map was to determine the areas most suitable for preservation or those having the highest to moderate range of conservation values.

- The higher the conservation value for a location, the more environmentally sensitive it is. The data sets considered in the study were assigned with respective weights or influence percentages. The layers and their weighting percentages include: steep slope (15%), 75 ft. stream buffers (15%), floodplains (20%), wetlands (10%), open space and four land use categories – agriculture, recreation, water, and wooded (15%), 50 ft. stormwater management facility buffers (15%), hydrologic soils (5%), and impervious surfaces (5%).

- Source:** Upper Dublin Township, Natural Lands Trust, Pennsylvania Department of Environmental Protection (PADEP), Delaware Valley Regional Planning Commission (DVRPC), Pennsylvania Department of Conservation and Natural Resources (DCNR), Dr. Toby Carlson, Pennsylvania State University, Philadelphia Water Department (PWD), Federal Emergency Management Agency (FEMA), and the Center for Sustainable Communities, Temple University.

- Year of Publication:** Various

Additional Map Layer Descriptions *(not recommended for the web site)*

▪ Hydrology and Geology

○ Aquatic Resources Conservation

Description: This group is a compilation of the following 11 data sets that are combined to create an overall aquatic resources conservation value for the Expanded Piedmont of Pennsylvania. Conservation value ranges from 1 - 10 with 10 being the highest value. The data sets include riparian buffer quality, water quality, headwaters protection, impervious cover in the year 2000, impervious cover change between the years 1985-2000, forested water quality, hydric soils, floodplains, national wetlands inventory, fish habitat, and aquatic habitat. The details of all these datasets are included in the appendix.

Source: Nature Lands Trust with input data from Pennsylvania Department of Environmental Protection (PADEP)

Year of Publication: 2006

○ Headwaters Protection

Description: The source of a river or the place where a river begins. The source of a river or stream may be a lake or spring. This data assigns a conservation value to watersheds based on the headwaters protection using flow accumulation.

Source: Natural Lands Trust

Year of Publication: 2006

○ Water Resources

Description: Water resources include both surface and ground water. Surface water includes lakes, ponds, rivers, and streams. Ground water (i. e., aquifer or underground stream) is stored below the surface of the ground.

Sources: Pennsylvania Department of Environmental Protection (PADEP)

Year of Publication: 2007

○ Water Pollution Control Facilities

Description: Water pollution control facilities utilize both physical and biological treatment methods to substantially reduce organic materials, oxygen demand, solids, and ammonia before discharging treated effluent to a river.

Sources: Pennsylvania Department of Environmental Protection (PADEP)

Year of Publication: 2007

▪ Wildlife Habitat

○ Fish Habitat

Description: Differing fish species were assigned a value based on their ecological importance. Using the original data "Pennsylvania conservation gap fish habitat models", as originated by the Environmental Resources Research Institute, the Pennsylvania State University, the corresponding fish habitats were assigned the same value associated with the species. In the habitat areas in which species overlapped, the values were added together and combined to create an overall conservation value for fish. The resulting data were then reclassified into 10 quantiles (10 being the highest conservation value).

Source: Natural Lands Trust with input data from Pennsylvania Department of Environmental Protection (PADEP)

Year of Publication: 2006

- **Bird Habitat**

Description: Differing bird species were assigned a value based on their ecological importance. Using the original data "Pennsylvania conservation gap reptile habitat models", as originated by the Environmental Resources Research Institute, the Pennsylvania State University, the corresponding bird habitats were assigned the same value associated with the species. In the habitat areas in which species overlapped, the values were added together and combined to create an overall conservation value for birds. The resulting data were then reclassified into 10 quantiles (10 being the highest conservation value).

Source: Natural Lands Trust with input data from Pennsylvania Department of Environmental Protection (PADEP)

Year of Publication: 2006

- **Mammal Habitat**

Description: Differing mammal species were assigned a value based on their ecological importance. Using the original data "Pennsylvania conservation gap reptile habitat models", as originated by the Environmental Resources Research Institute, the Pennsylvania State University, the corresponding mammal habitats were assigned the same value associated with the species. In the habitat areas in which species overlapped, the values were added together and combined to create an overall conservation value for mammals. The resulting data were then reclassified into 10 quantiles (10 being the highest conservation value).

Source: Natural Lands Trust with input data from Pennsylvania Department of Environmental Protection (PADEP)

Year of Publication: 2006

- **Land Features and Vegetation**

- **Contiguous Grasslands**

Description: Acreage of the grasslands vegetation was calculated and the data were reclassified based on conservation value as follows:

Acreage	Conservation Value
0-25	0
25-160	1
160-250	3
250-400	4
>400	5

Source: Natural Lands Trust with input data from Pennsylvania Department of Environmental Protection (PADEP)

Year of Publication: 2006

- **Agricultural Land**

Description: The USDA-NASS Pennsylvania Cropland Data Layer is a categorized land cover data layer specifically relating to agricultural land cover. The purpose of these data are to use satellite imagery to (1) provide supplemental acreage estimates for the state's major commodities and (2) produce digital, crop specific, categorized geo-referenced output products.

Sources: United States Department of Agriculture (USDA), National Agricultural Statistics Service (NASS), Research and Development Division, Geospatial Information Branch, Spatial Analysis Research Section (SARS)

Year of Publication: 2002

- **Natural Vegetation Habitat**

Description: Acreage of the contiguous natural vegetation (water, coniferous forest, mixed forest, deciduous forest, woody wetland, and emergent wetland from the 1992 Land Cover) is calculated and the data is reclassified based on conservation value as follows:

Acreage	Conservation Value
0-35	0
35-70	1
70-100	2
100-150	3
150-250	4
250-500	5
500-875	6
875-1375	7
1375-2025	8
2025-3000	9
3000+	10

Source: Natural Lands Trust with input data from Pennsylvania Department of Environmental Protection (PADEP)

Year of Publication: 2006

- **Conservation**

- **Natural Conservation Resources**

Description: This is the combined datasets of Aquatic Resources, Terrestrial Resources, and Rarity created by Natural Lands Trust (as described in the Appendix B). The three groups were added together and weighted as follows: Aquatic Resources at 46.95%, Terrestrial Resources at 33.05%, and Rarity at 20%.

Source: Natural Lands Trust with input data from Pennsylvania Department of Environmental Protection (PADEP)

Year of Publication: 2006

Appendix A

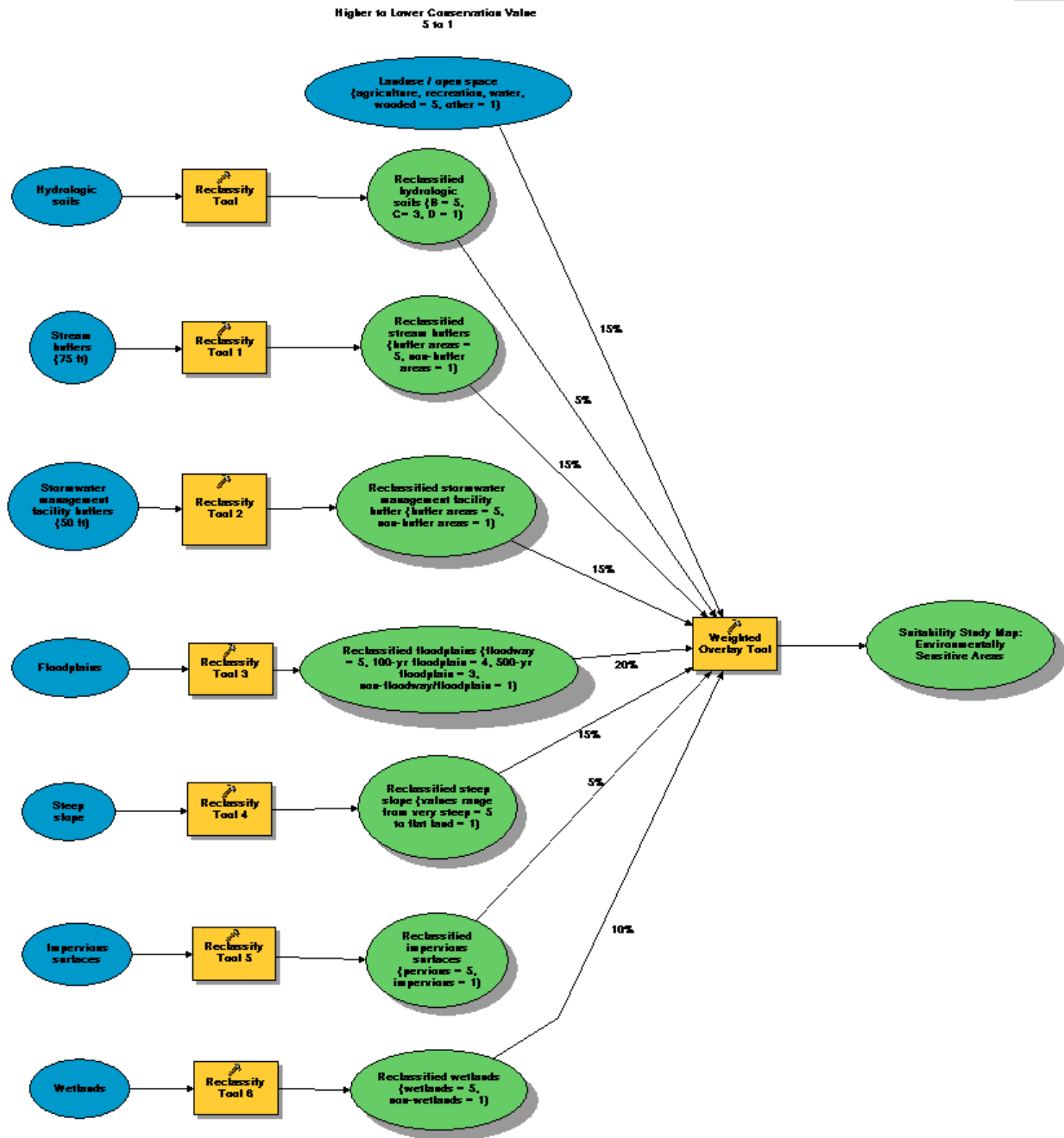


Figure 1: Suitability Study Model - Environmentally Sensitive Areas Analysis

APPENDIX B

The following data sets were created through SmartConservation® methodology using conservation values determined by 85 scientists and conservation practitioners gathered by Natural Lands Trust. The data sets were developed using GIS.

Conservation Resources Prioritization – This is the overall dataset which combines the three Group datasets Aquatic Resources, Terrestrial Resources, and Rarity as described below. The three groups were added together and weighted as follows: (1) Aquatic Resources at 46.95%, (2) Terrestrial Resources at 33.05%, and (3) Rarity at 20%.

1. Aquatic Resources Group - This Group is a compilation of the following 11 data sets that have been combined to create an overall aquatic resources conservation value raster for the Expanded Piedmont of Pennsylvania. It is one of three groups used to create an overall Conservation Resources data set. Conservation value ranges from 1 - 10 with 10 being the highest value.

Riparian Buffer Quality – 100 foot buffers of the networked streams were assigned value based on the Strahler stream order and the potential aquatic habitat values assigned to the 1992 land cover. The average conservation value for riparian buffers of 1-2 ordered streams, 3-5 ordered streams, and 6-12 ordered streams were then calculated for the small watersheds.

Water Quality (303d/305B) - The 303d data was assigned value based on the attainment of the stream. Attaining streams received a value of 10, unattaining streams received a value of 0, and unassessed streams received a value of 5. The average value for each small watershed was calculated by multiplying each stream segment's length by its assigned value and dividing by the total length of the streams within the watershed.

Headwaters Protection – Flow accumulation was calculated using GIS and values were assigned to the raster based on the amount number of cells flowing into each cell as follows:

<u># of cells flowing into</u>	<u>Value</u>
0-2	10
2-4	9
4-22	7
22-112	5
112-1414	3
1414-2828	2
2828-5656	1
>5656	0

This was then intersected with the small watersheds and conservation value was assign to the watersheds based on the average value of the flow accumulation within the watershed.

Hydric Soils - All soils determined as hydric from the SSURGO Soils data as originated by U.S. Department of Agriculture, Natural Resources Conservation Service were assigned a conservation value of 3.

Forested Water Quality - The percent of first and second order streams (Strahler method) and the percent of Forest (Coniferous Forest, Mixed Forest, Deciduous Forest, and Woody Wetland) within the small watersheds were calculated. The reclassified first & second order streams and the forest were then added together and divided by 2 to maintain the 0-10 value range

Impervious Cover 2000 - Using "Impervious Surface Area for Southeast Pennsylvania, 2000" data as originated by Toby Carlson, Penn State University. The average of impervious surface was then calculated for the small watersheds. Conservation Values were assigned based on the average impervious surface as follows:

<u>Avg. Impervious Surface</u>	<u>Value</u>
0-6	10
7-7	9
8-8	8
9-9	7
10-10	6
11-12	5
13-14	4
15-16	3
17-18	2
19-20	1
21-100	0

Impervious Cover Change 1985-2000 - This raster dataset has been created by calculating the average of impervious surface for the small watersheds for years 1985 and 2000. The difference between these values was then calculated by subtracting the 1985 data from the 2000 data.

Floodplains - using the "Floodplains from the PA Explorer CD-ROM edition" as originated by the Office of Remote Sensing for Earth Resources, Pennsylvania State University. All areas designated in the shapefile were assigned a conservation value of 5.

National Wetlands Inventory - using the National Wetlands Inventory originated by the US Fish & Wildlife Service wetlands were ranked using the attribute field "Attribute" as follows:

<u>Old Values</u>	<u>New Values</u>
U	0
FL; FL/US; RB; RS; SB; UB; US; BB	1
AB; AB/UB; UB/AB; AB/OW; FL/OW; OW	2
UB/EM; UB/FO	4
EM; EM/AB; EM/FL; EM/FO; EM/OW; EM/SS; EM/UB;	10
FO; FO/EM; FO/OW; FO/SS; FO/UB;	10
SS; SS/EM; SS/FO; SS/OW; SS/UB	10

Fish Habitat – Fish species were assigned value based on their ecological importance. Using the original data "Pennsylvania conservation gap fish habitat models" (as originated by the Environmental Resources Research Institute, Pennsylvania State University) the areas in which a habitat appropriate for them existed were assigned the value associated with the species. The habitat areas in which species overlapped their values were added together and combined to create an overall conservation value raster for fish. The resulting raster was then reclassified into 10 quantiles.

Herp (Aquatic) Habitat – Aquatic Herps species were assigned values based on their ecological importance. Using the original data "Pennsylvania conservation gap reptile habitat models" (as originated by the Environmental Resources Research Institute, Pennsylvania State University) the areas in which a habitat appropriate for them existed were assigned the value associated with the species. The habitat areas in which species overlapped their values were added together and combined to create an overall conservation value raster for aquatic herps. The resulting raster was then reclassified into 10 quantiles.

2. Terrestrial Resources Group - This group is a compilation of 10 data sets that have been combined to create an overall terrestrial resources conservation value raster for the Expanded Piedmont of Pennsylvania. It is one of three groups used to create an overall Conservation Resources data set. Conservation value ranges from 1 - 10 with 10 being the highest value.

Interior Forest Habitat - Using an inside buffer of 30 meters on the forest cover (Coniferous Forest, Mixed Forest, Deciduous Forest, and Woody Wetland) from the 1992 land cover, the interior forest raster

was created. Acreage of the contiguous interior forest was calculated and the data were reclassified based on conservation value as follows:

Acreage Conservation	Value
0-25	0
25-50	1
50 - 100	2
100 - 150	3
150 - 225	4
225 – 300	5
300 – 400	6
400 – 500	7
500 – 750	8
750 - 1000	9
>1000	10
No data	0

Slopes – Slopes 0% - 15% were assigned a value of 0, Slopes 15% - 25% were assigned a value of 2, and slopes greater than 25% were assigned a value of 4.

Contiguous Grasslands – Acreage of the grasslands vegetation was calculated and the data were reclassified based on conservation value as follows:

Acreage Conservation	Value
0-25	0
25-160	1
160-250	3
250-400	4
>400	5

Contiguous Scrub Transitional – Acreage of the scrub transitional vegetation (Bare; Transitional from the 1992 land cover) was calculated and the data were reclassified based on conservation value as follows:

Acreage Conservation	Value
0-5	0
5-25	1
>25	4

Natural Vegetation Habitat – Acreage of the contiguous natural vegetation (Water, Coniferous Forest, Mixed Forest, Deciduous Forest, Woody Wetland, and Emergent Wetland from the 1992 land cover) was calculated and the data were reclassified based on conservation value as follows:

Acreage Conservation	Value
0-35	0
35-70	1
70-100	2
100-150	3
150-250	4
250-500	5
500-875	6
875-1375	7
1375-2025	8
2025-3000	9
3000+	10

Mammals Habitat - Mammals species were assigned value based on their ecological importance. Using the original data "Pennsylvania conservation gap reptile habitat models" (as originated by the Environmental Resources Research Institute, Pennsylvania State University) the areas in which a habitat appropriate for them existed were assigned the value associated with the species. The habitat areas in which species overlapped their values were added together and combined to create an overall conservation value raster for mammals. The resulting raster was then reclassified into 10 quantiles.

Birds Habitat – Bird species were assigned value based on their ecological importance. Using the original data "Pennsylvania conservation gap reptile habitat models" (as originated by the Environmental Resources Research Institute, Pennsylvania State University) the areas in which a habitat appropriate for them existed were assigned the value associated with the species. The habitat areas in which species overlapped their values were added together and combined to create an overall conservation value raster for birds. The resulting raster was then reclassified into 10 quantiles.

Herps (Terrestrial) Habitat –Terrestrial Herps species were assigned value based on their ecological importance. Using the original data "Pennsylvania conservation gap reptile habitat models" (as originated by the Environmental Resources Research Institute, Pennsylvania State University) the areas in which a habitat appropriate for them existed were assigned the value associated with the species. The habitat areas in which species overlapped their values were added together and combined to create an overall conservation value raster for aquatic herps. The resulting raster was then reclassified into 10 quantiles.

Important Bird Areas – This raster dataset has been created using the "Important Bird Areas" as originated by the Pennsylvania Audubon Society. All areas designated as core areas were assigned a conservation value of 3. All areas designated as buffer areas were assigned a conservation value of 1.

Important Mammal Areas - This raster dataset has been created using the "Important Mammal Areas" as originated by the Environmental Resources Research Institute, Pennsylvania State University. All areas designated as important mammal areas were assigned a conservation value of 3.

3. Rarity Group - This group is a composed of 1 data set that has been combined to create an overall rarity conservation value raster for the Expanded Piedmont of Pennsylvania. It is one of three groups used to create an overall Conservation Resources data set. Conservation value ranges from 1 - 10 with 10 being the highest value.

PNDI County Natural Areas Inventory - This raster dataset has been created using the "Pennsylvania Natural Diversity Inventory" and "Natural Areas Inventory" for each county in the study area as originated by The Nature Conservancy. Each site was assigned a conservation value based on EO Rank, global, state, and local value.