SECTION II:
GENERAL DESCRIPTION OF WATERSHED

The Trout Creek watershed is located primarily in the northeastern section of Chester County, Pennsylvania with a small portion of the watershed situated in southwestern Montgomery County. Trout Creek flows from its headwaters in the southwest toward its mouth in the northeastern portion of the watershed, where it discharges into the Schuylkill River. Tredyffrin Township occupies about 65% of the watershed, with most of the Township situated in the upper portion of the watershed. Conversely, Upper Merion Township occupies about 33% of the watershed which is located mostly in the downstream portion of the watershed near the mouth of creek to the Schuylkill River. Easttown Township makes up the remaining portion of the watershed. Although this project focuses primarily on the Tredyffrin Township portion of the watershed this section of the report provides general information pertaining to the watershed as a whole.

A. Drainage Area

The Trout Creek watershed drains a watershed area of approximately 8.85 square miles with the Trout Creek and its tributaries, consisting of an estimated 15.5 miles of stream length. Approximately 60% of the total stream miles are first order streams. Both the main stem of the Creek and its tributaries are designated as Warm Water Fisheries by the PA Code – Title 25, Chapter 93.

There are many local roads and highways that traverse the watershed and influence the hydrology of the Trout Creek and its tributaries. The major traffic routes through the Trout Creek watershed include Interstates 76 and 276, U.S. Routes 202, and 422, and PA Routes 23, and 252 as shown on the Base Map, Map II-1. Interstates 76 and 276 are both part of the east west portion of the Pennsylvania Turnpike and run through the northern half of the watershed. Interstate 76 connects to the mainline of the Turnpike in Upper Merion Township and is situated in a northeast to southwest alignment, connecting metropolitan Philadelphia to points east and west of the city. US Route 202, is aligned from east to west, bisects the central portion of the watershed and crosses all of the Trout Creek tributaries. Conversely, US Route 422, aligned roughly from the northwest to the southeast also crosses the central portion of the watershed, running partially along the Chester- Montgomery County boundary. PA Route 23 crosses the watershed for a short distance in the upper northeast corner of the watershed while PA 252 is located in the western Tredyffrin Township portion of the watershed.

These major thoroughfares and crossroads provide critical transportation and commuting links for Chester and Montgomery County residents and the traveling public. Although the importance of these highways to transportation networks through the area is indisputable, the impact of these routes upon the watershed is also evident. Impervious surfaces associated with these roadways add to both the rate and volume of stormwater runoff within the watershed which has a corresponding impact upon flooding, erosion, groundwater recharge and water quality within the Trout Creek and its tributaries. Whereas the effects of stormwater runoff from roadways with regard to erosion and flooding are clearly visible within the watershed, the effect of nonpoint source pollution from the impervious areas associated with roadways upon water quality is not as apparent. However, the aggregate effect of “washing” the impervious roadway surfaces during each precipitation event has a

TREDYFFRIN TOWNSHIP
TROUT CREEK WATERSHED STUDY

LOCATION MAP

Map II-1
BASE MAP

Prepared For:
Tredyffrin Township
1100 Duportail Road
Berwyn, PA 19312
(610) 644-1400

Legend
- Watershed Boundary
- County Boundaries
- Municipal Boundaries
- Water Bodies
- Streams
- Interstates
- U.S. Highways
- PA State Routes
- Other Roads

NOTE:
Portions of this map were generated from existing data sources as listed below. These data are shown on the map for spatial reference only. These data did not enter into any computations or affect the reliability of the hydrologic analysis. Borton-Lawson Engineering has found some inaccuracies in some of these data and has corrected the data in locations where discrepancies were obvious, however, it was not a part of this plan to correct all of the mapping data.

DATA SOURCES:
Watershed Boundary - PADEP (Modified by BLE)
Streams - PADEP
Water Bodies - USFWS (Derived from NWI Wetlands)
Roads - PennDOT
County and Municipal Boundaries - PennDOT

Borton Lawson ENGINEERING

Lehigh Valley
3893 Adler Place
Bethlehem, PA 18017
Tel: 484-821-0470

Northeast Pennsylvania
613 Baltimore Drive
Wilkes-Barre, PA 18702
Tel: 570-821-1999

PREPARED BY: SJD CHECKED BY: SAV
DATE: 9/18/2007 PROJECT #: 2007-2196-00

FILE:\\WBData\Projects\2007\2196\00\DATA\GIS\ARCMAP\TroutCreekFinal.mxd

profound impact upon water quality within the watershed and its waterways as noted by high estimates of BOD, COD, TKN, TP, TSP, and Zinc noted in Chester County's "Watersheds".

B. Data Collection

In order to evaluate the hydrologic response of the watershed, data was collected on the physical features of the watershed as follows:

1. Base Map: The base map for Geographic Information Systems (GIS) maps was generated from data received from the Pennsylvania Department of Environmental Protection (PADEP) and the Pennsylvania Department of Transportation (PennDOT). Streams, lakes, and the watershed boundary were obtained from the PADEP. County and municipal boundaries and roads were obtained from PennDOT.

2. Elevation Data: A Digital Elevation Model (DEM) for the Trout Creek watershed was developed from DEM data obtained from the USGS. Five foot contours were obtained from the Delaware Valley Regional Planning Commission (DVRPC). The DEM was used to verify the watershed boundary. In addition subwatersheds or subareas used in the watershed modeling process were derived from the DEM. Subareas, drainage courses, land slopes and lengths, and drainage element lengths and slopes were determined from the DEM.

3. Soils: Soil Survey Geographic Database (SSURGO) soil mapping data was obtained from the United States Department of Agriculture, Natural Resources Conservation Service (NRCS). SSURGO data is the most detailed level of soil mapping done by the NRCS. SSURGO mapping are digital duplications of the original county soil survey maps.

4. Geology: The digital geology coverages for Chester and Montgomery Counties were obtained from the Pennsylvania Geologic Survey.

5. Land Cover: The existing land cover map was generated using year 2000 land cover data obtained from the Delaware Valley Regional Planning Commission (DVRPC). The DVRPC data was compared to the Tredyffrin Township Comprehensive Plan land use data and only several minor discrepancies were found; for example, the Comprehensive Plan lists golf courses as its own land use type, while the DVRPC categorizes golf courses as "open space".

6. Floodplains: Digital floodplain data from 2006 was obtained from Tredyffrin Township.

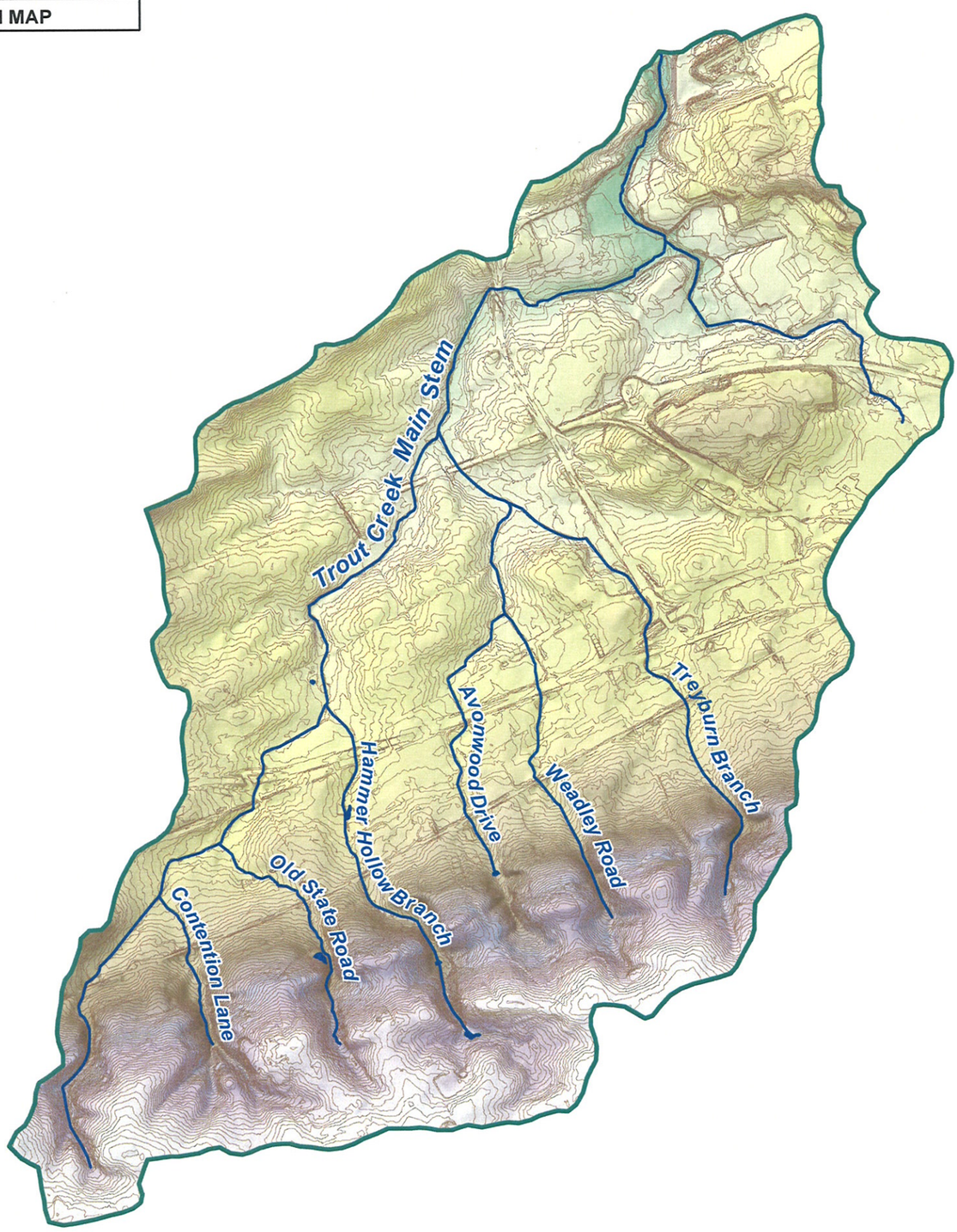
7. Aerial Photographs: Color aerial photographs were obtained from Tredyffrin Township.

C. Topography and Streambed Profile

The topography of the watershed is characterized by relatively flat to gently rolling hills in the stream valley with somewhat mild to steep slopes located throughout the southern portion of the watershed. Watershed elevations are displayed in the Digital Elevation Map (DEM) provided in Map II-2, which uses color-coding to show differences in elevation in order to portray the topographic relief of the watershed. The highest point in the watershed is located in the very southern portion of the watershed with an elevation of approximately 170 feet above sea level, while the lowest point (approximately 15 feet above mean sea level) is found in the very northern portion

TREDYFFRIN TOWNSHIP
TROUT CREEK WATERSHED STUDY

LOCATION MAP



2,500 1,250 0 2,500
Feet

Map II-2
DIGITAL ELEVATION MODEL

Prepared For:
Tredyffrin Township
1100 Duportail Road
Berwyn, PA 19312
(610) 644-1400

Legend

- Watershed Boundary
- Water Bodies
- Streams
- 5 Foot Contours

Elevation

High : 170.1
Low : 15.1

NOTE:
Portions of this map were generated from existing data sources as listed below. These data are shown on the map for spatial reference only. These data did not enter into any computations or affect the reliability of the hydrologic analysis. Borton-Lawson Engineering has found some inaccuracies in some of these data and has corrected the data in locations where discrepancies were obvious, however, it was not a part of this plan to correct all of the mapping data.

DATA SOURCES:
Watershed Boundary - PADEP (Modified by BLE)
Streams - PADEP
Water Bodies - USFWS (Derived from NWI Wetlands)
Digital Elevation Model - US Geological Survey
Contours - DVRPC

Borton Lawson ENGINEERING

Lehigh Valley
3893 Adler Place
Bethlehem, PA 18017
Tel: 484-821-0470

Northeast Pennsylvania
613 Baltimore Drive
Wilkes-Barre, PA 18702
Tel: 570-821-1999

PREPARED BY: SJD CHECKED BY: SAV
DATE: 9/18/2007 PROJECT #: 2007-2196-00

FILE:\\WBData\Projects\2007\2196100\DATA\GIS\ARCMAP\TroutCreekFinal.mxd

TREDYFFRIN TOWNSHIP
TROUT CREEK WATERSHED STUDY

LOCATION MAP

West Norriton Township

Lower Providence Township

Upper Merion Township

Tredyffrin Township

Easttown Township

Radnor Township

CHESTER COUNTY

DELAWARE COUNTY

MONTGOMERY COUNTY

CHESTER COUNTY

Trout Creek Main Stem

Avonwood Drive

Hammer Hollow Branch

Old State Road

Contention Lane

Weadley Road

Treyburn Branch

23

76

276

422

202

252

30

2,500 1,250 0 2,500

Feet

Hydrologic Soil Groups

- B - Moderate Infiltration Rate
- C - Low Infiltration Rate
- D - Very Low Infiltration Rate
- Water

Map II-3
HYDROLOGIC SOIL GROUPS

Prepared For:
Tredyffrin Township
1100 Duportail Road
Berwyn, PA 19312
(610) 644-1400

Legend

- Watershed Boundary
- County Boundaries
- Municipal Boundaries
- Water Bodies
- Streams
- Interstates
- U.S. Highways
- PA State Routes
- Other Roads

NOTE:
Portions of this map were generated from existing data sources as listed below. These data are shown on the map for spatial reference only. These data did not enter into any computations or affect the reliability of the hydrologic analysis. Borton-Lawson Engineering has found some inaccuracies in some of these data and has corrected the data in locations where discrepancies were obvious, however, it was not a part of this plan to correct all of the mapping data.

DATA SOURCES:
Watershed Boundary - PADEP (Modified by BLE)
Streams - PADEP
Water Bodies - USFWS (Derived from NWI Wetlands)
Roads - PennDOT
County and Municipal Boundaries - PennDOT
Soils - Natural Resources Conservation Service

Borton Lawson ENGINEERING

Lehigh Valley
3893 Adler Place
Bethlehem, PA 18017
Tel: 484-821-0470

Northeast Pennsylvania
613 Baltimore Drive
Wilkes-Barre, PA 18702
Tel: 570-821-1999

PREPARED BY: SJD CHECKED BY: SAV
DATE: 9/18/2007 PROJECT #: 2007-2196-00

FILE:\\WB\Data\Projects\2007\2196\00\DATA\GIS\ARCMAP\TroutCreekFinal.mxd

of the watershed. The slope of the streambed varies depending upon the location within the watershed. In portions of Tredyffrin Township, particularly in the southwest section of the watershed, the streambed is somewhat steep, whereas along the Main Stem of the Creek, situated to the north of the Turnpike the slope of the stream is relatively flat.

D. Soils

Soil properties influence the runoff generation process. The USDA, Natural Resources Conservation Service (NRCS) has established a criterion determining how soils will affect runoff by placing all surface horizon soils into four Hydrologic Soil Groups (HSGs) – A through D, based on infiltration rate and depth. There are no Group A soils within the Trout Creek watershed. The majority of the surface horizon soils in the watershed, approximately 76%, fall in Group B. Group B is characterized as having moderate infiltration rates and consists of primarily moderately deep to deep and moderately well to well drained soils that exhibit a moderate rate of water transmission. Group C soils, found sporadically throughout the watershed, have slow infiltration rates when thoroughly wetted and contain fragipans, a layer that impedes downward movement of water and produces a slow rate of water transmission. Also found in several areas of the watershed, D soils are tight, low permeable soils with high runoff potential and are typically clay soils. This information was incorporated into the GIS and, from this, the watershed HSG map was developed as shown in Map II-3.

E. Geology

Geology plays a direct role in surface runoff in the Trout Creek watershed because it creates the various soil types within the watershed through the breakdown of the parent material contained in the rock. The three major geologic formations in the Trout Creek watershed are the Octoraro Formation (approximately 27%), the Stockton Formation (roughly 20%) and the Elbrook Formation (18%). The geologic map of the watershed can be found in Map II-4.

As the Chester Valley cuts across Tredyffrin Township a large portion of the Township is underlain by carbonate geology. The carbonate geology is roughly centered along the S.R. 202 corridor with another band stretching northward toward Valley Forge Park and parallel to the north side of the Pennsylvania Turnpike (I-76). In addition to influencing the type of soils within the watershed, carbonate geology has an important role in the hydrology of the watershed, or the way water moves through the watershed. Carbonate rocks typically contain a series of interconnected openings, such as fissures, fractures, and caves which are able to receive and transmit large quantities of stormwater. As the water flows through the openings in the carbonate rock, the water can dissolve the rock making existing fissures and openings larger or creating new openings or interconnections within the rock. Because of this interconnectivity of the carbonate rocks, carbonate geology typically serve as excellent aquifers or sources of ground water supply.

Although the carbonate geology serves as a good water resource, if not adequately considered in the design of stormwater management facilities it can create problems as well. Typically stormwater management facilities tend to concentrate stormwater in a single location. If not managed properly this additional stormwater loading or concentration can cause accelerated dissolution of the subsurface geologic formations, creating underground sinkholes in and around stormwater management facilities. Effective stormwater management techniques within carbonate areas

TREDYFFRIN TOWNSHIP
TROUT CREEK WATERSHED STUDY

LOCATION MAP

West Norriton Township

Lower Providence Township

Geologic Formations

- Cah - Antietam and Harpers Formations, undivided
- Tbm - Bryn Mawr Formation
- OCc - Conestoga Formation
- Ce - Elbrook Formation
- Cl - Ledger Formation
- Xo - Octoraro Formation
- Tpb - Pensauken and Bridgeton Formations, undifferentiated
- Trs - Stockton Formation

Trout Creek Main Stem

MONTGOMERY COUNTY

CHESTER COUNTY

Upper Merion Township

Tredyffrin Township

Hammer Hollow Branch

Avonwood Drive

Weadley Road

Treyburn Branch

Old State Road

Contention Lane

CHESTER COUNTY

DELAWARE COUNTY

Easttown Township

Radnor Township

23 276 76 422 202 252 30

2,500 1,250 0 2,500

Feet

Map II-4
GEOLOGY

Prepared For:
Tredyffrin Township
1100 Duportail Road
Berwyn, PA 19312
(610) 644-1400

Legend

- Watershed Boundary
- Water Bodies
- Streams
- Interstates
- U.S. Highways
- PA State Routes
- Other Roads
- Municipal Boundaries
- County Boundaries

NOTE:
Portions of this map were generated from existing data sources as listed below. These data are shown on the map for spatial reference only. These data did not enter into any computations or affect the reliability of the hydrologic analysis. Borton-Lawson Engineering has found some inaccuracies in some of these data and has corrected the data in locations where discrepancies were obvious, however, it was not a part of this plan to correct all of the mapping data.
DATA SOURCES:
Watershed Boundary - PADEP (Modified by BLE)
Streams - PADEP
Water Bodies - USFWS (Derived from NWI Wetlands)
Roads - PennDOT
County and Municipal Boundaries - PennDOT
Geology - PA Dept. of Conservation and Natural Resources: PA Geological Survey

Borton Lawson ENGINEERING

Lehigh Valley
3893 Adler Place
Bethlehem, PA 18017
Tel: 484-821-0470

Northeast Pennsylvania
613 Baltimore Drive
Wilkes-Barre, PA 18702
Tel: 570-821-1999

PREPARED BY: SJD CHECKED BY: SAV
DATE: 9/18/2007 PROJECT #: 2007-2196-00

FILE:\\WBData\Projects\2007\2196\00\DATA\GIS\ARCMAP\TroutCreekFinal.mxd

typically require careful planning to ensure stormwater management facilities are not located in close proximity to existing features that may be susceptible to stormwater damage. A context sensitive stormwater management design is required so as to not overload a single point with excessive stormwater runoff; and installation of various stormwater appurtenances such as impervious liners, bypass channels, and or stormwater distributions systems to disperse flow evenly throughout the site may be required.

A description of carbonate and non-carbonate geologic formations modified from Berg, T. M., Geyer, A. R., Edmunds, W. E., and others, compilers, 1980, *Geologic map of Pennsylvania*, Pennsylvania Geological Survey, 4th ser., Map 1, are provided below.

1. Carbonate (Limestone and Dolomite Bearing) Geologic Formations:

CONESTOGA LIMESTONE (OCc)	-	Light-gray, thin-bedded, impure, contorted limestone having shale partings; conglomeratic at base; in Chester Valley, includes micaceous limestone in upperpart, phyllite in middle, and alternating dolomite and limestone in lower part.
LEDGER DOLOMITE (Cl)	-	Light-gray, locally mottled, massive, pure, coarsely crystalline dolomite; siliceous in middle part.

2. Non-Carbonate Geologic Formations:

ANTIETAM AND HARPERS FORMATION, UNDIVIDED (Cah)	-	The Antietam Formation is a gray, buff-weathering quartzite and quartz schist. Harpers Formation is a dark-greenish-gray phyllite and schist having thin quartzite layers.
BRYN MAWR (Tbm)	-	High-level terrace deposits; reddish-brown gravelly sand and some silt. Age uncertain.
ELBROOK (CE)	-	Light-colored calcareous shale and silty limestone at top; medium-gray limestone and dolomite in middle; pure, dark limestone at base.
OCTORARO FORMATION (Xo)	-	Includes albite-chlorite schist, phyllite, some hornblende gneiss, and granitized members.
PENSAUKEN & BRIDGETON (Tpb)	-	Dark-reddish-brown, cross-stratified, feldspathic quartz sand and some thin beds of fine gravel and rare layers of clay or silt.
STOCKTON FORMATION (Trs)	-	Light-gray to buff, coarse-grained, arkosic sandstone; includes reddish-brown to grayish-purple sandstone, siltstone, and mudstone.

F. Land Use

All streams and watersheds are dynamic and ever-changing systems; stream channels change based on changes within the watershed, on the surface of the land or changes to the ground water system. Pennsylvania was an area filled with mature woodlands when European settlers arrived in the 1600's and 1700's. During those centuries, tremendous changes took place to the landscape as much of Pennsylvania, including the Trout Creek watershed, was cleared of woodlands for agricultural uses. This change, in addition to the use of streams for mills, has a continued impact on the watershed today (Gutshall, 2004).

Over the past 60 years, the Trout Creek watershed, like most of eastern Chester County, has transformed from a watershed that was predominantly in woodland and agricultural land uses to a watershed that is a mix of suburban and urban land uses today. However, even as the watershed has developed, a few open spaces remain within the watershed.

Map II-5 displays the existing land cover of the watershed while Table II-1 details the land uses by category within the Trout Creek watershed as well as the Tredyffrin Township portion of the watershed.

TABLE II-1
LAND USE STATUS BY CATEGORY

Land Use	Trout Creek Watershed		Tredyffrin Township Portion of Trout Creek Watershed	
	Area (Square Miles)	Area (%)	Area (Square Miles)	Area (%)
Agriculture	0.11	1.24	0.06	1.05
Commercial	1.39	15.71	0.38	6.63
Forest	0.71	8.02	0.42	7.33
Industrial	0.02	0.23	0.00	0.00
Institutional	0.13	1.47	0.11	1.92
Open Space/ Recreation	1.13	12.77	0.56	9.77
Paved	1.27	14.35	0.51	8.90
Residential (1 - 4 acre lots size)	3.90	44.07	3.54	61.78
Residential (1/8 acre or less lot size)	0.18	2.03	0.15	2.62
Open Water	0.01	0.11	<0.01	0.00
TOTAL	**8.85**	**100.00**	**5.73**	**100.00**

The predominant land use in the watershed is classified as residential (46%). Approximately 16% of the watershed is commercial, which is found predominately in the Montgomery County portion of the watershed. Parking facilities account for 14% of the land area within the watershed and is the third highest land use by area. The abundance of parking areas is an indication of the number of office parks, corporate and educational campuses, retail and shopping centers, etc. within the watershed. Open space (parks, cemeteries, golf courses, etc.) accounts for 13% of the area and the

remaining 11% of land is classified as either forested, industrial, institutional, water, or agricultural. The Treddyfrin Township section of the watershed has similar percentages of land use as the watershed as a whole. The major differences between the entire watershed and the Tredyffrin section of the watershed are that the Tredyffrin Township portion has slightly less commercial development and paved surfaces and significantly more low density residential development. This is not unexpected as Tredyffrin Township contains the headwaters of the Trout Creek and typically the headwaters of many streams are less developed than areas of the watershed near the mouth.

Using the Land Use data for the Trout Creek watershed and Tredyffrin Township and typical impervious cover area by land use from the Environmental Protection Agency an estimate of the total impervious area of the watershed and the Tredyffrin Township section of the watershed can be obtained. As shown in Table II-2, an estimated 41% of the watershed is covered by impervious surface while approximately 35% of the Treddyfrin Township portion of the watershed is covered by impervious surface. Both in the entire watershed and in Tredyffrin Township section of the watershed the biggest contributors of impervious surface are commercial parking and low density residential areas. Although low density residential areas typically only contain about 30 percent impervious surface, these areas can have a significant impact on the stormwater runoff potential within the watershed and especially within the Tredyffrin Township as many of the residential areas were constructed prior to implementation of stormwater management standards and criteria intended to control downstream flooding, streambank erosion, groundwater recharge and water quality.

TABLE II-2
IMPERVIOUS SURFACE BY LAND USE

Land Use	Estimated Percentage of Impervious Cover[1]	Trout Creek Watershed		Tredyffrin Township Portion of Trout Creek Watershed	
		Area (Square Miles)	Estimated Impervious Area (Square Miles)	Area (Square Miles)	Estimated Impervious Area (Square Miles)
Agriculture	4	0.11	0.0044	0.060	0.0024
Commercial	65	1.39	0.9035	0.380	0.2470
Forest	4	0.71	0.0284	0.420	0.0168
Industrial	55	0.02	0.0110	0.000	0.0000
Institutional	55	0.13	0.0715	0.110	0.0605
Open Space/ Recreation	3	1.13	0.0339	0.560	0.0168
Paved	100	1.27	1.2700	0.510	0.5100
Residential (1 - 4 acre lots size)	30	3.90	1.1700	3.540	1.0620
Residential (1/8 acre or less lot size)	75	0.18	0.1350	0.150	0.1125
Open Water	0	0.01	0.0000	0.010	0.0000
TOTAL	-	8.85	3.6277	5.74	2.0280

1. Values compiled from References 7 and 8

G. Analysis Map

Map II-6, Analysis Map, was used to assist in locating potential sites for Best Management Practices within the watershed. One of the features included in this map is the location of obstructions.

Locations of these significant waterway obstructions were derived from Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) flood profiles for Trout Creek. Significant obstructions were noted on the flood profiles as those locations were the water surface elevation upstream of a culvert or bridge were substantially higher than the water surface elevation downstream of a culvert or bridge. Locations of erosion and channel alterations were obtained from the *Trout Creek Watershed Restoration and Protection Plan* (The Ratsep Group, June 2004). There are many existing stormwater detention basin facilities and one proposed facility in the vicinity of the PA Turnpike's service plaza shown on this map. These facility locations were obtained from Tredyffrin Township. Other areas of interest that were mapped to help locate prospective BMP sites include areas prone to flooding, schools, roadwork plans, service plazas, and large shopping centers.

TREDYFFRIN TOWNSHIP
TROUT CREEK WATERSHED STUDY

LOCATION MAP

West Norriton Township

Lower Providence Township

Upper Merion Township

Tredyffrin Township

Easttown Township

Radnor Township

Trout Creek Main Stem

MONTGOMERY COUNTY

CHESTER COUNTY

Avonwood Drive

Weadley Road

Treyburn Branch

Hammer Hollow Branch

Old State Road

Contention Lane

23 276 76 422 202 252 30

2,500 1,250 0 2,500
Feet

EXISTING LAND COVER

- AGRICULTURE
- COMMERCIAL
- FOREST
- INDUSTRIAL
- INSTITUTIONAL
- OPEN SPACE
- PAVED
- RESIDENTIAL (1 to 4 acres per dwelling)
- RESIDENTIAL (1/8 acre of less per dwelling)
- WATER

Map II-5
EXISTING LAND COVER

Prepared For:
Tredyffrin Township
1100 Duportail Road
Berwyn, PA 19312
(610) 644-1400

Legend

- Watershed Boundary
- County Boundaries
- Municipal Boundaries
- Water Bodies
- Streams
- Interstates
- U.S. Highways
- PA State Routes
- Other Roads

NOTE:
Portions of this map were generated from existing data sources as listed below. These data are shown on the map for spatial reference only. These data did not enter into any computations or affect the reliability of the hydrologic analysis. Borton-Lawson Engineering has found some inaccuracies in some of these data and has corrected the data in locations where discrepancies were obvious, however, it was not a part of this plan to correct all of the mapping data.

DATA SOURCES:
Watershed Boundary - PADEP (Modified by BLE)
Streams - PADEP
Water Bodies - USFWS (Derived from NWI Wetlands)
Roads - PennDOT
County and Municipal Boundaries - PennDOT
Digital Elevation Model - US Geologic Survey
Land Cover - DVRPC (Delaware Valley River Planning Commission)

Borton Lawson ENGINEERING

Lehigh Valley
3893 Adler Place
Bethlehem, PA 18017
Tel: 484-821-0470

Northeast Pennsylvania
613 Baltimore Drive
Wilkes-Barre, PA 18702
Tel: 570-821-1999

PREPARED BY: SJD CHECKED BY: SAV
DATE: 9/18/2007 PROJECT #: 2007-2196-00

FILE:\\WB\Data\Projects\2007\2196\00\DATA\GIS\ARCMAP\TroutCreekFinal.mxd

TREDYFFRIN TOWNSHIP
TROUT CREEK WATERSHED STUDY

LOCATION MAP

Areas of Interest
- Channel Alterations
- Potential BMPs - Identified by Tredyffrin Twp.
- Obstructions: Identified from Flood Insurance Study
- BMP Train
- Arboretum
- Schools
- Service Plaza
- Gateway Shopping Center
- Potential Future Stormwater Basins (PA Turnpike Commission)
- Devon Park Drive
- Culvert
- Erosion
- Existing Detention Basins
- Proposed Detention Basin
- 100 - Year Floodplains
- Open Space

Note: This study only encompasses the Tredyffrin Township portion of the Trout Creek Watershed and therefore aerial photography for the remaining areas was not collected.

2,000 1,000 0 2,000
Feet

Map II-6
ANALYSIS MAP

Prepared For:
Tredyffrin Township
1100 Duportail Road
Berwyn, PA 19312
(610) 644-1400

Legend
- Watershed Boundary
- Water Bodies
- Streams
- Interstates
- U.S. Highways
- PA State Routes
- Other Roads
- Municipal Boundaries
- County Boundaries

NOTE:
Portions of this map were generated from existing data sources as listed below. These data are shown on the map for spatial reference only. These data did not enter into any computations or affect the reliability of the hydrologic analysis. Borton-Lawson Engineering has found some inaccuracies in some of these data and has corrected the data in locations where discrepancies were obvious, however, it was not a part of this plan to correct all of the mapping data.

DATA SOURCES:
Watershed Boundary - PADEP (Modified by BLE)
Aerial Photos - Tredyffrin Township
Streams - PADEP
Water Bodies - USFWS (Derived from NWI Wetlands)
Roads - PennDOT
County and Municipal Boundaries - PennDOT
Problem Areas - Tredyffrin Township; The Ratsep Group
Stormwater Facilities - Tredyffrin Township; The Ratsep Group

Borton Lawson ENGINEERING

Lehigh Valley
3893 Adler Place
Bethlehem, PA 18017
Tel: 484-821-0470

Northeast Pennsylvania
613 Baltimore Drive
Wilkes-Barre, PA 18702
Tel: 570-821-1999

PREPARED BY: SJD CHECKED BY: SAV
DATE: 9/18/2007 PROJECT #: 2007-2196-00

FILE:\\WB Data\Projects\2007\2196\00\DATA\GIS\ARCMAP\TroutCreekFinal.mxd