

Study Design

For the

Plum Creek Watershed Association

Adopted (month and year)

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1.0 INTRODUCTION

The Plum Creek Watershed covers an area of approximately 13,214 acres in Allegheny County Pennsylvania, and incorporates all or portions of 4 different municipalities which include: The Boroughs of Oakmont, Plum, Verona and the Municipality of Penn Hills. The watershed includes Plum Creek, Little Plum Creek and Bodies Run. The main stem of Plum creek flows through Plum, Oakmont, Verona and Penn Hills and has 17 tributaries, 15 of which are unnamed. Little Plum Creek is a tributary to Plum creek that flows through Plum and Penn Hills, and has 16 unnamed tributaries. Bodies Run is a tributary to Plum Creek that flows through Plum Borough and includes 3 unnamed tributaries. These streams and all of their unnamed tributaries combine and drain into the Allegheny River between the Boroughs of Oakmont and Verona (see Figure 1 for map).

Although more than half of the watershed remains forested the watershed area is showing signs of degradation due to increased population and development, which is contributing, to the problems of streambank erosion, sediment pollution, loss of riparian habitat, and stormwater runoff. This coupled with abandoned mine drainage and other non-point source pollution have contributed to the degradation of the watershed. See Appendix A for a complete percentage breakdown Land Use Types in the watershed.

The Plum Creek Watershed Association is a Non-profit 501 c (3) organization, which was formed October 2001. The Association has partnered with the Allegheny County Conservation District, Student Conservation Association, and Canaan Valley Institute to develop this document. This Study Design has been prepared to act as a guidance document for volunteers sampling waters in the Plum Creek Watershed. This document will cover the goals of the sampling and monitoring program, the purpose of the monitoring, the rationale for what will be monitored and where the monitoring will occur, and quality assurance/quality control. This document is meant to be a “living “ document that will grow and change as the sampling program progresses.

This report has been divided into the following sections....

2.0 BACKGROUND

This section discusses the group's mission, the programs on which the Plum Creek Watershed Association has been working, the goals of the group, the history of the watershed and its current use, and water quality issues within the watershed.

2.1 Group Mission

The group mission is as follows; The Association is a non-profit, public/private partnership conservation organization with the purpose to protect and improve the water quality and recreation benefits of the watershed while educating the public on the necessity of water conservation and other natural and recreational resources of the Plum and Little Plum Creek Watershed.

2.2 Major Programs

The Plum Creek Watershed has been working on increasing funding and membership to sustain the organization and meet their mission. To date, PCWA has had the benefit of receiving grants from different organizations for specific activities. PCWA's major programs directly resulted from these grants and are listed below.

- WPCAMR-RWSI grant (2001-2002) for the formation, promotion, and sustainability of the association.
- WPCAMR-RWSI grant (2002-2003) for education, public awareness, and public outreach focusing on abandoned mine drainage and including other local environmental issues.
- PADEP Growing Greener Grant (2002) for the formation, promotion, and sustainability of the association.

2.3 Group Goals

Since the formation of the association, members and professionals have brainstormed to develop the group's goals. As these goals are accomplished, it is expected that new goals will unfold. The current goals for the association are listed below.

- Increase membership.
- Improve Stormwater Management.
- Stabilize Stream Banks.
- Reduce Erosion and Sediment Pollution.
- Removal of Streamside trash and debris.
- Develop a volunteer stream-monitoring program.
- Increase fishing and other recreational opportunities.
- Preserve wetlands, farmlands, and other natural and historical areas.
- Increase public awareness and input.
- Increase Environmental Education.

2.4 Watershed's Current Use

As described in the Section 1.0 Introduction, the watershed is comprised of 3 main streams, Plum Creek, Little Plum Creek, and Bodies Run. Plum Creek (and all tributaries including Little Plum Creek and Bodies Run) is classified in the PADEP Chapter 93 water quality standards as a Warm Water Fishery (WWF).

Currently the main stem of Plum Creek and all unnamed tributaries serve as a means of stormwater collection. Plum Creek's other actual uses include some recreation and aesthetics.

Little Plum Creek and all unnamed tributaries actual uses include stormwater collection, some recreation, agricultural uses, and aesthetics.

Bodies Run and all unnamed tributaries serve mainly as a stormwater collection system.

2.5 Water Quality Issues

The primary water quality issues in the Plum Creek Watershed are abandoned mine drainage, sediment pollution, and stormwater runoff. Habitat loss, riparian degradation, and streambank erosion are other pressing issues. The Plum Creek Watershed falls within State Water Plan Subbasin 18A (SWP-18A). Subbasin 18A has been assessed through the PADEP's unassessed waters program, and sections of Plum Creek, Little Plum Creek, and Bodies Run have been added to the 1998 303(d) list of impaired waters. Sources of impairment described in the 303(d) list include: AMD, Petroleum Activities, CSO's, Urban runoff and sanitary sewers, and onsite wastewater. Causes of impairment described by the 303(d) list include: metals, pH, nutrients, oil & grease, and other organics. For more specifics involving the 303(d) list see Table 2.1 and Appendix B.

Public input and feedback from members of the Plum Creek Watershed Association have revealed opinions about the most pressing water quality issues. These issues are: aquatic life impairment from abandoned mine drainage, bank erosion, sediment pollution and other pollutants from urban runoff and lack of stormwater management, and habitat loss and increased stormwater from increasing development.

2.6 Purpose for Monitoring

It is intended that this document will serve the following purposes:

- 1.) Define present watershed conditions.
- 2.) Characterize existing and emerging problems by type and magnitude.
- 3.) Provide information to help design strategies to reduce and control pollution and to manage land and water.
- 4.) Provide information for evaluating the effectiveness of those strategies.
- 5.) Reveal trends in water quality.

Using this document, members of the PCWA will perform a baseline data collection to answer the following questions:

- 1.) What are the present ecological conditions and how do they change over time?
- 2.) What is the impact of various types of land and water use activities on ecological conditions and human uses? (e.g. various types of point and non-point source pollution)
- 3.) What are the areas of "high priority" in the watershed and how can we reduce and control pollution in those areas?

The document was designed to be a working document. It is expected that it will be used by the Plum Creek Watershed Association to learn more about the watershed, reveal trends in water quality, and secure funding opportunities. DEP, other government agencies, municipalities, and concerned citizens may also use this document for their overall knowledge or to develop remediation strategies.

Appendix A

Land Use Types (%)

Complete Plum Creek Watershed

(Includes Plum Creek, Little Plum Creek, Bodies Run, and all unnamed tributaries.)

Residential	22%
Commercial, Industrial, Transportation	3%
Agricultural (Pasture, Hay, Row Crops)	18%
Forested (includes open spaces)	57%

Plum Creek

(Includes the main stem of Plum Creek and all unnamed tributaries.)

Residential	55%
Commercial, Industrial, Transportation	10%
Agricultural (Pasture, Hay, Row Crops)	5%
Forested (includes open spaces)	27%
Mining	3%

Little Plum Creek

(Includes the main stem of Little Plum Creek and all unnamed tributaries.)

Residential	15%
Commercial, Industrial, Transportation	7.5%
Agricultural (Pasture, Hay, Row Crops)	40%
Forested (includes open spaces)	30%
Mining	7.5%

Bodies Run

(Includes the main stem of Bodies Run and all unnamed tributaries.)

Residential	10%
Commercial, Industrial, Transportation	5%
Agricultural (Pasture, Hay, Row Crops)	20%
Forested (includes open spaces)	65%
Mining	0%

** All the above data is estimated using a land use – land cover map provided by the Canaan Valley Institute **

Table 2-1

CURRENT STATUS OF WATERSHED

Streams of Interest	Water Uses Protected	Actual Uses and Values	Water Assessed	Uses Supported	NPS Pollution	Sources of Impairments (from 303(d) List)	Cause of Impairment (from 303(d) list)	Known Problems, Conflicts or Threats	Known Efforts to Address Problems
Plum Creek & Tributaries	WWF	Storm water collection Recreation/ Parks Aesthetics	Yes	No	Yes	On Site Waste Water, AMD, other organic waste, Habitats Modification, urban runoff – sanitary sewer	Nutrients, Metals, pH, oil & grease	Bank Erosion, sediment pollution, stormwater runoff, litter, threat of development	DEP Ohio River Sweep
Little Plum Creek & Tributaries	WWF	Storm Water Collection, Recreation. Parks Aesthetics, Agricultural Uses	Yes	No	Yes	AMD, Petroleum activities, CSO, Urban Runoff – sanitary sewer	Nutrients, Oil & Grease, other inorganics, metals, other habitat altering	AMD, stormwater runoff, bank erosion, sediment pollution, litter, threat of development	Renton Reclamation Project, DEP Ohio River Sweep.
Bodies Run	WWF	Storm Water Collection, Aesthetics	Yes	No	Yes	On Site Waste Water, AMD, other organic waste, Habitats Modification, urban runoff – sanitary sewer	Nutrients, Metals, pH, oil & grease	Stormwater runoff, sediment pollution, bank erosion.	