1.1 Introduction

Since the 1850's, when the U.S. Army Corps of Engineers (ACE) first built the Washington Aqueduct (WAD), the Potomac River has served as a reliable source of drinking water for the District of Columbia. Today, the Potomac River remains the sole source of water for D. C. residents. ACE operates two water supply intakes on the Potomac River at [REDACTED] and [REDACTED] to supply water to the nation's capital. In addition to its conveyance systems, a thoroughly modernized WAD operates two treatment plants, at the Delcarlia and McMillan Reservoirs, which produce on average 180 mgd of drinking water that meets or exceeds all EPA standards for safe, potable water.

While WAD's facilities have proven more than adequate to treat raw water from the Potomac River, increasingly, the importance of protecting the quality of source water for drinking supplies has been recognized. Under the provisions of the 1996 Safe Drinking Water Act Amendments, each state is required to develop a Source Water Protection Program (P. L. 104-182, Section 1453). The first step in the development of such a program is a source water assessment (SWA) of the drinking water source of each water supply intake. This report is the District of Columbia's source water assessment for the [REDACTED] and [REDACTED] intakes of the Washington Aqueduct on the Potomac River.

1.2 The Components of the Source Water Assessment

Under the 1996 Safe Drinking Water Act Amendments, each SWA must contain the following four components:

1. A delineation of the watershed contributing source water to the intake;
2. An inventory of potential contaminants and their sources within the delineated watershed;
3. An analysis of the susceptibility of source water to potential contamination from these sources; and
4. Communication of the results of source water assessment to the public.

Chapter 2-5 and 8 of this report satisfy these requirements. Chapter 2 gives a general characterization of the intake watersheds, in addition to describing their delineation. Chapter 3 illustrates the time of travel concept for potential contaminants to the intakes under a variety of flow conditions. Chapter 4 describes the watershed delineation, contaminant inventory, and susceptibility analysis. Chapter 5 reviews existing monitoring data and analyzes the potential for source water contamination from known sources of contamination in the Potomac River Basin. Chapter 8 provides information on the steps leading up to the development of the assessment plan and details the public meetings that were held for stakeholder involvement and contribution.

1.3 The Use of the Chesapeake Bay Program Watershed Model in the Source Water Assessment

The District of Columbia faces a unique challenge in developing a source water assessment for its intakes on the Potomac River: The intakes and the contributing watershed lie wholly outside D.C.'s boundaries. The watershed covers over 11,000 square miles in the states of Maryland, Virginia, Pennsylvania, and West Virginia. Interstate cooperation is a necessity in performing the SWA and implementing any subsequent protection program.

The District of Columbia already participates in several regional programs for environmental protection, including the Chesapeake Bay Program, (CBP) a wide-ranging commitment by D.C., Maryland, Virginia, Pennsylvania, and the Federal Government to protect and enhance the waters of the Chesapeake Bay Basin. CBP has developed the Watershed Model, an HSPF model of the fate and transport of nutrients and sediment from point and nonpoint sources draining into the bay. The Watershed Model and the methodology behind it are recognized tools for assessing pollutant sources and evaluating strategies to control them. In order to better integrate source water protection into regional environmental protection programs, the Watershed Model was adapted for use in the source water assessment. Chapter 6 describes the use of the Watershed Model to evaluate the susceptibility of the District of Columbia's source water to contamination from sediment, nutrients, pathogens, and pesticides.