DEFINITIONS

(From New Castle County Unified Development Code, Adopted on December 31, 1997, and as amended.)

COCKEYSVILLE FORMATION WATER RESOURCE PROTECTION AREAS

The Cockeysville Formation Water Resource Protection Areas consist of: (1) areas that are directly underlain (outcrop) by the Cockeysville Formation, and (2) land surface areas which drain to the areas underlain by the Cockeysville Formation (Cockeysville Formation Drainage Area). The locations of the Cockeysville Formation were obtained from Plate 1 of a report prepared by the Delaware Geological Survey in 1991 titled "Summary Report, Geology and Hydrology of the Cockeysville Formation, New Castle County, Delaware." Areas draining to and across the Cockeysville Formation were derived from the U. S. Geological Survey 7.5 minute topographic quadrangle maps.

The brown areas depicted on Plate 1 in the "Summary Report" mark areas underlain by the Wissahickon or Setters formations where inter-formational groundwater flow to the Cockeysville Formation is considered greater than average. For land use regulation purposes, these areas are considered as being in the Cockeysville Formation Drainage Area.

The Cockeysville Formation forms environmentally sensitive areas because the rocks which comprise the formation (calcite and dolomite) are fractured and subject to dissolution. The associated complex sub-surface drainage system, potential for rapid groundwater movement, and sinkhole formation make the groundwater in this area highly susceptible to contamination. In addition, recharge to this formation, essential for maintaining the groundwater resource, is limited by the relatively small outcrop areas. The Cockeysville Formation in the Hockessin area currently supports public and private water supply wells producing an average of more than 1.5 million gallons per day.

WELLHEAD WATER RESOURCE PROTECTION AREAS

Wellhead Water Resource Protection Areas are surface and sub-surface areas surrounding public water supply wells or wellfields where the quantity or quality of groundwater moving toward such wells or wellfields may be adversely affected by land use activity. Such activity may result in a reduction of recharge or may lead to introduction of contaminants to groundwater used for public supply.

Three classes of Wellhead Water Resource Protection Areas are shown on the maps.

Class A - The area within a 300 foot radius circle around all public water supply wells which are classified as water systems, as defined by Section 22.146 (Public Water Systems) in the State of Delaware Regulations Governing Public Drinking Water Systems. Class A wells are community, transient non-community, and non-transient non-community.

Class B - The Glendale and Eastern States Wellfields. These Wellhead Protection Areas have been delineated through the use of hydrogeologic mapping, analytical methods, and application of U.S. EPA modular semi-analytical models using a five year time-of-travel by the Delaware Geological Survey as discussed in a report prepared by the Delaware Geological Survey entitled "Application of the EPA WHPA Models for Delineation of Wellhead Protection Areas in the Glendale and Eastern States Wellfields, New Castle County, Delaware" dated January 1993.

Class C - Wellhead Protection Areas delineated by the Delaware Geological Survey and the Delaware Department of Natural Resources and Environmental Control through the interpretation of geologic and hydrologic reports and maps, water-table maps, and professional judgment. Such areas are considered preliminary designations.

SURFACE WATER RESOURCE PROTECTION AREAS

Surface Water Resource Protection Areas consist of : (1) the areas which drain on the surface or underground to existing public water supply reservoirs, (2) the land surfaces in the Flood Plain upstream of an approved public water supply intake. The Flood Plain is comprised of the 100-year Flood Plain as defined in Article 33 of New Castle County Unified Development Code and (a) delineated by the Federal Emergency Management Agency (2010) and (b) soils frequently and very frequently flooded mapped by the New Castle County Soil Survey, prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service (2010), and (3) Erosion Prone Slopes contiguous to and draining toward a Flood Plain or a water course upstream of an approved public water supply intake. Erosion Prone Slopes consist of soils with all or part of the area at greater than or equal to 15% slopes as mapped by the New Castle County Soil Survey, prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service (2010) with map unit symbols BkD, BoF, BvsF, CstD, GaC, GaD, GaE, GeC, GgC, GgD, GhC, GnC, MaC, MaD, MaE, MxC, NtC, NvC, NvD, NvE, SaD, SaE, and UzF.

Surface water sources are susceptible to pollutants released in proximity to and upstream of intakes or storage facilities. Currently, these sources provide approximately 70% of the daily public water supply and most of the emergency water supply for New Castle County. The drainage areas, flood plains, and erosion prone slopes were derived from the following maps and report: (1) U. S. Geological Survey Topographic Quadrangle maps, (2) WATER 2000, Volume VII, 1984, Water Resources Agency for New Castle County (1984), (3) Digital Flood Plain Mapping, Federal Emergency Management Agency (2010), and (4) New Castle County Soil Survey, U. S. Department of Agriculture, Natural Resources Conservation Service (2010).

The drainage areas, flood plains, and erosion prone slopes were derived from the following maps and report: (1) U. S. Geological Survey Topographic Quadrangle maps, (2) WATER 2000, Volume VII, 1984, Water Resources Agency for New Castle County (1984), (3) Digital Flood Plain Mapping, Federal Emergency Management Agency, 1997, and (4) Soil Survey of New Castle County, U. S. Department of Agriculture, 1970.

RECHARGE WATER RESOURCE PROTECTION AREAS

Recharge Water Resource Protection Areas are designated as having excellent potential for groundwater recharge. They were delineated using methodology described in a report prepared by the Delaware Geological Survey entitled "Delineation of Ground-Water Recharge Resource Protection Areas in the Coastal Plain of New Castle County, Delaware (1993)."

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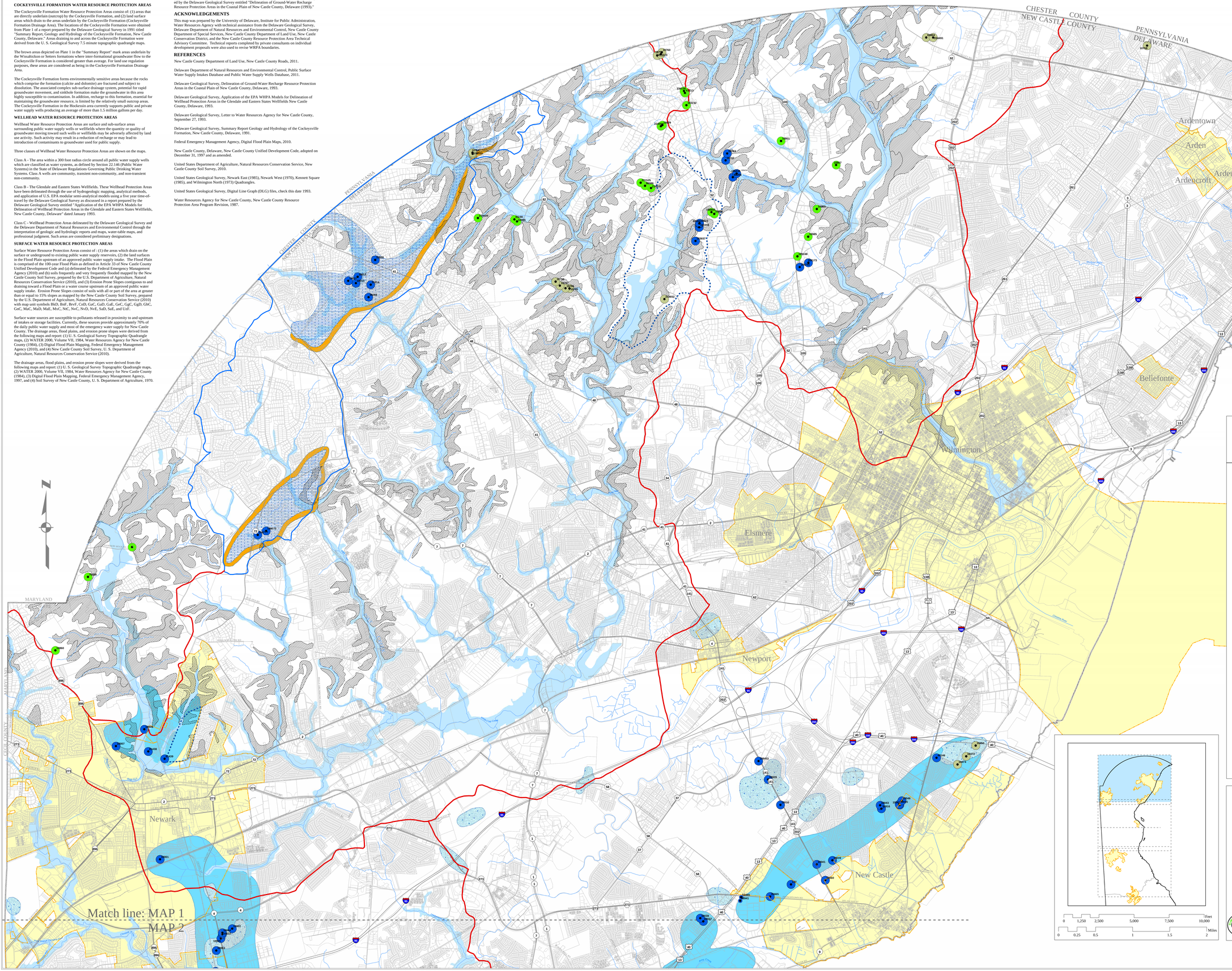

Source Watersheds

Watersheds upstream from Public Surface Water Intakes

Water Resource Protection Areas (WRPAs)

Cockeysville Formation WRPA

- Outcrop
- Wissahickon
- Drainage Area

Wellhead WRPA

- Class A WRPA
- Class A WRPA - 150-foot Radius
- Transient, Non-Community Wells (Restaurants, Stores, Hotels, Parks, etc.)
- Non-Transient, Non-Community Wells (Schools, Daycare Centers, Office, Factory, etc.)
- Class C WRPA

Surface Water WRPA

- Reservoir Watershed
- Flood Plains
- Erosion Prone Slopes

Recharge WRPA

- Recharge Areas

Water Resource Protection Areas for City of Newark City of Wilmington New Castle County Delaware

1987, Revised 1993, 2001, 2006, and December 2011

Map 1 of 3

Map compiled by Nicole M. Minto
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