2.0 ENVIRONMENTAL SETTING

2.1 Physiographic Setting

The project APE falls within the Mid-Drainage and Drainage Divide physiographic zones on the United States Geological Survey (USGS) Newark East and Saint Georges, Delaware 7.5 minute topographic quadrangles (USGS 1993a, 1993b). The project APE is located in a portion of Delaware with a great deal of physiographic variability in a small area. The Piedmont physiographic zone is located 3.0 km (1.9 mi) north of the western end of the APE, and the Delaware Shore physiographic zone begins less than 3.0 km (1.9 mi) east of the eastern end of the APE.

The Mid-Drainage physiographic zone is a north-south strip that is centered on the modern extent of tidally influenced waters in the rivers of the Coastal Plain. The project APE is in the western portion of this zone, and all waters are fresh, rather than brackish.

The Drainage Divide physiographic zone is a north-south strip that follows the divide between rivers and streams that drain east to the Delaware River and those that drain west to the Chesapeake Bay. The portion of the Drainage Divide zone in the APE captures only the headwaters of streams draining to the east into the Delaware River.

Elevations in the APE range from 13.7 to 22.0 m (45.0 to 72.0 ft) above mean sea level. The APE generally follows a broad, low drainage divide. As typical of the Coastal Plain, topographic relief is very subtle, and the APE lacks any notable knolls or ridges.

2.2 Climate

New Castle County has a humid, continental climate that is modified due to the proximity of the Atlantic Ocean (Matthews and Lavoie 1970:93). The nearby Atlantic Ocean modifies masses of air that pass over it before reaching the county. Winters bring westerly or northwesterly winds, cooler temperatures, and clearing skies. Summers bring southerly winds with warm moist air. The average annual temperature for the county is 12.2° C (54.0° F). The average annual precipitation for New Castle County is 121.9 cm (48.0 in) and it is fairly evenly distributed over the year. The frost-free growing season lasts approximately 175 to 185 days in the project area.

2.3 Hydrology

The project APE is generally located on or near a drainage divide between the Christina River drainage to the north and the Red Lion Creek drainage to the south. The western end of the APE abuts and is drained by Muddy Run, a tributary of the Christina River. The middle portion of the APE is drained by two branches of Belltown Run (a Christina River tributary) on the north and Red Lion Creek on the south. The eastern portion of the APE drains into the Christina River to the north and the Red Lion Creek to the south. All of the streams in the APE are small, well-entrenched, and lack significant floodplains.

2.4 Soils

The following soils information is taken from Matthews and Lavoie (1970). Soils mapped within the APE belong to the Sassafras-Fallsington-Matapeake Association and the Matapeake-Sassafras Association. The former soils comprise the western half of the APE and are level to gently sloping, well-drained and poorly drained, moderately coarse-textured and medium-textured soils located on uplands. The latter soils comprise the eastern half of the APE and are nearly level to steep, well-drained, medium-textured and moderately coarse-textured soils also found in uplands.

Subsequent to the mapping of the soils by the soil survey, however, much commercial and residential development has occurred within the project APE. In several areas, the original soils have been extensively disturbed or completely stripped/excavated during the construction activities associated with the present roadway, commercial establishments, utilities, and housing developments, including the emplacement of side streets, surface drainage ditches, driveways, parking lots, and subsurface utilities and stormwater drainage networks.

2.5 Lithic Resources

The western end of the project APE is located within 3.2 km (2.0 mi) of Iron Hill, a location which was used throughout the pre-contact period as a source for Iron Hill jasper. This distinctive material varies in color from yellow to dark brown and ranges in quality from excellent to poor. When good to excellent quality jasper is found, a wide variety of lithic tool forms are easily made (Petraglia and Knepper 1996). In addition to being found in primary outcrops, jasper cobbles can be found as secondary sources in certain streams on the Delmarva Peninsula. The other possible lithic raw material source near the APE would be cobble packages of quartz, quartzite, and chert found in

major streams. The Christina River near the eastern end of the APE might contain such cobbles, as suggested by the presence of modern gravel works on the river at Walther Road.

2.6 Flora and Fauna

The floral and faunal distributions across Delmarva can be described as a mosaic with a high variety of species present in a small area (Custer 1986:46-47). The greatest variety of animals would have been found in the grass/woodlands settings and in perennial and seasonal water sources. Principal mammal species which served as potential resources for the aboriginal inhabitants of the area were mastodon, mammoth, musk ox, vole, lemming, mouse, white-tailed deer, caribou, elk, giant beaver, river otter, porcupine, cottontail rabbit, gray squirrel, and opossum. Important fur-bearing mammals included beaver, muskrat, raccoon, and red and gray foxes. Avian fauna of aboriginal importance would have included wild turkey and ruffed grouse, as well as various species of waterfowl. Numerous species of fish and shellfish were available in freshwater streams, the brackish waters of the Chesapeake Bay, and the salt waters of the Atlantic Ocean. Much of the natural vegetation of the APE has been significantly altered by historic and modern clearing, agriculture, and logging.