Environmental Assessment
For the Siting of a National Cemetery
Southeast Pennsylvania

Volume I

Prepared For

Department of Veterans Affairs
National Cemetery Administration
811 Vermont Avenue NW
Washington, DC 20005

Prepared By

MACTEC
5205 Militia Hill Road
Plymouth Meeting, PA 19462

November 2005

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MACTEC Project No.: 3485-05-0049

NCA Contract No. V786P-557

November 2005

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List of Acronyms and Abbreviations

ADT	Average Daily Traffic
AHPA	Archaeological and Historic Data Preservation Act
AIRFA	American Indian Religious Freedom Act
APE	Area of Potential Effect
ARPA	Archaeological Resources Protection Act
AST	Aboveground Storage Tanks
bgs	below ground surface
BHP	Bureau of Historic Preservation
BMPs	Best Management Practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubit foot per second
CM	Conservation Management
CWA	Clean Water Act
Del Val	Del Val Soil and Environmental Consultants
EA	Environmental Assessment
EDR	Environmental Data Resources, Inc.
EMS	Emergency Medical Services
ENSR	ENSR International, Inc.
EO	Executive Order
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GP	General Permit
gpm	gallons per minute
IH	International Hydrogeologists
IP	Individual Permit
IPM	Integrated Pest Management
JMZO	Joint Municipal Zoning Ordinance
LAST	Storage Tank Release Sites
LOS	Level-of-Service
LUST	Leaking Underground Tanks
MACTEC	MACTEC Engineering and Consulting, Inc.
McMahon	McMahon Associates, Inc.
Met Ed	First Energy – Metropolitan Edison Company

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List of Acronyms and Abbreviations

NAGPRA	Native American Graves and Repatriation Act
NCA	National Cemetery Administration
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
PAARNG	Pennsylvania Army National Guard
PADCNR	Pennsylvania Department of Conservation and Natural Resources
PADEP	Pennsylvania Department of Environmental Protection
PADGS	Pennsylvania Department of General Services
PADMVA	Pennsylvania Department of Military and Veterans Affairs
PADPW	Pennsylvania Department of Public Welfare
PADW	Pennsylvania Department of Welfare
PASS	Pennsylvania Archaeological Site Survey
PCB	polychloryl biphenyl
PECO	Philadelphia Electric Company
PENNDOT	Pennsylvania Department of Transportation
PFBC	Pennsylvania Fish and Boat Commission
PGC	Pennsylvania Game Commission
PNDI	Pennsylvania Natural Diversity Inventory
PSSH	Pennhurst State School and Hospital
REC	Recognized Environmental Concern
RP	Resource Protection
SCS	Soil Conservation Service
SHPO	State Historic Preservation Office
SR	State Road
U.S.	United States
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tanks
VA	U.S. Department of Veterans Affairs

Executive Summary

On November 11, 2003, the President of the United States (U.S.) signed Public Law 108-109, authorizing the creation of several new National Cemeteries, including one to serve southeast Pennsylvania with an opening date of 2007. The National Cemetery Administration (NCA) is evaluating the development potential of three potential sites as possible sites for a new National Cemetery in southeast Pennsylvania, an area with a great need for additional national cemetery facilities. The three sites under consideration are located within 75 miles of Philadelphia, Pennsylvania in Bucks or Chester Counties. As required by law, the NCA has completed an Environmental Assessment (EA) of the alternatives in order to comply with the National Environmental Policy Act (NEPA). The evaluation is described in detail in the attached report.

The NCA coordinated with a number of local groups, county committees and congressional offices in an effort to identify suitable sites for a new cemetery. Numerous parcels of land in Southeast Pennsylvania were initially considered. This EA contains a detailed analysis of four alternatives including the No Action alternative. The three properties and the No Action alternative under consideration have been given equivalent evaluation in this EA. These sites include:

- Pennhurst – Alternative Site 1,
- Riegelsville – Alternative Site 2, and
- Dolington – Alternative Site 3.

The analysis conducted for this EA indicates that a primary challenge for cemetery development at any of the three sites is presence or potential presence of cultural resources. Selection of any of the alternative sites for the location of a National Cemetery could result in a finding of historic properties affected under the rules governing the protection of historic properties. However, measures could potentially be employed by the NCA that would avoid a finding of historic properties affected - adverse effect. Such measures would include consultation with the State Historic Preservation Office (SHPO) and other consulting parties as specified under 36 CFR 800.2, SHPO review of project design plans, and incorporation of SHPO recommendations to ensure consistency with the Secretary of Interior's standards for the treatment of historic properties. A Phase I Intensive Cultural Resource Assessment is recommended for the selected site in order to meet the standard of identification of historic properties specified in 36 CFR 800.4. Upon completion of the Phase I Intensive Cultural Resource Assessment, the NCA would be in an informed position to allow avoidance of National Register of Historic Places (NRHP) eligible resources on the subject property.

Construction of a National Cemetery on Pennhurst – Alternative Site 1, Riegelsville – Alternative Site 2 or Dolington – Alternative Site 3, would also result in a moderate adverse impact to soils as a result of the mass grading and disturbance of existing prime farmland. In addition, the anticipated placement of several feet of fill, as discussed in this EA, would also impact soil conditions. These impacts may be addressed by site-specific mitigations developed in association with cemetery design and site planning.

Potential impacts to other attributes that may be affected by the citing of a new national cemetery are anticipated to be minimal based upon the information currently available for this EA. Unavoidable impacts identified during the design and site-planning process may be mitigated.

Assuming cemetery development is conducted in accordance with the U.S. Department of Veterans Affairs (VA) design standards, in accordance with federal law, and with appropriate site-specific mitigation measures (as discussed in this EA), the impacts should be minimal at any of the three sites (Table ES-1). The analysis is consistent with a finding of no significant impact for each of the alternative sites and the No Action alternative. However, the No Action altenative does not provide burial services to Veterans, and thus, cannot meet the need for the proposed action.

Table ES-1. Effects Summary for the Three Alternative Sites

	Alternatives		
Attributes	**Pennhurst - Alternative Site 1**	**Riegelsville - Alternative Site 2**	**Dolington – Alternative Site 3**
Aesthetics	0	0	0
Air Quality	0	0	0
Cultural Resources	-2	-2	-2
Economic Activity	0	0	0
Floodplains and Coastal Zone.	-1	0	0
Geology and Soils	-2	-2	-2
Wetlands	0	-1	-1
Hydrology and Water Quality	-1	1	1
Groundwater	0	0	0
Prime Farmland	-1	-2	-2
Land Use	0	0	0
Noise	-1	-1	-1
Potential for Generating Substantial Controversy	0	0	0
Real Property	0	0	-1
Current Workforce	-1	0	0
Solid / Hazardous Waste	0	0	0
Traffic, Transportation and Parking	-1	-2	-1
Utilities	0	0	0
Vegetation and Wildlife	-1	-1	-1
Provide Burial Services to Veterans	1	1	1
Total Rank	**-10**	**-9**	**-9**

Source: MACTEC, 2005.
Created by: ABS Checked by: AWC
Note: 1 = Beneficial Effect
-3 = Severe Effect
-2 = Moderate Effect
-1 = Minimal Effect
0 = No Significant Effect

1.0 Project Purpose and Description of Need

The National Cemetery Administration (NCA) is the entity within the U.S. Department of Veterans Affairs (VA) that is responsible for establishing, constructing, and maintaining national cemeteries in order to provide reasonable access to burial benefits for veterans pursuant to the provisions of the National Cemeteries Act of 1973 and other statues. NCA considers reasonable access to burial benefits to mean that a first interment option is available within 75 miles of the veterans' residence. Once the need is identified, NCA follows a multi-step process for building new national cemeteries:

- Site selection process including Environmental Assessment (EA);
- Land acquisition;
- Master planning and design development;
- Construction documents preparation; and
- Construction award/completion.

The purpose of the proposed action is to fulfill a need for a national veteran's cemetery in the southeast Pennsylvania area. This report is the EA, part of the site selection process for siting a new cemetery in southeast Pennsylvania.

The NCA has recognized for some time that there was a need for additional cemetery facilities, including the southeastern Pennsylvania area. The death rate of veterans has been increasing each year as World War II and Korean War veterans advance in age. The annual rate of veteran deaths is expected to increase annually through this time period. Southeast Pennsylvania was identified as an area of great need for a national cemetery in a demographic study of the nation's veteran population. Current estimates indicate that veteran deaths will soon peak in southeastern Pennsylvania and remain high for several years (VA NCA, 2005). This progressive increase in veteran deaths results in a corresponding increase in the demand for burial services in national cemeteries. The project is needed to provide cemetery facilities for approximately 170,000 veterans within a 75-mile radius of Philadelphia in southeast Pennsylvania.

Public Law 99-576, the Veteran's Benefits Improvement and Health Care Authorization Act of 1986, required the NCA to identify the geographic areas in the United States (U.S.) with the most urgent need for veteran burials, a 1987 report indicated ten locations where new national cemeteries would be required. In 1999 Public Law 106-117, the Veterans Millennium Health Care and Benefits Act, required the NCA to again identify the geographic areas of the country most in need of a new nationa1 cemetery. On November 11, 2003, the President of the U.S. signed Public Law 108-109, authorizing the creation of several new National Cemeteries, including one to serve southeast Pennsylvania with an opening date of 2007.

Southeast Pennsylvania was identified as an area of great need for a national cemetery in a demographic study of the nation's veteran population. The project is needed to provide cemetery facilities for the thousands of veterans within a 75-mile radius of Philadelphia.

The NCA has found that 75 miles is an optimum distance for planning purposes. The NCA has also shown through experience that few people will elect burial at a national cemetery that is farther than 100 miles from their place of residence, and that there is a reluctance for burial to take place across a state line from the place of residence. The nearest veteran's cemeteries are the Indiantown Gap National Cemetery in Annville, Pennsylvania (80-miles from the Philadelphia region) and the Philadelphia National Cemetery in Philadelphia, Pennsylvania. The Indiantown Gap Cemetery currently has space to accommodate casketed and cremated remains. The Philadelphia National Cemetery currently has space to accommodate cremated remains only. These facilities are not capable of accommodating the 170,000 veterans currently living in the Philadelphia area.

This report summarizes the findings of the EA completed as required by the National Environmental Policy Act (NEPA). The procedure used to complete this EA is consistent with the guidance detailed in the VA's "Environmental Compliance Manual" (VA, Office of Facilities Management, Landscape Architect Professional Group, 1998). It is important to note that the project will only move forward if a "Finding of No Significant Impact" (FONSI) determination is made.

This EA was prepared in accordance with the NEPA, the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] [C §1 1500-1508]), and VA Regulations, Title 8 of the CFR, Section 26.4 (a). The VA policy includes provisions to protect, restore, and enhance the quality of the human environment; and to minimize adverse environmental consequences, consistent with other national policy considerations.

2.0 Description of Project Alternatives

2.1 Steps for Establishing a New National Cemetery

2.1.1 General Process and Management

The sequence of steps for siting and constructing a new National Cemetery are outlined in Table 2-1.

Table 2-1. Steps for Establishing a New National Cemetery

1. Identify veteran population to be served
2. Calculate acreage requirement
3. Define area of consideration (counties) to search for potential sites
4. Site selection process
   - Review and assess competing sites
   - Environmental compliance
   - Identify preferred site
   - Site survey/appraisal
   - Land acquisition
5. Architectural and Engineering Firm Selection
   - Master planning and design
   - Construction documents
6. Construction
   - Solicitation of bids, award, oversight
7. Open Fast-Track-early burial area development (6 months after construction starts)
8. Completion of Construction – Dedication
9. Minimum Timeframe = 5.5 years

Source: NCA, 2005.

Site selection occurs prior to master planning and design, so detailed plans for the cemetery footprint are not yet available. However, the NCA has guidelines for the design and operation of national cemeteries.

The following summary (VA NCA 2004 and 2005), describes the NCA's general approach to siting, design, construction and management of national cemeteries, and is presented here to facilitate evaluation of potential impacts based upon design and management considerations for a national cemetery.

> *Each national cemetery is managed by National Cemetery Administration (NCA) personnel in conformance with national and memorial service network office policies, priorities, goals and objectives. Most cemeteries are supervised by a cemetery director and a staff of administrative and maintenance personnel. National cemeteries are commonly open from 8 a.m. to 5 p.m. daily and on Memorial Day from 8 a.m. to 7 p.m.*

Generally, funeral corteges are received from 9 a.m. to 3 p.m., Monday through Friday. Burials at national cemeteries do not normally occur on weekends or federal holidays.

The users of cemetery facilities are typically:

- *Funeral attendees, including family members, funeral directors, etc.*
- *Public visitors*
- *Cemetery staff, including administrative, maintenance and other visiting VA staff*
- *Volunteers, who provide honors at interment services and assist cemetery staff in administration and maintenance activities*
- *Contractors (maintenance and construction), sales representatives and vendors*

Structures expected to be built include:

- *Public Information Center*
- *Administration / Maintenance Complex*
- *Committal Service Shelter*

A Public Information Center with Cortege Assembly Area may be situated near the main cemetery entrance to provide a central point for vehicles in a funeral procession to wait while the entire cortege assembles and representatives receive final instructions before proceeding to the Committal Service Shelter. The Public Information Center would normally be occupied by cemetery personnel. In the absence of staff, visitors can contact administrative personnel by telephone provided there. Cemetery visitors would obtain gravesite locator information there and Public Rest Rooms would be located there.

The sequence beginning at the cemetery entrance should place the entrance to the Public Information Center and restrooms adjacent to the Cortege Assembly Area, and at a distance from the Committal Service Shelters and Administration/Maintenance Complex, which should be centrally located on the site.

Retain the site in as natural a state as possible. Keep grading to a minimum, while meeting the functional requirements of the cemetery. To the extent feasible, balance on-site cut and fill. Leave undisturbed such features as natural drainage ways, valuable trees or tree groups, shrubs, ground covers, rock out-croppings and streams. The design should use construction practices that minimize adverse effects on the natural habitat.

The planting design should articulate and strengthen the site layout. In general, the development should use regionally native plants and employ landscaping practices and technologies that conserve water and prevent pollution.

Prepare interment areas for seeding, sprigging and/or sodding with topsoil and proper nutrients. In non-burial areas, consider alternatives to standard turf that are suitable to drought conditions. The amount of annual rainfall as well as the type of irrigation system, if any, will determine the plant material selected. Irrigation is usually necessary to keep the landscape at an aesthetically pleasing level. Although sufficient rainfall may be received to sustain indigenous plants, situations involving introduced species or plants in stressful conditions may require irrigation. Evaluate the landscape environment, including turf grasses, and determine whether an irrigation system should be installed in the cemetery.

Interment areas are those portions of the cemetery acreage that are developed for burials of either full casket or cremated remains. Interment areas may be subdivided into burial sections of varying sizes and shapes. Burial sections are visually separate areas, broken by vegetated areas (woods), roads, walks and topography. Burial sections for full casket gravesites shall be no larger than three acres. Burial sections for cremated remains shall have no more than 999 sites (approximately .2 acres). In-ground interment areas for casketed or cremated remains shall generally conform to existing terrain.

The National Cemetery Administration is committed to providing burial benefits to as many veterans as possible and to achieving the maximum development of gravesites within national cemeteries. The standard gravesite size will be the smallest size practical to accommodate the type of marker being used, to ensure appropriate gravesite appearance and to provide for safety consideration of employees. Each gravesite is marked with one marker, consistent with the requirements of applicable law.

The standard gravesite sizes will be used when conditions warrant:

- *The 1500 millimeters x 3000 millimeters (5 feet x 10 feet) gravesite will be used where double-depth interments in a 2100 millimeters (7 feet) excavation are possible.*
- *The 1800 millimeters x 3000 millimeters (6 feet x 10 feet) gravesite will be used for single depth side-by-side interments where excavation below 1500 millimeters (5 feet) is impractical due to soil conditions.*
- *The 1200 millimeters x 2400 millimeters (4 feet x 8 feet) gravesite may be used in those sections of national cemeteries which by law use flat markers.*
- *The 900 millimeters x 2400 millimeters (3 feet x 8 feet) gravesite may be used in those sections of national cemeteries which use lawn crypts. Lawn crypts are pre-placed concrete containers with removable concrete lids which are installed at the time of land development. Crypts are installed by excavating the burial area and preparing it to provide adequate drainage. Pre-cast crypts are then placed adjacent to one another and abutting on another.*

As with full casket gravesites, NCA is committed to achieving the maximum development of cremain sites within national cemeteries. NCA will strive to provide cremain sites in all cemeteries including those closed to the interment of casketed remains. The standard cremain site size will be the smallest size practical to accommodate the type of marker being used, to ensure that the cremain site appearance is appropriate and consistent with any adjacent gravesite section. Each gravesite will be marked with one marker, consistent with the requirements of applicable law and NCA policy.

The standard cremain site sizes will be used when conditions warrant:

- *Designated Cremains Sections -- A burial site for the interment of cremated remains in a separate cremains section is 900 millimeters x 900 millimeters x + 600 millimeters (3 feet x 3 feet x + 2 feet) deep, and is marked with a 300 millimeters x 450 millimeters (12 inches x 18 inches) flat marker of granite or bronze.*
- *Garden Niche or Terrace -- A burial site for the interment of cremated remains in a distinct space using a system of paths, walls and/or terraces that creates a tranquil garden setting, is 900 millimeters x 900 millimeters x + 600 millimeters*

(3 feet x 3 feet x + 2 feet) deep, and is marked with a 300 millimeters x 450 millimeters (12 inches x 18 inches) VA standard flat marker of granite or bronze, or a wall-mounted bronze plaque, 140 millimeters x 215 millimeters (5-1/2 inches x 8-1/2 inches).

- *Columbarium -- A niche in an above-grade structure designed for the interment of cremated remains is 265 millimeters x 375 millimeters x 500 millimeters (10-1/2 inches x 15 inches x 20 inches) deep, measured at the face. Each niche is designed to accept an individual VA standard niche cover. Some columbaria developed earlier in national cemeteries utilized multiple-niche covers and various sizes of niches. Expansion of existing columbaria will follow the original design concept for that cemetery. The columbarium design must include the capability of expansion in future phases of cemetery development but must appear complete with the initial phase of development.*
- *Cremains [Scattering] Garden -- A designated garden-type area where cremated remains are scattered in the landscape. A site used for the scattering of cremated remains is not individually marked, but the deceased is acknowledged on a communal bronze plaque in the garden area or by an individual bronze plaque mounted on a wall designated for that purpose. An individual whose ashes are scattered in the national cemetery may not have a memorial marker placed in the memorial section of the cemetery.*

The planning and design phase of the project will not commence until after land has been acquired. The land acquisition phase will follow this EA. Therefore, details about how any of the sites under consideration might be developed into a cemetery are not available. However, according to the NCA (VA NCA, 2004), cemetery development will likely occur in phases with the first phase likely to include construction of the first active burial section in addition to the infrastructure necessary to operate the cemetery. Subsequent phases would probably be limited to new burial sections and the infrastructure required for the section.

2.2 Alternatives Considered and Dismissed from Detailed Analysis

2.2.1 Site Selection Process

2.2.1.1 Location

The site should be located as closely as possible to the densest veteran population in the area under consideration. The focal point is a 75-mile radius within state from Philadelphia, Pennsylvania. In addition, the sites are evaluated according to size, shape, accessibility, utilities and water, and surrounding land use.

Sufficient acreage must be available to provide sufficient gravesites for several decades. Interment rates are projected based upon veteran population within a 75-mile in-state radius of the proposed site. The number and mix of required full-casket gravesites, cremain sites, and columbarium niches are used to determine acreage requirements. Irregularly shaped sites are generally more difficult to access and less efficient to layout and develop. The NCA has determined that an ideal site would consist of approximately 200 acres.

The selected site should be readily accessible via highways and major public roadways. Close proximity to highway interchanges and public transportation is optimal. If public utilities (electricity, water, sewer) are immediately available to the site, that is ideal. However, on-site septic systems and on-site water wells may be acceptable. An adequate water supply, whatever the source, is also very important. Sites adjacent to visually objectionable, load noise, high traffic, or other nuisance elements are avoided to maintain the desired decorum for the ceremonies. The site needs to be free of public easements and rights-of-way.

2.2.1.2 Site Characteristics

The inherent qualities of the site, including soils, topography, and aesthetics, should be such that it is conducive to cemetery development. Soils should be of a quality which will provide adequate topsoil for growing turf as well as adequate stability for constructing roads and buildings. Shallow depth to groundwater may require additional site preparation. An ideal site would be free of subsurface obstructions and hazardous waste.

Comparatively level to rolling terrain is desirable for areas to be developed. The grade of burial areas should be in the 2 to 15 percent range. There should be sufficient slope to enable proper drainage of the site. Ravines, wetlands, and sinkholes are avoided wherever feasible. Existing site amenities such as pleasant views and quality vegetative cover are sought after. The presence of man-made elements such as cultural/historic/archaeological elements, utility easements, rights-of-way, or mineral rights can hamper or legally prevent development.

During 2003-2005, NCA staff completed preliminary site visits at several potential candidate sites in southeastern Pennsylvania for a national cemetery. The purpose of the site visits was to identify appropriate candidate sites suitable for further consideration as national cemetery. The sites that were included in the NCA's preliminary site visits included the following:

- A portion of the Valley Forge National Park in Valley Forge, Pennsylvania.
- The Graterford Site – located adjacent to the Graterford Correctional Facility in Graterford, Pennsylvania.
- A site in Embreeville, Pennsylvania.
- Three sites located in Upper Makefield Township**,** in Bucks County, Pennsylvania.
- A site in Norristown, Pennsylvania.
- The Pennhurst Site – located on the grounds of the former Pennhurst State Hospital in Spring City, Chester County, Pennsylvania.
- The Riegelsville Site – located at the St Lawrence Catholic Church in Riegelsville, Bucks County, Pennsylvania.
- The Dolington Site – a fourth site in Upper Makefield Township located in Dolington, Bucks County , Pennsylvania.

The Graterford, Valley Forge, Norristown, Embreeville and the first "three Upper Makefield" sites were removed from consideration prior to initiation of this EA due in part to availability and

size constraints. Of the sites listed above, three sites, two in Bucks County and one in Chester County (see Figure 2-1), were identified for further consideration: Pennhurst Site, Riegelsville Site, and the Dolington Site. These three sites are the focus of this EA.

2.3 Alternatives Retained for Detailed Analysis

2.3.1 Pennhurst Site - Alternative Site 1

Under this alternative, the NCA would acquire and develop an approximately 200± acre site in Chester County, Pennsylvania. In early 2003, the Pennsylvania Department of Military and Veterans Affairs (PADMVA) indicated that Pennhurst – Alternative Site 1, formerly occupied by the Pennhurst State School and Hospital (PSSH) in Spring City, East Vincent Township, Chester County, Pennsylvania, would be available to the NCA for consideration for a national cemetery. Approximately 259 gross-acres of state-owned property currently occupied by assisted living dwellings, a National Guard Armory, paved areas and woodland areas are available at the Pennhurst – Alternative Site 1. The former Pennhurst School site and buildings are currently proposed to remain the property of the State of Pennsylvania, and not transferred to the NCA, per the June 6, 2005 letter from the Commonwealth of Pennsylvania to the NCA.

Pennhurst – Alternative Site 1 is located immediately north of Spring City in East Vincent Township, Chester County, Pennsylvania (see Figure 2-2). The Pennhurst – Alternative Site 1 is approximately 30 miles northwest of Philadelphia and 25 miles southeast of Reading, Pennsylvania. The Pennhurst – Alternative Site 1 is bounded to the west by Pennhurst Drive, agricultural fields and a golf course, to the north by the Schuylkill River, agricultural fields and desilting basin, to the east by wooded areas and the Schuylkill River with commercial and residential developments further east, and to the south by single family residential developments as well as several commercial and industrial properties further south (Figure 2-3).

At the present time, most of Pennhurst – Alternative Site 1, is vacant and abandoned. The Pennhurst – Alternative Site 1 is a portion of an original 675-acre tract of land formerly occupied by the Pennhurst Center, a self-contained, state-owned and maintained mental facility. The Pennhurst Center was operated by the Pennsylvania Department of Public Welfare (PADPW). The Pennhurst Center included housing for over 4,000 patients and employees, dining facilities, medical and dental facilities, and associated infrastructure, including a power generation facility, a wastewater treatment plant, and a water supply tower. The property also contained agricultural lands and related improvements for the cultivation of crops, and for raising poultry and dairy cows, and as a cemetery for the burial of deceased patients. The property considered for the cemetery construction is currently owned by the Pennsylvania Department of General Services (PADGS). The PADGS acquired the property in 1987 from the Pennsylvania Department of Welfare (PADW), which is now the PADPW, upon closure of the Pennhurst Center. The PADW had owned the Pennhurst – Alternative Site 1 since 1908.

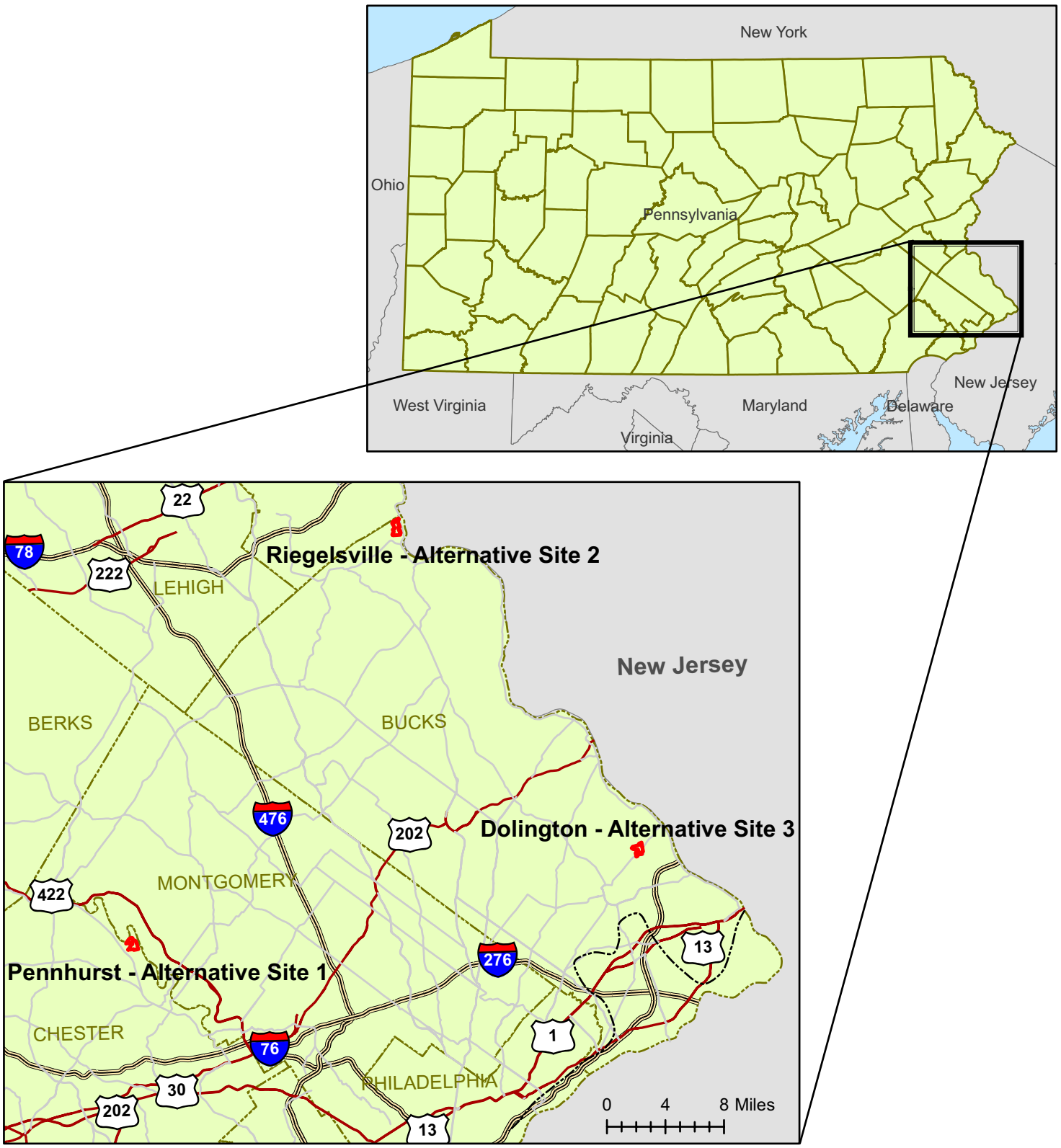


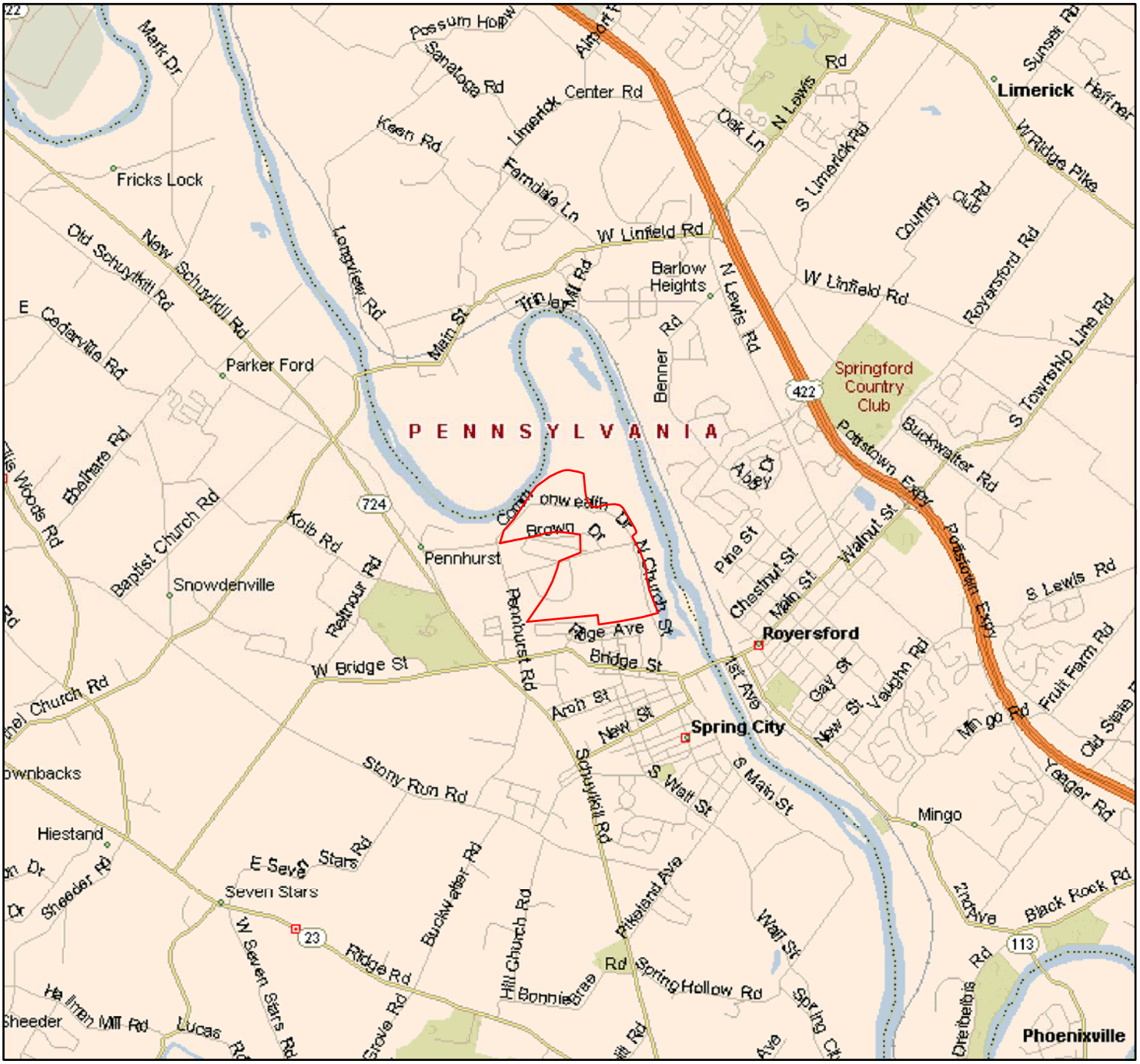
FIGURE 2-1. PROJECT LOCATION MAP

DRAWN	DATE
ALF	10/26/2005
CHECKED	DATE
ABS	10/27/2005

MACTEC
Plymouth Meeting, PA
3485-05-0049

NATIONAL CEMETERY
SOUTHEASTERN PENNSYLVANIA

DEPARTMENT OF VETERANS AFFAIRS
NATIONAL CEMETERY ADMINISTRATION



Source: MapPoint, 2005

Legend

Approximate Site Location

0 1 2 Miles

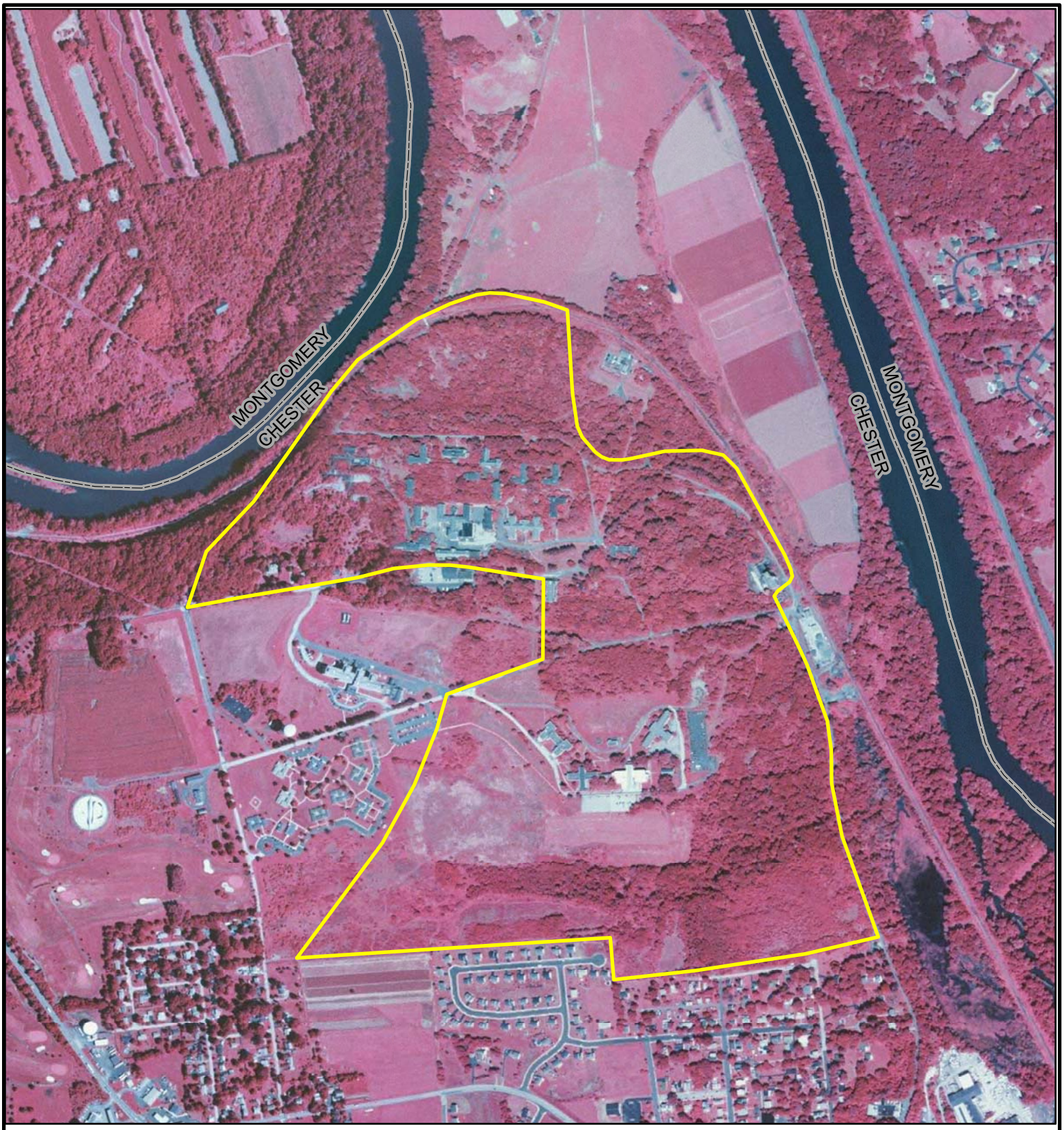
FIGURE 2-2. PROJECT LOCATION MAP, PENNHURST – ALTERNATIVE SITE 1

DRAWN	DATE
ALF	10/26/2005
CHECKED	DATE
ABS	10/27/2005

MACTEC
Plymouth Meeting, PA
3485-05-0049

NATIONAL CEMETERY SOUTHEASTERN PENNSYLVANIA

DEPARTMENT OF VETERANS AFFAIRS NATIONAL CEMETERY ADMINISTRATION



Source:
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004

0 0.1 0.2 Miles

Legend

Approximate Site Boundary

County Boundary

FIGURE 2-3. AERIAL PHOTOGRAPH, PENNHURST – ALTERNATIVE SITE 1

DRAWN	DATE
ALF	10/26/2005
CHECKED	DATE
ABS	10/27/2005

MACTEC
Plymouth Meeting, PA
3485-05-0049

NATIONAL CEMETERY SOUTHEASTERN PENNSYLVANIA

DEPARTMENT OF VETERANS AFFAIRS NATIONAL CEMETERY ADMINISTRATION

There are 33 buildings at Pennhurst - Alternative Site 1. Four of the 33 buildings (Maintenance/ Storeroom, Chiller Building, Pershing and Buchanan) are currently used by the PADMVA and the Pennsylvania Army National Guard (PAARNG). The Maintenance/Storeroom building, which is located on the Lower Campus, is used for storage of miscellaneous equipment by the PADMVA. The Pershing and Buchanan buildings, located on the Upper Campus, are occupied by the PAARNG and are located adjacent to the PAARNG training lands. The Chiller Building is located behind the Pershing Building on the Upper Campus and houses the power and cooling equipment for the Pershing Building. Since 1989, PAARNG has used the property for military training exercises.

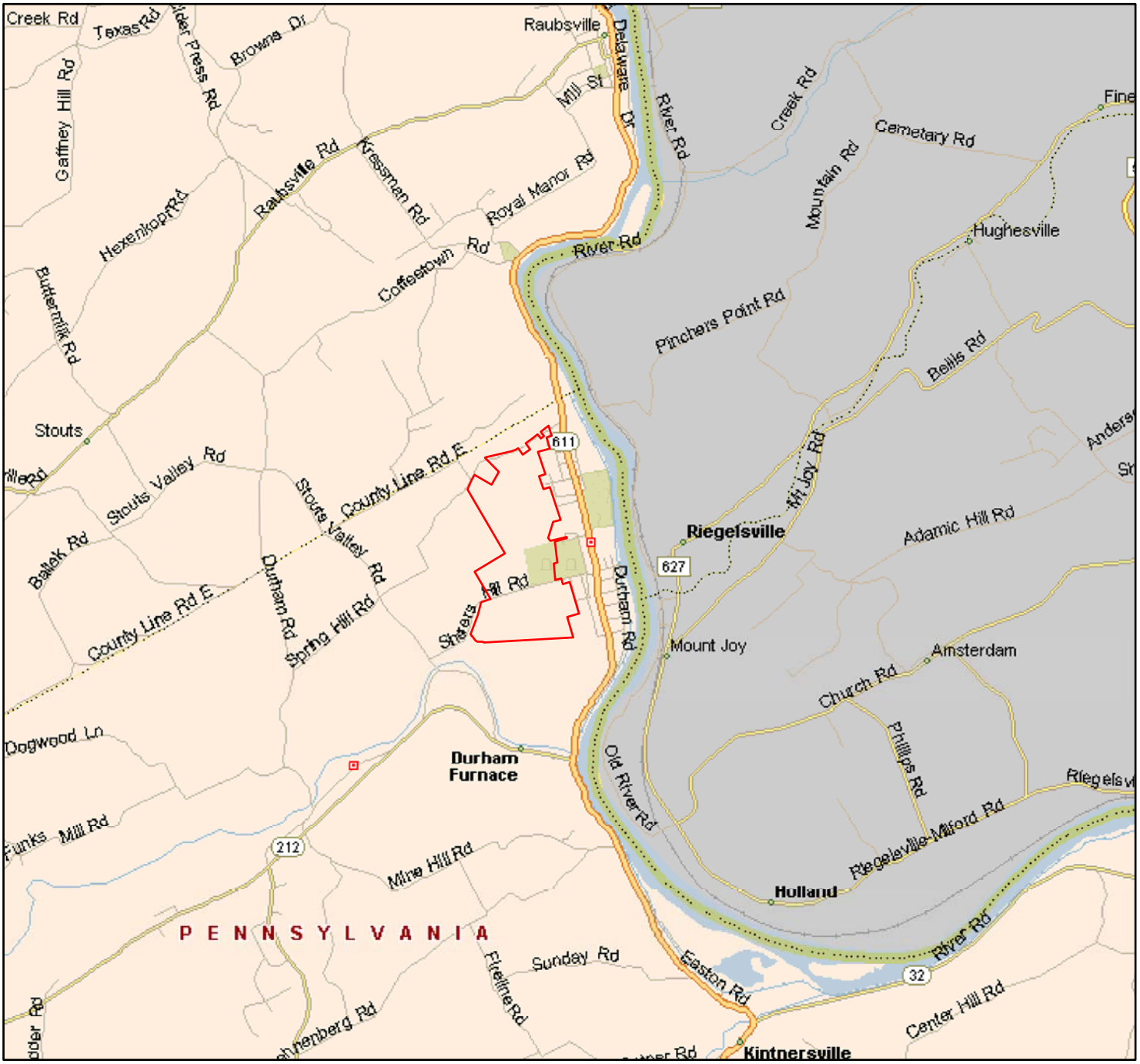
2.3.2 Riegelsville – Alternative Site 2

Under this alternative, the NCA would acquire and develop the approximately 260± acre site in Bucks County, Pennsylvania. The Riegelsville – Alternative Site 2 is owned by the St. Lawrence Catholic Church (345 Elmwood Lane, Riegelsville, PA 18077). The St. Lawrence Catholic Church, who acquired the property from the Joseph D. Ceader Family Memorial Trust approximately two and a half years ago, has expressed an interest in selling the parcel to the VA. Mr. Steve Salva, a church board member representing the St. Lawrence Catholic Church, was the primary contact for this investigation.

The Riegelsville – Alternative Site 2 is an irregularly-shaped lot located immediately west of the St. Lawrence Catholic Church in Riegelsville Borough, Bucks County, Pennsylvania (Figure 2-4). The proposed Riegelsville – Alternative Site 2 consists of approximately 205± acres of active farm fields and wooded lots (Figure 2-5). The Riegelsville – Alternative Site 2 is bounded by Spring Hill Road, residential parcels and woodland areas to the north, residential parcels in Riegelsville Borough to the east and residential, agricultural and woodland parcels in Durham Township to the south and west. The project study area is approximately 50 miles north of Philadelphia and 9 miles south of Easton, Pennsylvania.

At the present time, Riegelsville – Alternative Site 2, is utilized for agricultural purposes by Mr. Edward Thaler, a local farmer who leases the land from the St. Lawrence Catholic Church. Mr. Thaler has leased the property for agricultural purpose since the mid 1970's. The topography of Riegelsville - Alternative Site 2, generally consists of gently to steeply dipping rolling active farm fields with built-in contour terraces and alternating hay crops. Steep slopes are present within a woodland corridor across the central portion of the Riegelsville – Alternative Site 2 running from the southern border toward the northern border. Three small un-named, perennial streams are located on the northern portion of the subject property.

No current building structures exist on the property. However, just west of the St. Lawrence Catholic Church in a wooded lot along the central portion of the Riegelsville – Alternative Site 2, MACTEC Engineering and Consulting, Inc. (MACTEC) observed slate shingles and construction



Source: MapPoint, 2005

Legend

Approximate Site Location

0 1 2 Miles

FIGURE 2-4. PROJECT LOCATION MAP, RIEGELSVILLE – ALTERNATIVE SITE 2

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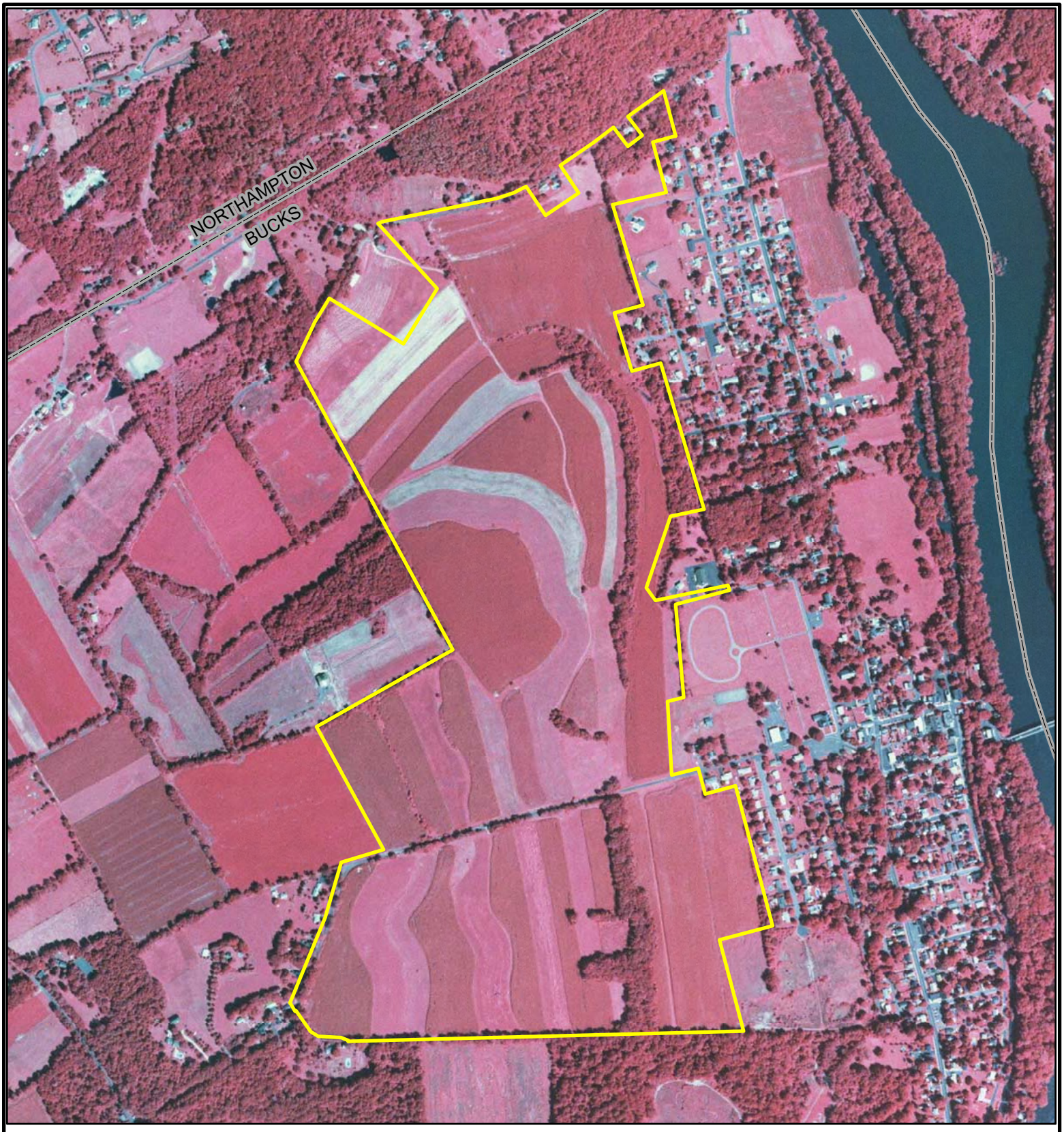

Source:
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004

0 0.1 0.2 Miles

Legend

Approximate Site Boundary

County Boundary

FIGURE 2-5. AERIAL PHOTOGRAPH, RIEGELSVILLE – ALTERNATIVE SITE 2

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debris. According to site officials, the remnants may be a horse barn which previously existed on the northern section of the Riegelsville – Alternative Site 2 adjacent to the St. Lawrence Catholic Church. Also, the ruins of a former above-ground limestone kiln are located along Delaware Road to the southwest of the St. Lawrence Catholic Church that appears to be on the property under consideration.

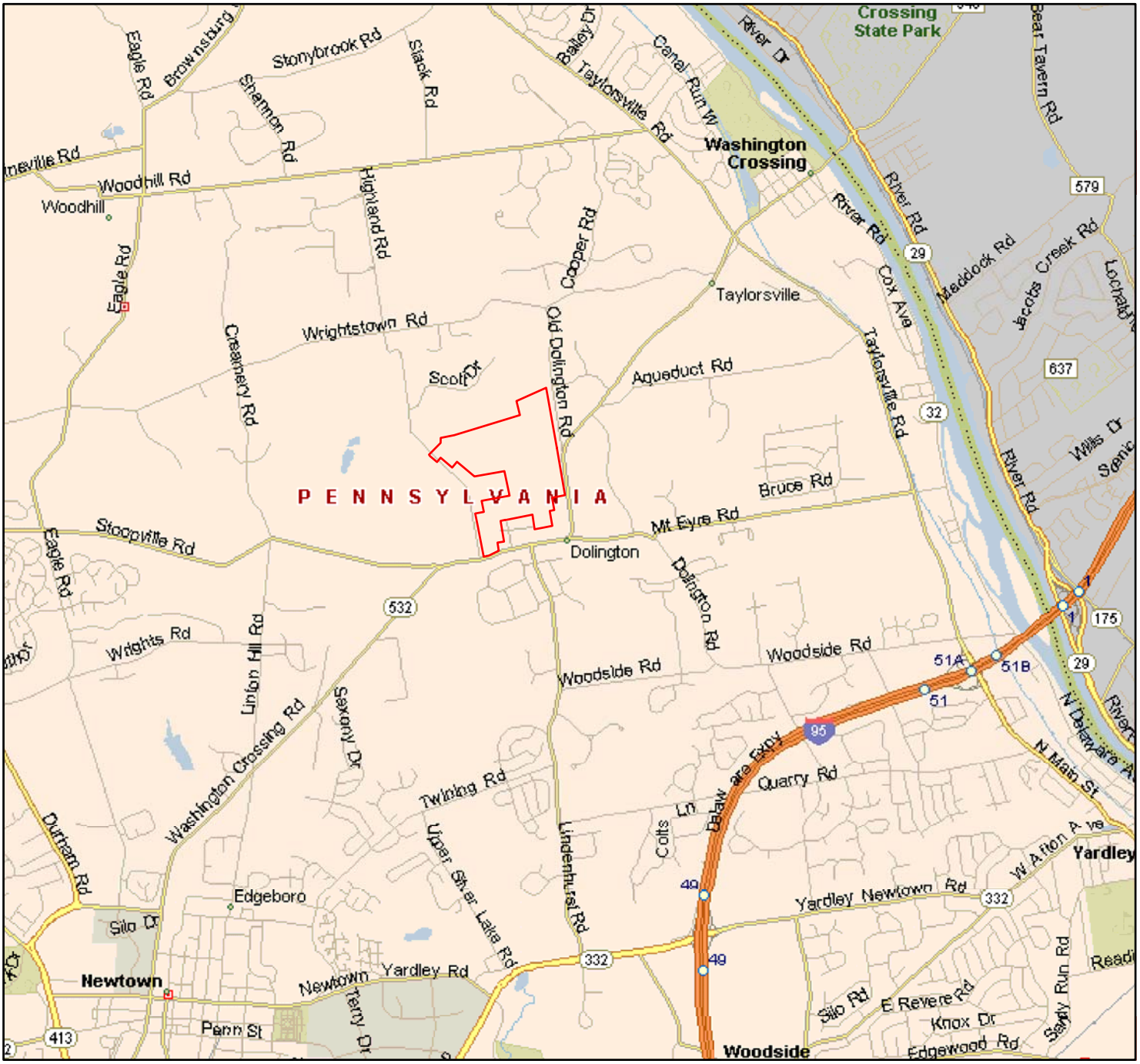
The only utility and/or service on-site is electricity. No other services exist on the property; however, the surrounding area is connected to public water, on-lot sewage systems, telephone and information lines (ie. cable television).

2.3.3 Dolington – Alternative Site 3

Under this alternative, the NCA would acquire and develop a 214±acre site in Bucks County, Pennsylvania. The Dolington – Alternative Site 3 is owned by The Dolington Group, which is made up of individual parcel owners, two of which will eventually retain ownership of their homes on smaller, subdivided lots; however, the contractual owner of the tract is Toll Brothers, Inc. (Toll Brothers), of Horsham, Pennsylvania (250 Gibraltar Rd. Horsham, PA 19044) (Eastern States Engineering, 2005). Toll Brothers has expressed an interest in selling the parcel to the VA. Mr. Gerald White, a member of The Dolington Group, was the primary contact for this investigation.

Dolington - Alternative Site 3, an irregularly-shaped lot consisting of approximately 214±acres, is a portion of a larger tract owned by The Dolington Group and Toll Brothers. Dolington – Alternative Site 3 is bounded by Old Dolington Road and Washington Crossing Road to the east, the Dolington Village National Register Historic District to the southeast, Washington Crossing Road and a housing development to the south, Highland Road and a few residential properties to the west, and a residential housing development to the north. The project study area is approximately 9 miles northwest of Trenton, New Jersey and 25 miles northeast of Philadelphia (Figure 2-6).

At the present time, the Dolington – Alternative Site 3 consists of a gently sloping, open, cultivated landscape with sections of wooded lots and wetlands, and four residencies associated with the Dolington – Alternative Site 3's property parcels (Figure 2-7). The topography of the Dolington – Alternative Site 3 slopes from a high point near the Dolington Village Historic Register District to a low point located along an unnamed stream on the northern portion of the Dolington – Alternative Site 3. The entire Dolington – Alternative Site 3 has slopes of less than eight percent, except for a small portion in the northwest, which has slopes of about ten percent (Eastern, 2005). Two un-named tributaries to Hough's Creek are located on the central and northwest portions of the subject property.



Source: MapPoint, 2005

Legend

Approximate Site Location

0 1 2 Miles

N

FIGURE 2-6. PROJECT LOCATION MAP, DOLINGTON – ALTERNATIVE SITE 3

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Source:
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004

0 0.1 0.2 Miles

Legend

Approximate Site Boundary

N

FIGURE 2-7. AERIAL PHOTOGRAPH, DOLINGTON – ALTERNATIVE SITE 3

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The built structures on Dolington – Alternative Site 3 include: four farm-related residencies with associated outbuildings. Off-site buildings that are visible include residential and agricultural properties surrounding the Dolington – Alternative Site 3.

Utilities and/or services on-site include electricity, water supply wells, on-site sewage disposal systems, telephone and information lines (ie. cable television). No other services exist on the property; however, the surrounding area is connected to public water, on-lot sewage systems, telephone and information lines.

2.3.4 Alternative 4 – No Action

Under this alternative, the NCA would not develop a new national cemetery in southeast Pennsylvania. The estimated 170,000 veterans in the vicinity would have to use either one of the other national cemeteries or private cemeteries for burial services. Both the Indiantown Gap National Cemetery, located in Annville, Pennsylvania, and the Philadelphia National Cemetery in Philadelphia, Pennsylvania are close enough to meet the proximity needs of some of the veterans that may request burial services. However, these locations do not have the total capacity to meet all of the projected needs for this area.

3.0 Affected Environments

The following sections describe the findings of a series of inquiries made to obtain background information on each of the three sites under consideration as a new National Cemetery. The work was conducted in accordance with the guidelines of the VA Environmental Compliance Manual (VA, 1998). Included below are summaries from: records searches (Appendix A) which meet the government records search requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-00; owner/site manager interviews; site visits/investigations; and consultations with regulatory and resource agency personnel. Site photographs taken in 2004 and 2005, are available as a separate section in this report (Appendix D).

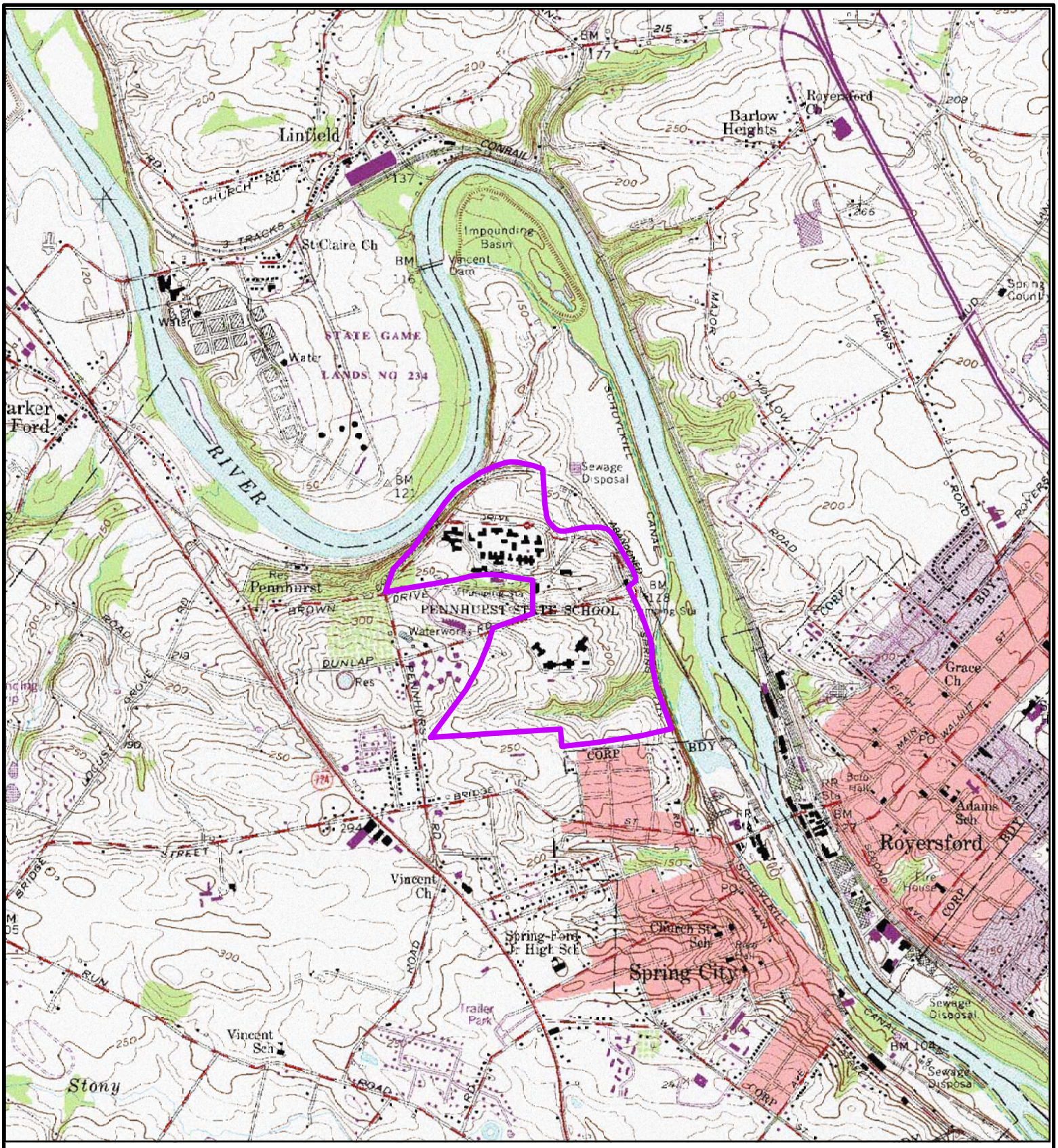
3.1 Aesthetics and Noise

3.1.1 Pennhurst – Alternative Site 1

Pennhurst – Alternative Site 1 consists of relatively flat plateaus separated by steep slopes. Steep slopes are present along the north side of the property sloping toward the Schuylkill River. The portion of the former Pennhurst Center that is being evaluated for this study includes the area known as Upper Campus. The Lower Campus area includes the buildings associated with the former PSSH. Along the southern portion of the Pennhurst – Alternative Site 1 (Upper Campus), the topography is generally flat to gently sloping toward the north and to an unnamed stream (Stream 1-B; see Section 3-6) (Figure 3-1). Portions of the Pennhurst – Alternative Site 1 immediately adjacent to Stream 1-B are characterized as steeply sloping adjacent to a forested riparian corridor (MACTEC, 2004). Since Upper Campus at a higher elevation than Lower Campus, the view to the north from Upper Campus looks out on Lower Campus below and the Schuylkill River.

The Lower Campus area includes the buildings associated with the former PSSH is not under consideration by the VA for cemetery development. The Chiller, Pershing and Buchanan buildings, located on the Upper Campus, are currently occupied by the PAARNG. Because the other buildings have not been used or maintained, most of the buildings are dilapidated (Appendix D – Photograph 1).

According to Odgen (2001), there are 260 soldiers that access the PAARNG site for training exercises on a periodic basis, typically as many as 14 weekends per year. Training exercises consist of traveling in convoys on existing roads of the PAARNG training area and setting up temporary field command centers with parking areas, command tents, field dining and other support facilities, and completing firing exercises. Noise associated with these exercises are typical of truck traffic noise and gunfire from hunting or similar military maneuvers.



Source: USGS, 1983

Scale:
1: 24,000

0 0.25 0.5 Miles

Legend

Approximate Site Boundary

FIGURE 3-1. TOPOGRAPHIC MAP, PENNHURST – ALTERNATIVE SITE 1

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Areas of the Pennhurst – Alternative Site 1 no longer in use are overgrown with woody vegetation (Appendix D – Photograph 2). This overgrowth and the forested riparian corridors act as a buffer to surrounding noise sources. The parcel is surrounded by the Schuylkill River to the north and east, by residential development to the south, and by farmland and State Road (SR) 724 to the west (Maxim, 2002). None of the background noises associated with the surrounding land uses were loud enough to interfere with observers conversing, or listening to bird calls, if situated a reasonable distance from the noise sources.

3.1.2 Riegelsville – Alternative Site 2

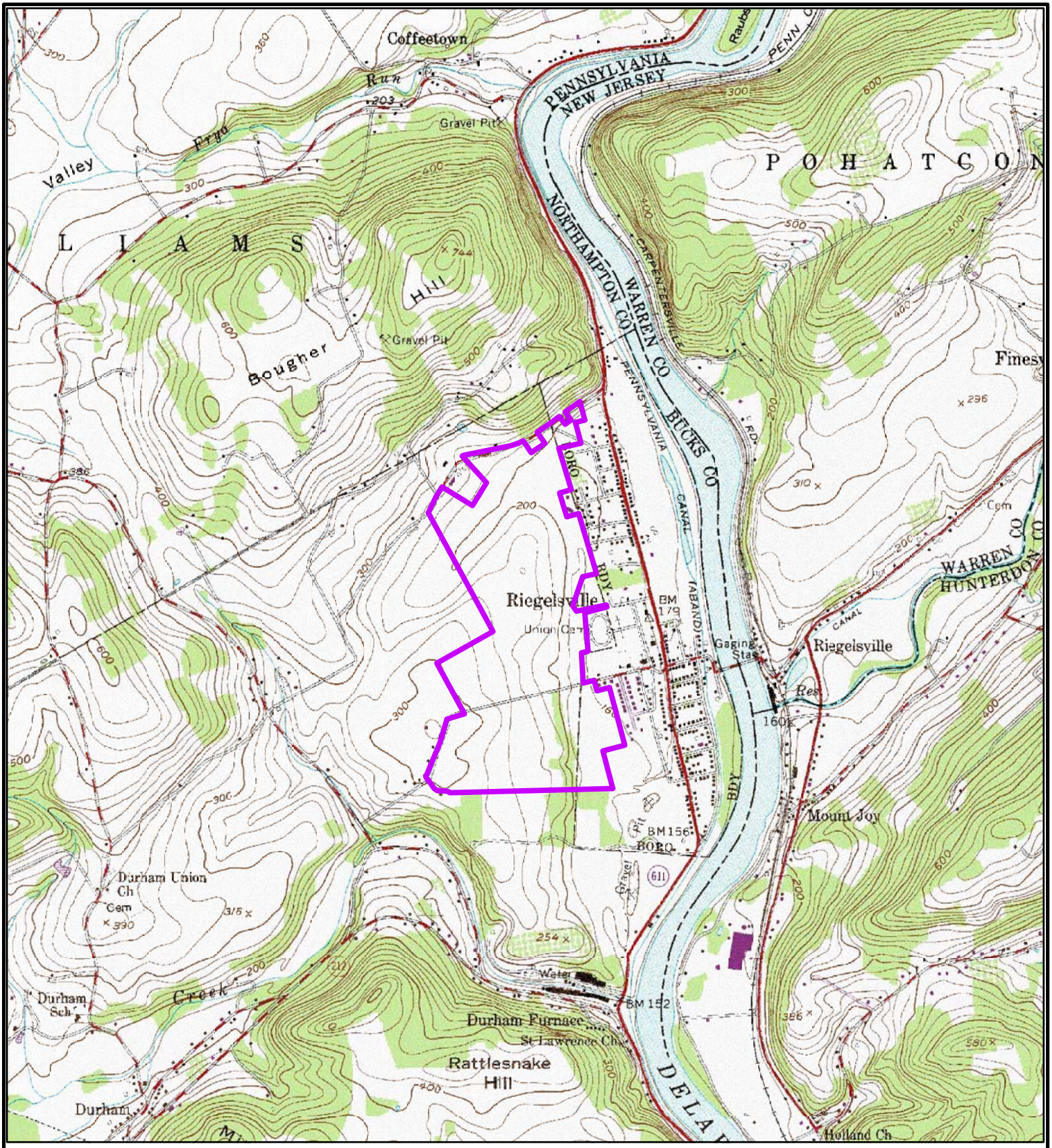
Riegelsville – Alternative Site 2 consists of gently to steeply dipping rolling active farm fields with contoured terraces and alternating hay crops (Figure 3-2). Steep slopes were present within a woodland corridor across the central portion of the Riegelsville – Alternative Site 2 from the southern border toward the northern border. Three small un-named, perennial streams are located on the northern portion of the subject property. The land use for Riegelsville – Alternative Site 2 is maintained agricultural fields and immature forested areas (MACTEC, 2005).

The existing landuse is composed primarily of active farm fields and minimal wooded lots, which does not act as a buffer to noise in the surrounding area (Appendix D – Photograph 3). However, existing noise levels at Riegelsville – Alternative Site 2 are very low, based on site observations. The parcel is bounded by Spring Hill Road, residential parcels and woodland areas to the north, residential parcels in Riegelsville Borough to the east and residential, agricultural and woodland parcels in Durham Township to the south and west.

3.1.3 Dolington – Alternative Site 3

Dolington – Alternative Site 3 consists of a gently sloping, open, cultivated landscape with sections of wooded lots and wetlands, and four residencies associated with the Dolington – Alternative Site 3's property parcels. The topography of the Dolington – Alternative Site 3 slopes from a high point near the Dolington Village to a low point located along an unnamed stream on the northern portion of Dolington – Alternative Site 3 (Figure 3-3). The major portions of land on the Dolington – Alternative Site 3 are agricultural fields that contain upland weeds (esp. cocklebur) and planted crops (seasonally corn and wheat) (Appendix D – Photograph 4). Most of the remainder of Dolington – Alternative Site 3 consists of open fields, hedgerows, and woodlands located on the eastern and northeastern portions of the Dolington – Alternative Site 3, primarily along the banks of the tributary to Hough's Creek (MACTEC, 2005).

The existing landuse, which is composed primarily of open, active farm fields, does not act as a buffer to noise in the surrounding area. Traffic noise from the surrounding roadways can be heard in most areas of the Dolington – Alternative Site 3. Construction noise from development of adjacent property could also be heard on Dolington – Alternative Site 3. However, existing noise levels at the Dolington – Alternative Site 3 were deemed to be low, based on onsite



Scale:
1: 24,000

0 0.25 0.5 Miles

Source: USGS, 1990

Legend

Approximate Site Boundary

FIGURE 3-2. TOPOGRAPHIC MAP, RIEGELSVILLE – ALTERNATIVE SITE 2

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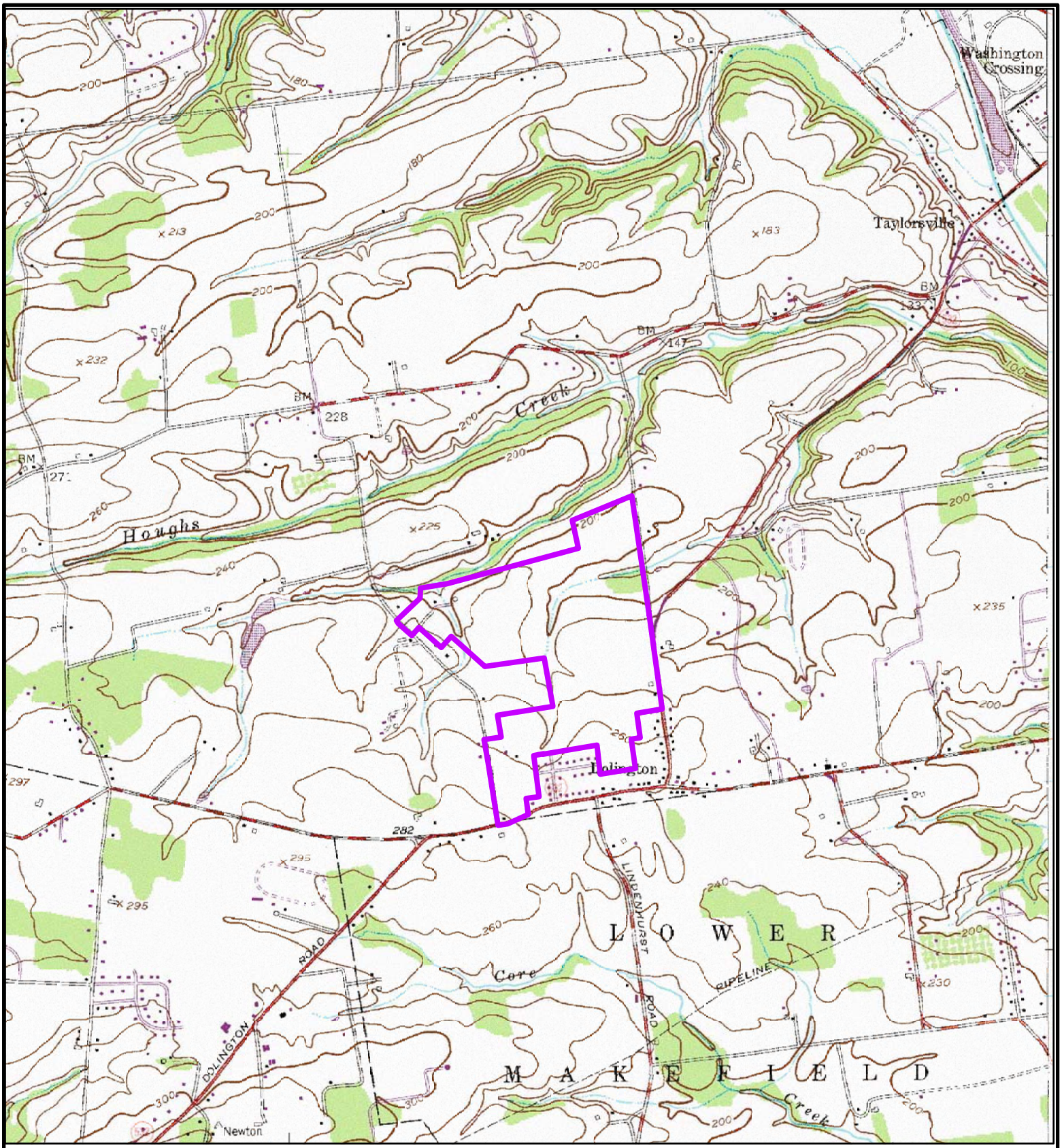

Source: USGS, 1973

Scale: 1: 24,000

0 0.25 0.5 Miles

Legend

Approximate Site Boundary

FIGURE 3-3. TOPOGRAPHIC MAP, DOLINGTON – ALTERNATIVE SITE 3

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observations, as none of the background noise was so loud that observers had difficulty conversing, or listening to bird calls, if situated a reasonable distance from the noise sources (MACTEC, 2005).

3.2 Air Quality

Measured air quality data is collected routinely by the PADEP which has jurisdiction in the counties surrounding the City of Philadelphia. (The City also has a separate regulatory agency which monitors and regulates air pollutants within Philadelphia County). The measured air quality levels provide a basis for the types of permits oar approvals that would have to be secured for virtually any activity that would discharge air pollutants to the atmosphere. The PADEP will require approval before any construction activity could commence at any of these sites.

According to the PADEP, Bucks County, which encompasses Pennhurst – Alternative Site 1 and Riegelsville – Alternative Site 2, is classified as a non-attainment for ozone and particulate matter. More specifically, Bucks County is classified as severe non-attainment for the old one hour ozone standard and moderate non-attainment for the new 8-hour ozone standard. Additionally, it is non-attainment for the new particulate matter (PM 2.5) standard. Chester County, including Pennhurst – Alternative Site 1 is classified as severe non-attainment for ozone. The Philadelphia Consolidated Metropolitan Statistical Area (which includes all three alternative sites) is designated as being in attainment for all other criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen oxides and lead) (USEPA, 2005) except as noted above.

No unusual odors were detected at any of the alternative sites during site visits. PADEP has regulations which mitigate odorous emissions but there are no prohibitions associated with prior construction approvals needed for any of the proposed activities.

3.3 Community Services

3.3.1 Pennhurst – Alternative Site 1

Pennhurst - Alternative Site 1 lies within East Vincent Township, Chester County, Pennsylvania and is served by the township's and county's programs. The local township government is comprised of an elected Board of Supervisors.

The Liberty Steam Fire Company and Ridge Fire Company provide fire protection to the area of Pennhurst – Alternative Site 1. Emergency medical services (EMS) are provided by the Kimberton Fire Company and Rescue Squard and the West End Fire Company and Rescue Squad, as well as other private ambulance services in the area (East Vincent Township, 2005).

Emergency units would likely provide service to either the Phoenixville Hospital or the Pottestown Hospital, which are the nearest hospitals located approximately 5 miles and 4 miles from the Pennhurst - Alternative Site 1, respectively.

The schools that would be affected by any decrease in property tax revenues should the cemetery be built at this site are East Coventry Elementary, Spring City Elementary, Vincent Elementary, Owen J. Roberts Middle School, and Owen J. Roberts High School.

3.3.2 Riegelsville – Alternative Site 2

Riegelsville – Alternative Site 2 lies within Riegelsville Borough, Bucks County, Pennsylvania and is served by the borough's and county's programs. The local government is comprised of an elected council.

The Riegelsville Community Fire Company #1 provides fire protection to the area of Riegelsville – Alternative Site 2. EMS are provided by the Upper Bucks Regional EMS, Inc. (Station 142) with back-up from the Point Pleasant-Plumsteadville EMS, and other private ambulance services in the area.

Emergency units would likely provide service to Easton Hospital, which is the nearest hospital located approximately 7 miles from the Riegelsville - Alternative Site 2.

The schools that would be affected by any decrease in property tax revenues should the cemetery be built at this site are Cheston Elementary, Forks Elementary, F.A. March Elementary, Palmer Elementary, Paxinosa Elementary, Tracy Elementary, Easton Area Middle School, Shawnee Middle School, and Easton Area High School.

3.3.3 Dolington – Alternative Site 3

Dolington – Alternative Site 3 lies within Upper Makefield Township, Bucks County, Pennsylvania and is served by the township's and county's programs. The local township government is comprised of an elected Board of Supervisors.

The Upper Makefield Fire Company provides fire protection to the area of Dolington - Alternative Site 3. EMS are provided by the Yardley-Makefield Emergency squad with back-up from the Newtown Rescue Squad, Lambertville Emergency Squad, and other private ambulance services in the area (Eastern, 2005).

Emergency units would likely provide service to St. Mary's Medical Center which is the nearest hospital located approximately 5 miles from the Dolington - Alternative Site 3.

The schools that would be affected by any decrease in property tax revenues should the cemetery be built at this site are Science Feinstone Elementary, Goodnoe Elementary, Newtown

Elementary, Newtown Junior High School, South Council Rock High School, and North Council Rock High School.

3.4 Cultural and Historical Resources

Cultural resources are defined as prehistoric and historic sites, structures, districts, or any other physical evidence of human activity considered important to a culture, subculture, or a community for scientific, traditional, and/or religious reasons (36 CFR Part 64). For the purpose of this report, based on statutory requirements, the term cultural resource is defined to include the following:

1. Historic properties, as defined in the National Historic Preservation Act (NHPA) of 1966, as amended;
2. Cultural items, as defined in the Native American Graves and Repatriation Act (NAGPRA);
3. Archeological resources, as defined in the Archeological Resources Protection Act (ARPA);
4. Historic and paleontological resources, as defined by the Antiquities Act of 1906, as amended;
5. Sites that are scientifically significant, as defined by the Archeological and Historic Data Preservation Act (AHPA);
6. Sacred site, as defined in EO 13007, to which access and use is permitted under the American Indian Religious Freedom Act (AIRFA); and
7. Collections, as defined in 36 CFR Part 79, Curation of Federally-Owned and Administered Collections.

The proposed action constitutes a federal undertaking as defined under 36 CFR 800.16(y) and therefore project implementation must comply with Section 106 of the National Historic Preservation Act (NHPA) {16 USC 470s} in addition to various environmental regulations. The administrative law that governs federal agencies with respect to the NHPA is published in the Federal Register under 36 CFR Part 800 *Protection of Historic Properties; Final Rule.* Within 36 CFR 800.8, provision is made for compliance with the NHPA through documentation generated in response to the NEPA, provided that the standards for developing environmental documents comply with Section 106 of the NHPA. Environmental documents prepared by federal agencies for their undertakings often require additional effort to satisfy the NHPA, which has both a lower threshold triggering compliance and a more rigorous compliance process than the NEPA

Additionally, VA Cultural Resource Management procedures outlined in *VA Handbook 7545* require project implementation to meet the professional standards promulgated by the State Historic Preservation Office (SHPO) with jurisdiction over the project area. Therefore, identification of historic properties within the Area of Potential Effect (APE) of the proposed undertaking must be conducted as specified in 36 CFR Part 800 *Protection of Historic Properties; Final Rule* as well as the *Guidelines for Archaeological Investigations*, dated July 1991 and published by the Commonwealth of Pennsylvania Bureau of Historic Preservation

(BHP), before compliance with the NHPA can be achieved. Compliance with the requirements set forth under 36 CFR Part 800 *Protection of Historic Properties; Final Rule* will be addressed on the selected alternative siteof the three properties under consideration.

According to 36 CFR 800 of the NHPA, the Area of Potential Effect (APE) for a project is the geographic area or areas which may directly or indirectly cause alterations in the character or use of historic properties. The APE for Pennhurst – Alternative Site 1, Riegelsville – Alternative Site 2, and Dolington – Alternative Site 3 are determined to be the sites and their immediately adjacent areas.

As part of this EA, a Preliminary Cultural Resources Assessment was performed to document previously identified cultural resources that may be located within the area of potential effect (APE) of the various alternatives and to conduct a preliminary field reconnaissance to assess the potential for previously unidentified National Register eligible properties within the APE of the proposed undertaking.

Pursuant to federal and state law, information concerning the nature and location of any archaeological resource may be withheld from the public irrespective of subchapter II of chapter 5 of title 5 of the United States Code unless certain provisions are met, including that such a disclosure would not create a risk of harm to such resources or the site at which such resources are located. Subsequently, specific location information pertaining to archaeological resources is not provided in this document.

3.4.1 Cultural Overview

Paleoindian Chronological Period

Pennsylvania has produced some of the earliest evidence of human occupation in North America. Chronologically, the Paleoindian period is generally believed to begin by at least 16,000 years ago and ended around 7,000 B.C. with human adaptation to post-glacial conditions (Carr and Adovasio, 2002). Custer (2001), correlates the Paleoindian chronological period with the Hunter-Gather I Cultural Period (with some overlap into the Early Archaic chronological period). The climate was much colder and wetter than present day and land cover consisted of a mix of grasslands and spruce and deciduous forests. Paleoindian sites, typically of low artifact density, can be found in a wide variety of locations in Pennsylvania, and cultural manifestations include fluted projectile points fashioned from high quality lithic materials.

Archaic Chronological Period

The Archaic chronological period is generally thought to begin with a shift in adaptation strategy in response to changing climate. Chronologically, this shift begins by around 7,000 B.C., although by 10,000 years ago, fluted projectile point technology appears to have been abandoned in favor of notched types. The division between Paleoindian and Archaic remains problematic due to conflicting interpretations of subsistence strategies that Archaic peoples may have adapted

(Raber, Miller, and Neusius, 1998). Custer (2001) correlates the Middle Archaic with the Hunter-Gatherer II Cultural Period dating from 6,500 B.C. to around 3,000 B.C. and the Late Archaic Chronological Period with a subsequent Intensive Gathering-Formative Cultural Period. Within the eastern Pennsylvania Piedmont, Early Archaic peoples are thought to have been highly mobile and sites tend to be characterized by low artifact density and are generally located on or near floodplains. During the Middle and Late Archaic, base camps and special purpose camps begin to appear and can be distinguished in the archaeological record by site size and artifact density (Raber, Miller, and Neusius, 1998).

Woodland Chronological Period

Chronologically, the Woodland Period begins around 1,200 B.C. and continues to European contact around 1600 A.D. Early Woodland base camps of the Intensive Gathering-Formative Cultural Period left evidence of substantial dwellings and storage pits in the archaeological record. Projectile point types increased in variety and technological innovation included the appearance of pottery. By the Late Woodland, around 1000 A.D. (defined by Custer as the Village Life Cultural Period), inhabitants of the region were living in villages supported by agriculture of domesticated corn, beans, and squash (Custer 2001).

Historic Period

The Historic Period begins with the first contact of Europeans with Native Americans in the region. Native American groups like the Susquehannocks had extensive interaction with English, Dutch, and Swedish immigrants to the region, while the Lenape tended to avoid contact with Europeans (Custer 2001). Colonial settlement of the area was first attempted by the Swedish and Dutch, and in 1681, William Penn received a proprietary grant from the Crown (Munger, 1991). A wide variety of European groups eventually settled in Pennsylvania. By the time of the American Revolution, eastern Pennsylvania consisted of a thriving mix of agriculturalists and early industrialists.

3.4.2 Existing Conditions

3.4.2.1 Pennhurst – Alternative Site 1

A Preliminary Cultural Resources Assessment was conducted on the Pennhurst – Alternative Site 1 property in October of 2004. The preliminary assessment identified one (1) NRHP eligible district, an associated cemetery, and two (2) previously identified archaeological sites on the subject property. Based on the results of the preliminary assessment, the Pennhurst – Alternative Site 1 exhibits a high potential for the occurrence of additional cultural resources, particularly low intensity archaeological sites that may be identified through Phase I intensive survey (Figure 3-4). Previously identified cultural resources within the APE of the Pennhurst – Alternative Site 1, including two archaeological sites [Pennsylvania Archeaolgoical Site Survey (PASS) files], are summarized below.

Source:
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004

0 0.1 0.2 Miles

Legend

- Approximate Site Boundary
- Identified Cultural Resource
- County Boundary

FIGURE 3-4. CULTURAL RESOURCES, PENNHURST – ALTERNATIVE SITE 1

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Pennhurst State School & Hospital

The Pennhurst State School & Hospital (PSSH) was founded in 1903 as the State Institution for Feeble Minded and Epileptic of Eastern Pennsylvania. The PSSH is considered eligible for inclusion in the NRHP under Criterion A and Criterion C of the National Register Criteria for Evaluation (BHP, 2004). The PSSH is considered eligible under Criterion A because "in this institution not only were the feeble-minded recognized as an individual patient type but also for the first time epileptic patients were removed from the state's mental institutions for more specific treatment and care (BHP, n.d.)." The PSSH is considered eligible under Criterion C because it is considered an excellent example of "the cottage plan used in other state institutions at the turn-of-the-century (BHP n.d.)." The eligible NRHP district for PSSH includes approximately 76 buildings ranging in age from 1880-1970 (representative Appendix D – Photographs 5 through 7). Approximately 13 of these buildings have been listed as significant and another 13 have been listed as contributing elements to the NRHP district. Also associated with the PSSH is a cemetery for residents reportedly located near the southern boundary of the APE. During the initial site visit, 43 grave markers were noted in two lines within this area. Most of the interments identified by the grave markers occurred prior to 1920, within a span of four years. Historic period buildings have been documented on the property dating back to 1880, and it is likely that earlier historic period archaeological sites exist as well.

Archaeological Site 36CH40

Site 36 CH40 was reported by a local collector and was the subject of limited professional evaluation in 2001 (French, 2001). No temporally diagnostic artifacts were identified during the 2001 evaluation by French and the site has been assigned a Late Archaic association based on debitage analysis which indicated local materials were used as lithic sources at the site. Archaeological Site 36CH40 occupies approximately 1.2 acres within the APE of the proposed undertaking.

Archaeological Site 36CH41

Site 36 CH40 was reported by a local collector and has not been professionally evaluated. Based on the PASS file the site has been assigned an Archaic association. Archaeological Site 36CH41 occupies approximately 1.5 acres within the APE of the proposed undertaking.

3.4.2.2 Riegelsvile – Alternative Site 2

A Preliminary Cultural Resources Assessment was conducted on the Riegelsville – Alternative Site 2 property in May of 2005. The preliminary assessment identified one previously identified archaeological site (36Bu123) and seven (7) previously unidentified archaeological sites on the Riegelsville – Alternative Site 2 property. Additionally, the Riegelsville – Alternative Site 2 property is located adjacent to the potential Riegelsville NRHP District and three individually NRHP eligible properties and within the viewshed of the Delaware Canal National Landmark.

Based on the results of the preliminary assessment, the Riegelsville – Alternative Site 2 exhibits a high potential for the occurrence of additional cultural resources, particularly low intensity

archaeological sites that may be identified through Phase I intensive survey (Figure 3-5). Previously identified cultural resources within the APE of the Riegelsville – Alternative Site 2 are summarized below.

Archaeological Site 36Bu123

Archaeological Site 36Bu123 was reported by Pennsylvania State University and is mapped by the Pennsylvania Archaeological Site Survey (PASS) as located in the southwestern portion of the proposed undertaking. During the preliminary assessment, plowed agricultural fields in the vicinity of the mapped location of Site 36Bu123 were walked at 15-meter intervals with negative results. In addition to the pedestrian reconnaissance, five (5) subsurface tests were excavated in the vicinity of Site 36Bu123 and three (3) large areas of subsidence were also inspected with negative results.

Based on the negative field results within the vicinity of Site 36Bu123 additional literature and documents review was conducted. The *History of Bucks County* by J.H. Battle (1887) was located at the Bucks County Historical Society which revealed a description similar to that of Shoemaker's for the location of an "Indian clearing." Battle's description suggests that Site 36Bu123 would be more accurately located approximately two (2) miles west of the proposed undertaking.

Provisional Archaeological Site 1

Provisional Site 1 is a multi-component site consisting of a sparse prehistoric and historic surface scatter. Cultural materials identified included both prehistoric and historic components. The site is located 10 meters to the east and 60 meters north of a first order stream and is delineated by a mild slope to the north and a floodplain associated with the channelized stream to the south and east.

Provisional Archaeological Site 2

Site 2 is a multi-component site consisting of a sparse prehistoric and historic surface scatter. Cultural material identified from the prehistoric component included fifteen (15) debitage fragments. The historic component consisted of one (1) amber container glass fragment. The site is delineated by a first order stream to the north and by a mild slope to the south.

Provisional Archaeological Site 3

Site 3 is a multi-component site consisting of a sparse prehistoric and historic surface scatter. Cultural materials identified from the prehistoric component include one (1) quartzite debitage specimens and six (6) quartz debitage specimens. The historic component consists of one (1) ironstone sherd (circa. 1830 to early-19th century), one (1) iron railroad tie, and one colorless glass fragment. The site is located on an upland crest and is delineated to the south by a steep slope.

Source:
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004

0 0.1 0.2 Miles

Legend

- Historic Property/ Landmark
- Delaware Canal National Landmark
- National Register District
- Approximate Site Boundary
- County Boundary

FIGURE 3-5. CULTURAL RESOURCES, RIEGELSVILLE – ALTERNATIVE SITE 2

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ALF	10/26/2005
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Provisional Archaeological Site 4

Site 4 is a multi-component site consisting of a sparse prehistoric and historic surface scatter. Cultural materials identified from the prehistoric component include one (1) chert debitage fragment, one (1) hammer stone, and five (5) quartz debitage specimens. The historic component consists of one (1) ceramic earthenware sherd and one (1) colorless glass fragment. The site is located on an upland crest overlooking the Delaware River.

Provisional Archaeological Site 5

Site 5 is a sparse lithic scatter. Materials identified include one (1) chert debitage specimens and three (3) quartz debitage specimens. The site is located on an upland crest overlooking the Delaware River.

Provisional Archaeological Site 6

Site 6 consists of a sparse surface scatter of historic materials that include one (1) ceramic whiteware sherd with floral decoration (circa. 1830 to 1870), one (1) amber container glass fragment and one (1) flat colorless glass fragment (circa. Early-20th century to the present). The site is located on an upland crest and is delineated to the east by a mild slope.

Provisional Archaeological Site 7

Site 7 is an historic above-ground ruin of a limestone kiln (Appendix D – Photograph 8). The site is delineated by Delaware Road to the south and a mild slope to the west.

Riegelsville NRHP District

In 1981, a Comprehensive Historic Sites Survey was conducted by the Bucks County Conservancy for the Riegelsville Borough under contract with the Pennsylvania Historical and Museum Commission and the Bucks County Office of Community Development. The Comprehensive Sites Survey (Appendix C) identified 327 standing structures (201 properties) and 36 archaeological sites (21 properties) within the limits of Riegelsville Borough. As a result of the survey, a potential Riegelsville National Register Historic District was identified which contains 16 NRHP eligible standing structures (12 properties) and 40 Pennsylvania Inventory eligible structures (27 properties) as well as the Delaware Canal National Landmark. In addition to, and outside of the NRHP district, three individual properties were identified as NRHP eligible within the Riegelsville Borough.

The National Register Criteria for significance for the potential Riegelsville NRHP District and the three individual properties listed in the Comprehensive Historic Sites Survey was not identified in the documentation reviewed. However, based on the contextual material contained within the document, it appears that both the potential Riegelsville NRHP District and the three individual properties were recommended as NRHP eligible under Criterion C, as embodying the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

Delaware Division of the Pennsylvania Canal National Landmark

The Delaware Division of the Pennsylvania Canal was constructed in 1832 as part of the Pennsylvania Canal System and was designated as a National Landmark in 1976. The National Landmark significance statement for the Delaware Division of the Pennsylvania Canal National Landmark states that the primary significance is the integrity of the canal and the ambience of its environment. The Delaware Canal has retained all of its engineering and operational structures, for all but two to three miles of its original sixty mile length and is currently maintained as a state park.

3.4.2.3 Dolington – Alternative Site 3

A Preliminary Cultural Resources Assessment was conducted on the Dolington – Alternative Site 3 property in October of 2005. The preliminary assessment identified one (1) National Register of Historic Places (NRHP) Historic District partially within the direct-effect APE of the proposed undertaking. Two historic standing structures that contribute to the NRHP district and a portion of an agricultural field are located within the portion of the district that is included in the boundary of the proposed undertaking. Six (6) additional NRHP eligible historic standing structures are also located on the subject property and are not currently included in the NRHP district. One previously identified archaeological site 36Bu371 and one previously unidentified archaeological site were also identified on the subject property.

Three NRHP eligible properties were identified within the indirect-effect APE during the literature and documents review. During the field reconnaissance, it was noted that one of these NRHP eligible properties is no longer extant; however the remaining two appear to retain sufficient integrity for listing on the NRHP. Based on the results of the preliminary assessment, the Dolington – Alternative Site 3 exhibits a high potential for the occurrence of additional cultural resources, particularly low intensity archaeological sites that may be identified through Phase I intensive survey (Figure 3-6). Previously identified cultural resources within the APE of the Dolington – Alternative Site 3 are summarized below.

Archaeological Sites

Based on the results of the BHP file review the candidate property has not been the subject of a Phase I Cultural Resources Assessment. However, the Pennsylvania Archaeological Site Survey (PASS) File indicated that one (1) archaeological site has been previously identified within the boundaries of the candidate property. Archaeological Site 36Bu371 was recorded by Jane Johnson of Newtown, Pennsylvania in 2004. The site was reported by Johnson to have yielded several hundred artifacts during surface collection and based on the materials recovered, likely represents a Late Archaic occupation. Additionally, one previously unidentified archaeological site was noted during the field reconnaissance of the subject property. This archaeological site consists of a sparse lithic scatter located near the northern boundary. During the field reconnaissance, ground surface visibility was generally poor which hampered site discovery.

Source:
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004

0 0.1 0.2 Miles

Legend

- Approximate Site Boundary
- Identified Cultural Resource
- Approximate NRHP District Boundary

FIGURE 3-6. CULTURAL RESOURCES, DOLINGTON – ALTERNATIVE SITE 3

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ALF	10/26/2005
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However, based on preliminary field observations and the proximity of the area to perennial streams, there is a high probability for the occurrence of additional archaeological sites on the subject property.

Dolington Village National Register District

In 1993, a National Register nomination was conducted by the Bucks County Conservancy for Dolington Village. The National Register nomination identified 94 standing structures with 70 contributing to the National Register District which was listed in the NRHP in 1994. Dolington Village is significant under Criterion A, for its association with events (Agriculture/Commerce) that have made a significant contribution to the broad pattern of Pennsylvania history, under Criterion C, as embodying the distinctive characteristics of a type, period, or method of construction, and under Criterion D, for its potential to yield information important in the history of the area. The boundaries of the proposed undertaking currently include a portion of the Dolington Village National Register District. In addition, the proposed undertaking boundaries include the Abandoned Balderston farm complex that contributes to the significance of the NRHP District.

Abandoned Balderston Farm Complex

Two historic standing structures that contribute to the NRHP district are located near the southeastern corner of the proposed undertaking. These structures consist of an historic residence known locally as the Balderston House and an associated barn (Appendix D – Photographs 9 and 10). Given the agricultural context for this property, the historic property boundary for this NRHP listed resource may have extended to the west and north, beyond the current NRHP boundary. This historic period farm complex is listed as a contributing resource to the Dolington Village National Register District under Criteria A, C, and D of the NRHP Evaluation Criteria. Although the structure appears to have suffered a loss of architectural integrity, and therefore may no longer be eligible under Criterion C, it likely retains significance under Criteria A as an historic period farm that was associated with the agricultural heritage of eastern Pennsylvania and it appears to retain significance under Criterion D due to its potential to yield materials that could increase knowledge of historic local building practices and culture.

Dolington Log House

The Dolington Log House is currently listed in the BHP files as a single domestic dwelling with an undetermined NRHP status. This resource is located in the southwestern portion of the subject property near an existing riparian buffer easement and is thought to date to the late 18th century, making it one of the oldest structures in the vicinity of the proposed undertaking. The property is currently an occupied tenant house that includes a 20th century barn. Both historic and recent modifications have been completed on this resource and the architectural integrity appears to have been compromised. However, this resource retains significance under Criterion A and Criterion D of the NRHP Evaluation Criteria. Due to the early date of construction of this house, it retains significance under Criteria A as an historic period farm that was associated with the agricultural heritage of eastern Pennsylvania and it appears to retain significance under Criterion

D due to its potential to yield materials that could increase knowledge of historic local building practices and culture.

Belke Farm Complex

The Belke farm complex consists of an historic period residence, barn and spring house and an associated 20th century farm outbuilding ruin (Appendix D – Photograph 11). The complex is not currently identified in BHP files as an historic property. However, the residence and spring house appear to date to the early to mid-19th century and retain significance under Criteria A as an historic period farm that was associated with the agricultural heritage of eastern Pennsylvania. The farm complex also retains significance under Criterion D due to its potential to yield materials that could increase knowledge of historic local building practices and culture.

Leedom House and Garage

The Leedom House and garage consist of an early 20th century residence and garage (Appendix D – Photograph 12). The complex is not currently identified in BHP files as an historic property. However, the residence and garage appear to date to the early to mid-20th century and could retain significance under Criteria A as a late historic period farm that was associated with the agricultural heritage of eastern Pennsylvania.

John Worstall Home

The John Worstall home consists of a single dwelling located near the western boundary of the subject property. This historic period structure was reportedly constructed in 1810. The BHP currently lists the NRHP status for this resource as undetermined. This resource was observed during the field reconnaissance portion of this Preliminary Cultural Resources Assessment and it appears to be in good condition. Based on this information, it is considered to retain significance under Criteria A as an historic period farm that was associated with the agricultural heritage of eastern Pennsylvania. The farm complex also retains significance under Criterion D due to its potential to yield materials that could increase knowledge of historic local building practices and culture.

Timothy Balderston Farm

The Timothy Balderson home consists of a single dwelling located near the eastern boundary of the subject property. This historic period structure was reportedly constructed in 1840. The BHP currently lists the NRHP status for this resource as undetermined. This resource was observed during the field reconnaissance portion of this Preliminary Cultural Resources Assessment and it appears to be in good condition. Based on this information, it is considered to retain significance under Criteria A as an historic period farm that was associated with the agricultural heritage of eastern Pennsylvania. The farm complex also retains significance under Criterion D due to its potential to yield materials that could increase knowledge of historic local building practices and culture.

Balderston Homestead

The Balderson Homestead consists of a single dwelling located near the southern boundary of the subject property. This historic period structure was reportedly constructed in 1766. The BHP currently lists the NRHP status for this resource as eligible for listing. This resource was not observed during the field reconnaissance portion of this Preliminary Cultural Resources Assessment and it appears to have been replaced by a recently constructed residential subdivision.

3.5 Economic Activity

Based on the experience of the VA at other National Cemeteries, it is presumed that the change from current use to cemetery use, and the resulting open space, would be considered an amenity by neighbors and that surrounding property values would not be affected or could even increase.

3.5.1 Pennhurst – Alternative Site 1

Currently, Pennhurst – Alternative Site 1 is being used by the PAARNG for administrative and training purposes. The PSSH are not operational and there is no economic activity associated with the former hospital and school. No residences are located on Site 1.

According to the 2000 U.S. census data, the population of Chester County, which is the seventh most populated county in Pennsylvania, was 433,501, including 5,493 residing in East Vincent Township (USCB, 2000). The median age of residents in East Vincent Township is 38 years old, which is just below the county average of 38.2 years. Since 1990, the population of Chester County has grown 15.2 percent and East Vincent Township has grown 32.0 percent. By 2010, the county population is projected to grow an additional 5.2 percent and the township by an additional 10.8 percent. According to the 2000 census, 12 percent of the Chester County civilian population is veterans, and 16.6 percent of the East Vincent population is veterans.

Within Pennsylvania, the five counties of southeastern Pennsylvania (Bucks, Montgomery, Philadelphia, Delaware, and Chester) all recorded population increases during the past ten years with the greatest increase in population occurring in Chester County.

The number of households in Chester County has increased by nearly 18.5 percent, from 1990 to 2000, with a larger increase of 26.5 percent occurring within East Vincent Township (USCB, 2000). According to the 2000 census, 79.1 percent of housing units in East Vincent Township were owner-occupied.

According to the 2000 census data, residents in East Vincent Township appear to achieve lower levels of education as compared to populations across other areas of Chester County. In East Vincent Township, 29.1 percent of the population (25 years and over) received a bachelors degree or higher, which is lower than the county average of 42.5 percent. A larger share of the population (82.8 percent) graduated from high school, and a slightly smaller share of people with

post-secondary degrees; however the percentage of the township population that graduated from high school is still lower than the county average of 89.3 percent.

Over 40 percent of the East Vincent Township residents are employed in management, professional, and related occupations; 31 percent of the residents are employed in sales and office occupations; and approximately 30 percent of the population are employed in the service industry, construction and maintenance or in the production or transportation trade.

According to the 2000 census data, Chester County has the highest income levels in southeastern Pennsylvania. Based on the 2000 census, the per capita income for East Vincent Township was $27,799, which was lower than the county average of $31,627. The median household income for East Vincent Township was $63,851, also slightly lower than the county median of $65,295.

3.5.2 Riegelsville – Alternative Site 2

Riegelsville – Alternative Site 2 is currently used for agricultural purposes by Mr. Edward Thaler, a local farmer who leases the land from the St. Lawrence Catholic Church. There are no residences associated with Site 2.

According to the U.S. census data collected in 2000, the population of Bucks County was 597,635 with 863 residing in Riegelsville Borough. Median age data for Riegelsville Borough was not available in the 2000 census. However, nearby Durham Township's median age of residents in 2000 was 40.8 years old, which was just above the county average of 37.7 years. Durham Township is located southwest of Site 2. Since 1990, Riegelsville Borough has decreased in population by 5 percent. By 2010, the population is projected to grow 107.8 percent to population of approximately 930. Appendix D shows the population, housing and socioeconomic trends of Bucks County and Riegelsville Borough.

The number of households in Bucks County increased by 13 percent between 1990 and 2000, with a decrease of 0.2 percent occurring within Riegelsville Borough. By 2010, the number of households in Riegelsville Borough is estimated to increase by approximately 111 percent to 450 households.

In terms of socioeconomic trends, residents of Bucks County tend to achieve greater levels of education as compared to populations across the U.S. There is a larger share of the county population who have graduated from high school, and a slightly smaller share of people with post-secondary degrees. Specific socioeconomic data were unavailable for Riegelsville Borough.

Based on the 2000 census data, the educational, health and social service industries employed the majority of Bucks County residents. Within the Riegelsville Borough, manufacturing, health care and social assistance, retail trade, and accommodation and fast food industries employed the majority of residents (USCB, 2000).

According to the 2000 census data, the per capita income for Durham Township was $29,913, slightly higher than the county average of $27,430. In 2000, the median household income for Durham Township was $70,875, which was higher than the county median of $59,727. Income data was not available for Riegelsville Borough.

3.5.3 Dolington – Alternative Site 3

Dolington – Alternative Site 3 is currently used for agricultural and residential purposes. There are four residences associated with this site, but one is abandoned.

According to U.S. census data (2000), the population of Bucks County was 597, 635 with 7,180 residing in Upper Makefield Township. The latest census data for Bucks County during 2004 shows an increase in population of 1.8 percent from 2000 to 608,486 households. Median age for residents of Upper Makefield Township in the 2000 census was 42.4 years; the median age was 39.3 years in Bucks County. Both were above the county average of 37.7 years (USCB, 2000 and 2004).

The number of households in Bucks County increased by 13 percent between 1990 and 2000 to a total of 225,498. Households in Upper Makefield Township comprised 1.1 percent of the total county households (2,512). Based on the 2004 U.S. census data, the number of households in the county increased 4.4 percent to 235,423 households (USCB, 2000).

In terms of socioeconomic trends, residents of Bucks County tend to achieve greater levels of education as compared to populations across the U.S. There is a larger share of the county population who have graduated from high school, and a slightly smaller share of people with post-secondary degrees. Upper Makefield Township has even a higher percentage of graduates in both categories.

Based on the 2000 census data, the educational, heath and social service industries employed the majority of residents in both Bucks County and Upper Makefield Township.

According to the 2000 census data, the per capita income for Upper Makefield Township was $56,288, which was more than double the county average of $27,430. The U.S. per capita income amount in 2000 was $21,587. In 2000, the median household income for Upper Makefield Township was $102,759, which was higher than the county median of $59,727.

3.6 Floodplains, Wetlands, Coastal Zone

3.6.1 Floodplains

The extent of a floodplain is an important consideration because Executive Order (EO) 11988, and the floodplain management criteria contained in 44 CFR Part 60, *Criteria for Land*

Management and Use, regulates the uses of these areas. The objective of this presidential order is to avoid, to the extent possible, the long- and short-term adverse impacts associated with occupancy and modification of floodplains. The order applies to all Federal agencies conducting activities and programs that may potentially affect floodplains. To comply with EO 11988, before taking any action, the National Cemetery Administration must evaluate the impacts of specific proposals in the floodplain. In accordance with the requirements of EO 11988, the National Cemetery Administration must demonstrate that there is no practicable alternative to carrying out the Proposed Action within the 100-year floodplain (EO 11988 1977).

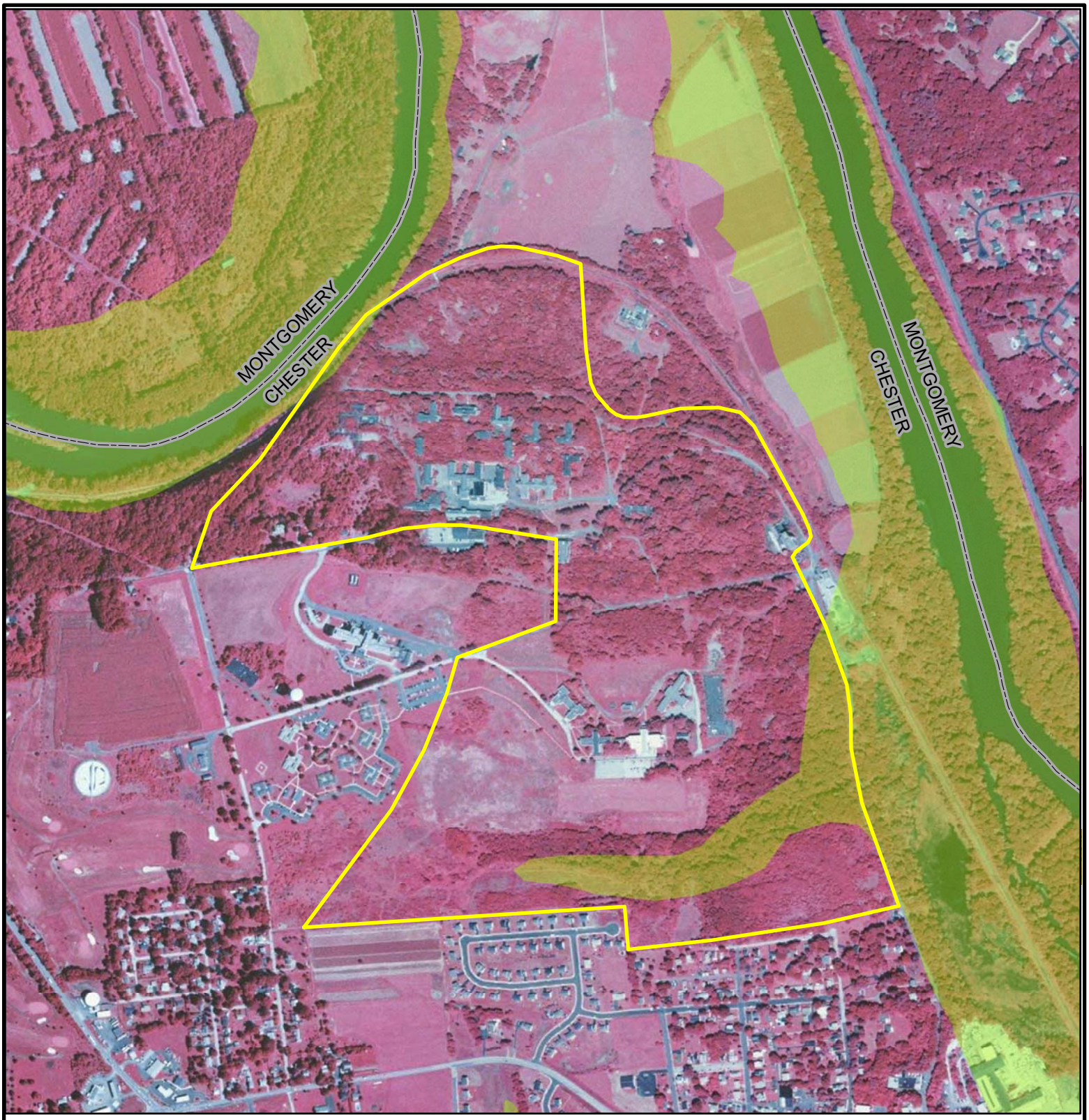
At Pennhurst – Alternative Site 1, approximately 17-acres of 100-year floodplain were identified along the lower portion of the South Tributary on the FEMA Q3 Flood Plain Map. There were no other floodplains identified at the Pennhurst – Alternative Site 1. The 100-year floodplain of the Schuylkill River is located to the north and east of the Pennhurst – Alternative Site 1 outside the property boundaries (Figure 3-7). Riegelsville – Alternative Site 2 does not lie in a 100-year floodplain zone (Figure 3-8). Approximately 0.5-acres of Dolington – Alternative Site 3 lie within a 100-year floodplain (Figure 3-9). No portions of Dolington – Alternative Site 3 are contained within the designated Floodplain Conservation District, as defined and regulated in Section 905 of the Newtown Area Joint Municipal Zoning Ordinance (JMZO) (Eastern, 2005).

3.6.2 Wetlands

Data from the National Wetlands Inventory (USFWS, 2005), aerial photographs, soil surveys, and topographic maps were reviewed prior to the site visits to determine locations and types of wetlands that were present on each site.

Jurisdictional waters of the United States, including streams and wetlands, are defined by 33 CFR Part 328.3 and are protected by Section 404 of the Clean Water Act (33 USC 1344), which is administered and enforced by the U.S. Army Corps of Engineers (USACE). The 1987 USACE Wetlands Delineation Manual defines wetlands as "*areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.*" This definition provides the three criteria that must be met for a determination of jurisdictional wetlands according to the USACE: (1) wetland hydrology, (2) hydrophytic vegetation, and (3) hydric soils. All three criteria must be present for an area to be classified as a jurisdictional wetland.

During site visits in June 2004, March 2005 and September 2005, limited ecological surveys, including reconnaissance of federal jurisdictional wetlands as defined in 33 CFR Part 328, were completed. The ecological surveys included a limited inventory of upland and wetland communities, recording the presence of plants and wildlife observed, a limited survey for state and federal protected species and their habitats, and photographing conditions on each of the sites.



Sources:
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004
Floodplains: Office of Remote Sensing for Earth Resources, Penn State University, 1996

0 0.1 0.2 Miles

Legend

- Approximate Site Boundary
- County Boundary
- 100 Year Flood Zone (FEMA)

FIGURE 3-7. FEMA 100 YEAR FLOOD ZONES, PENNHURST – ALTERNATIVE SITE 1

DRAWN	DATE
ALF	10/26/2005
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Sources:
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004
Flood Zones: Office of Remote Sensing for Earth Resources, Penn State University, 1996

0 0.1 0.2 Miles

Legend
- Approximate Site Boundary
- County Boundary
- 100 Year Flood Zone (FEMA)

FIGURE 3-8. FEMA 100 YEAR FLOOD ZONES, RIEGELSVILLE – ALTERNATIVE SITE 2

DRAWN	DATE
ALF	10/26/2005
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Sources:
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004
Floodplains: Office of Remote Sensing for Earth Resources, Penn State University, 1996

0 0.1 0.2 Miles

Legend

- Approximate Site Boundary
- 100 Year Flood Zone (FEMA)

FIGURE 3-9. FEMA 100 YEAR FLOOD ZONES, DOLINGTON – ALTERNATIVE SITE 3

DRAWN	DATE
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According to the National Wetlands Inventory (NWI), no wetlands are present on Pennhurst – Alternative Site 1 (Figure 3-10), Riegelsville – Alternative Site 2 (Figure 3-11), and Dolington – Alternative Site 3 (Figure 3-12). However, during the site visits wetlands were observed on each of the sites, as discussed in previous reports (MACTEC 2004a, 2004b, 2005a, 2005b, 2005c, ESE 2005), and summarized in Table 3-1 below.

Table 3-1. Wetland Summary

Site	Number of Wetlands	Acres of Wetlands (according to NWI)	Acres of Wetlands (according to MACTEC's observations)	Wetland Types	Percent Wetlands with Exotic/ Invasive Plant Species	Percent Wetlands Utilized by Wildlife (at time of site visit)
Pennhurst – Alternative Site 1	1	0	0.1	emergent	100	100
Riegelsville – Alternative Site 22	4	0	4.91	forested, emergent	25	100
Dolington – Alternative Site 3	5	0	6.23	scrub-shrub, emergent	20	100

Source: NWI, 1981-Present; MACTEC 2005.
Created by: JKE Checked by: AWC

3.6.2.1 Pennhurst – Alternative Site 1

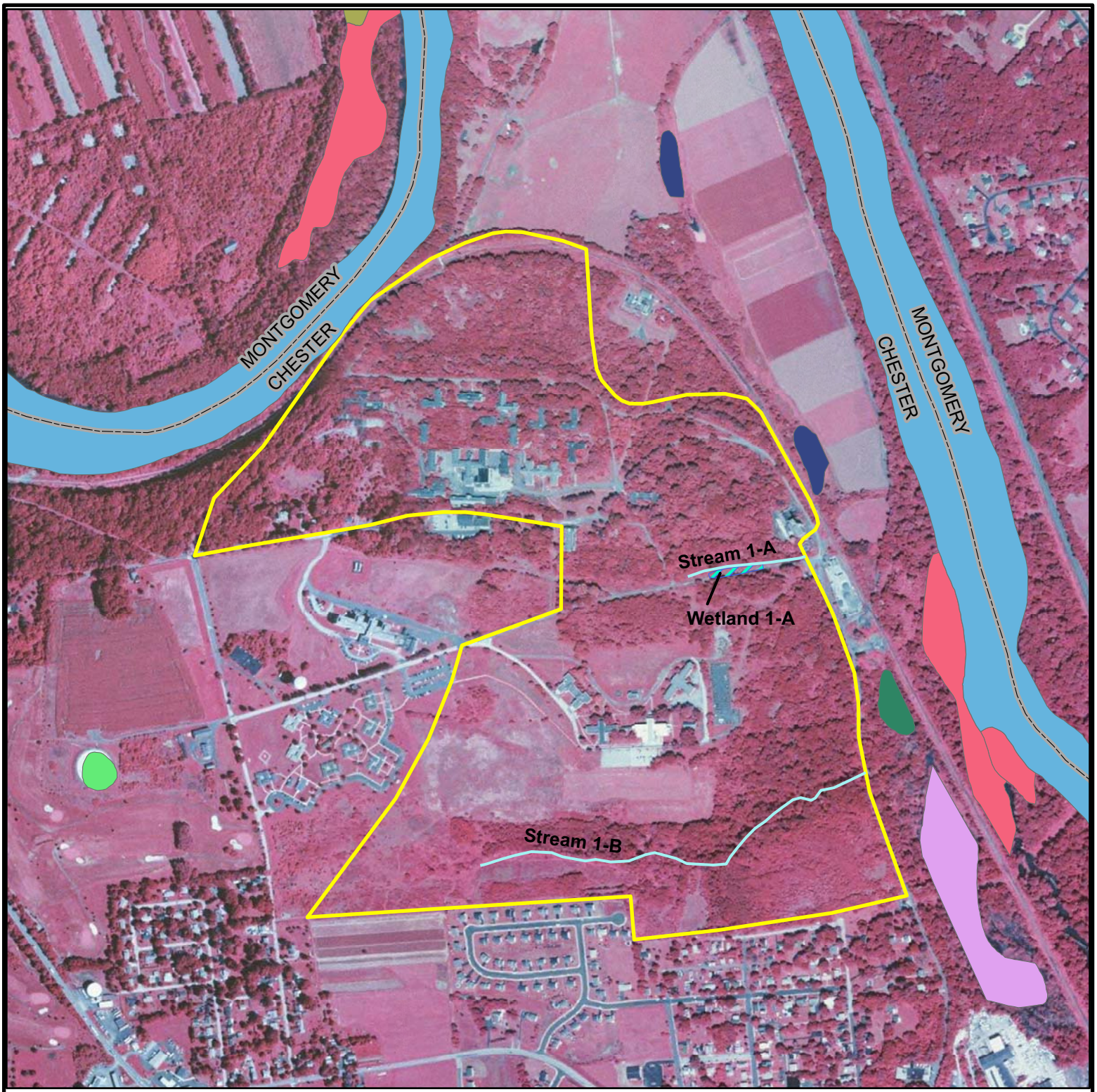
On Pennhurst – Alternative Site 1, one wetland area (<0.1 acre) and two jurisdictional stream features (3,383 feet on site) were observed (Figure 3-10). These areas are designated as:

Wetlands

- A less than 0.1-acre jurisdictional wetland was observed in the eastern central portion of the subject property, adjacent to the intermittent stream observed in the eastern central portion of the property (Figure 3-10, Wetland 1-A). Vegetation in this area was dominated by common reed (*Phragmites australis*), an invasive exotic species. Saturated soils, wetland drainage patterns, and low chroma soils were observed in this area.

Streams

- Two streams were observed on Pennhurst – Alternative Site 1; these streams are tributaries to the Schuylkill River to the east (off site). A jurisdictional, unnamed, intermittent stream (Stream 1-A) was observed in the eastern central portion of the property, adjacent to Wetland 1-A. The baseflow stream channel is approximately one to two feet wide and approximately one foot deep. The easternmost end of Stream 1-A is culverted where it passes under Commonwealth Drive, as well as in the upstream sections.
- A jurisdictional, unnamed, intermittent stream was observed in the southeastern portion of the property (Stream 1-B). The baseflow stream channel is approximately three to four feet wide and approximately four to six inches deep. This stream drains into the off-site wetland area indicated on the NWI map, but the creek bed was dry during the site visit.



Sources: Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004;
NWI Wetlands: U.S. Fish & Wildlife Service, National Wetlands Inventory, 1981-present
Surface Water Features/Wetlands: MACTEC, 2005

0 0.1 0.2 Miles

Legend

- Water
- Wetlands (As Observed On Site)
- County Boundary
- Approximate Site Boundary

National Wetlands Inventory

- PEM5A
- PFO1A
- PSS1/EM5C
- PSS1C
- PUBZh
- PUBZx
- R2UBH

FIGURE 3-10. WETLANDS, PENNHURST – ALTERNATIVE SITE 1

N

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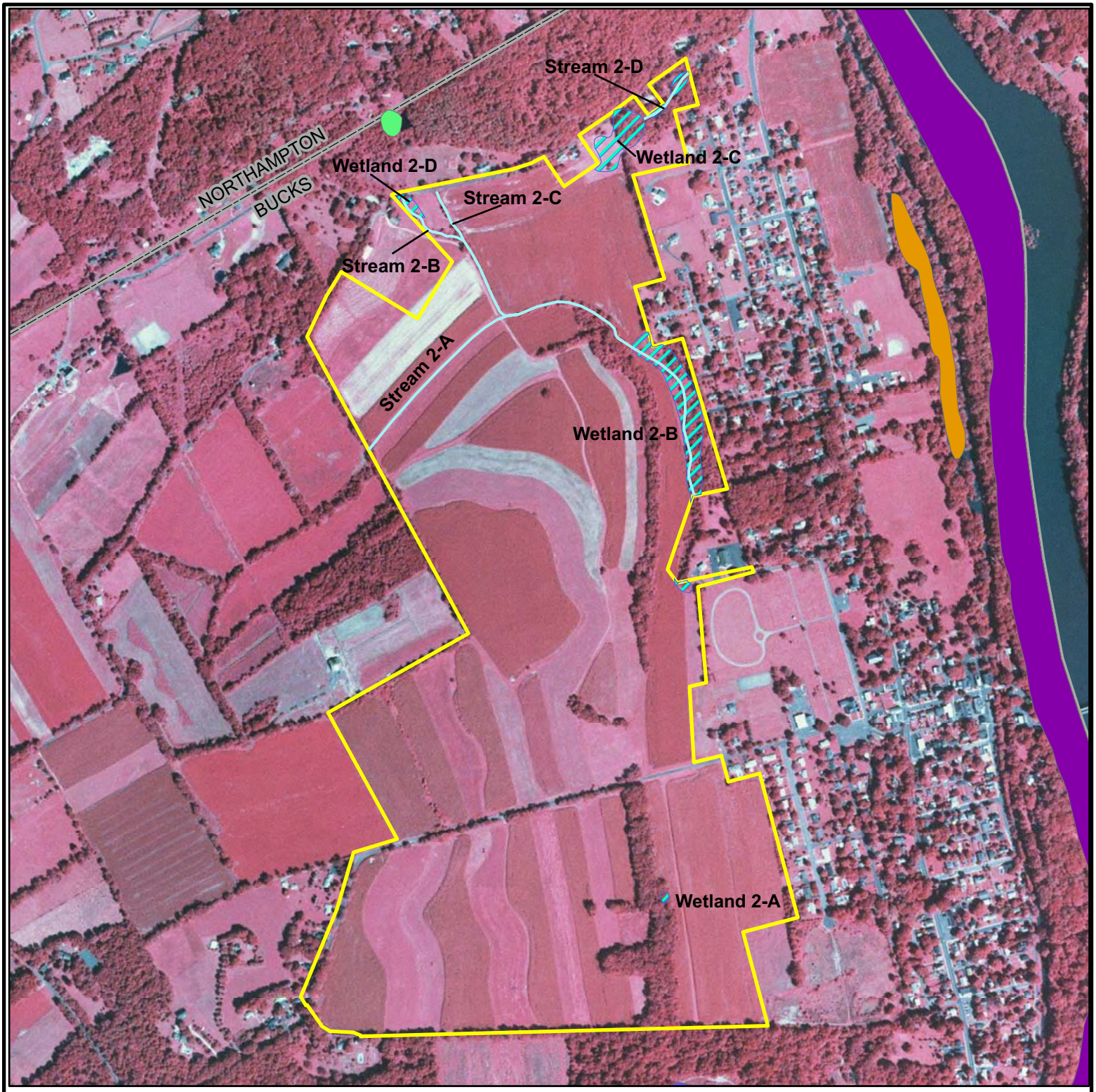

Sources:
Wetland/Surface Water Features: MACTEC, 2005
NWI Wetlands: U.S. Fish & Wildlife Service, National Wetlands Inventory, 1981-present
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004

0 0.1 0.2 Miles

Legend

- Water
- Wetlands (As Observed On Site)
- Approximate Site Boundary
- County Boundary

National Wetlands Inventory

- POWKH
- POWZ
- POWZH
- R2OWH

N

FIGURE 3-11. WETLANDS, RIEGELSVILLE – ALTERNATIVE SITE 2

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Sources:
Surface Water Features/Wetlands: MACTEC, 2005
NWI Wetlands: U.S. Fish & Wildlife Service, National Wetlands Inventory, 1981-present
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004

0 0.1 0.2 Miles

Legend

Water
Wetland (As Observed On Site)
Approximate Site Boundary

National Wetlands Inventory
PFO1
POW

FIGURE 3-12. WETLANDS, DOLINGTON – ALTERNATIVE SITE 3

DRAWN	DATE
ALF	10/26/2005
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At Pennhurst – Alternative Site 1, the small wetland observed was dominated by an invasive exotic species. The wetland and riparian vegetation is further described in Section 3.17. At the time of monitoring the wetlands were being used by wildlife, specifically birds and mammals. Use by fish and/or amphibians was not observed.

3.6.2.2 Riegelsville – Alternative Site 2

On Riegelsville – Alternative Site 2, four wetland areas (total 4.9 acres) and three jurisdictional stream features (total length 5,072 ft on site) were observed (Figure 3-11).

Wetlands

- A small jurisdictional hillside seep wetland (Wetland 2-A) was observed in the southern area of the subject property (Figure 3-11), and is not hydrologically connected to waters of the U.S. Vegetation in this area is dominated by green ash (*Fraxinus pennsylvanica*) and understory multiflora rose (*Rosa multiflora*). Water-stained leaves, sediment deposits, driftlines, and low chroma soils were observed in this area.
- A jurisdictional wetland area (Wetland 2-B) was observed in the central eastern portion of the subject property at the terminus of Stream 2-A (Figure 3-11). This wetland is hydrologically connected to Stream 2-A. Vegetation in this area is dominated by young alders (*Alnus serrulata*) and grass (*Poa sp.*). Inundation, soil saturation, drift lines, sediment deposits, oxidized root channels, water stained leaves, and low chroma soils were observed in this old field area.
- A jurisdictional wetland area (Wetland 2-C) was observed in the northeastern portion of the subject Riegelsville – Alternative Site 2 (Figure 3-11). This wetland is hydrologically connected to Stream 2-D Vegetation in this area is dominated by multiflora rose, sweet gum (*Liquidambar styraciflua*), and sycamore (*Platanus occidentalis*). Inundation, saturated soils, drainage patterns, oxidized root channels, water-stained leaves, sediment deposits, and low chroma soils were observed in this area.
- A small jurisdictional wetland area (Wetland 2-D) was observed in the northern portion of the subject Riegelsville – Alternative Site 2 (Figure 3-11). This wetland is hydrologically connected to Stream 2-B. Vegetation in this area is dominated by panic grass (*Panicum sp).* Inundation, saturated soils, drainage patterns, oxidized root channels, and low chroma soils were observed in this area.

Streams

- A jurisdictional, perennial stream channel (unnamed tributary to the Delaware River) was observed in the north central portion of the subject property (Figure 3-17, Stream 2-A). The baseflow stream channel is approximately five feet wide, six to eight inches deep, and is braided within its historic floodplain. This stream appears to have been previously channelized and may be actively incising in areas.
- A jurisdictional stream channel was observed in the northern portion of the subject property (Figure 3-17, Stream 2-B). The baseflow stream channel is approximately three feet wide and six to eight inches deep. Some potential wetland areas were observed adjacent to this stream.

- A jurisdictional stream channel was observed in the northern portion of the subject property (Figure 3-17, Stream 2-C). The baseflow stream channel is approximately three feet wide and six to eight inches deep. Some potential wetland areas were observed adjacent to this stream.
- A jurisdictional stream channel was observed in the northeastern portion of the subject property (Figure 3-17, Stream 2-D). The baseflow stream channel is approximately three feet wide and six to eight inches deep.

At Riegelsville – Alternative Site 2, all wetlands observed contained native vegetation; however, invasive vegetation was also present. The vegetation is further described in Section 3.17. At the time of the site visits, the wetlands were being used by wildlife, specifically birds and mammals. Use by fish, and/or amphibians was not observed.

3.6.2.3 Dolington – Alternative Site 3

At Dolington – Alternative Site 3, five wetland areas (Total 6.2 acres), two jurisdictional stream features (Total length 6,431 ft), and three swales were observed during site visits in conducted in September, 2005. These areas are designated as:

Wetlands

- Most of the wetlands on Dolington – Alternative Site 3 are adjacent to the unnamed tributary of Hough's Creek. These wet areas consist of a variety of obligate and facultative wetland vegetation underlain with soils that exhibited hydric characteristics and are saturated within the upper six to ten inches.
- The largest wet region is located on the central portion of the Dolington – Alternative Site 3 in a forested section of the project (Wetland 3-A). This wetland has soils with matrix chromas that are two or less and evidence of redoximorphic features present at the time of the on-site investigation. The area is inundated for most of the growing season and is fed from sheet flow run off from the adjacent agricultural fields.
- A wetland bank (Wetland 3-B) located near the southern / central property line, where the channel exits the parcel, consists primarily of hydrophytic herbaceous plant species and has soils that exhibited hydric characteristics. There is evidence of primary and secondary hydrological indicators present, as well as soils with reducing conditions.
- A small woodland seep (Wetland 3-C) is present to the west of the on-site drainage swales and has a variety of wet type vegetation, as well as underlined with soils that exhibit hydric characteristics and define drainage pattern.
- A spring, which was observed near the northern property line (Wetland 3-D), empties into the channel and it has hydrophytic wet type plant species, soils that are inundated and a define drainage pattern extending from the spring to the stream channel. This area is underlain with soils that are saturated and exhibit hydric characteristics.
- In addition to the above wetland areas, a small water filled depression (Wetland 3-E) was observed in the yard of the abandoned Balderston Parcel residence near the southeast Dolington – Alternative Site 3 boundary. The 15 foot by 15-foot depression was densely

vegetated with herbaceous hydrophytic vegetation. The water source for this depression is unknown and could not be determined by field observations.

Streams

- The main jurisdictional stream feature on Dolington – Alternative Site 3 is an unnamed tributary of Hough's Creek (Figure 3-12; Stream 3-A) located in central area of site. It exits via a culvert along Old Dolington Road. This channel is approximately two to four feet wide with one to two foot banks at the point where it enters the tract. There was roughly one inch of water present at the time of the Dolington – Alternative Site 3 inspection in September, 2005. As the channel extended near the southern property line it was roughly one to two feet wide with a one-foot bank.
- Another tributary to Hough's Creek is present on the northern property boundary (Stream 3-B). It flows to the northwest and divides into two smaller drainage channels both approximately one-foot wide with a one-foot bank. It then exits the tract and re-enters the property on the western half of the parcel and extends through an open pasture and ends near the rear of an existing residence. The waterway is about two to three feet wide where it exits the Dolington – Alternative Site 3 and roughly one-foot wide with a one-foot bank, where it enters.

All of the creeks on the Dolington – Alternative Site 3 were observed to have no flow during site visits in September, 2005. The largest creek on-site was reduced to only a few small pools at this time. No natural surface water was observed in the wetlands or at the top of the tributaries in the small drainages or at the headwaters of the large creek during the September visit. Based on the observed geomorphology and low flows the creeks on Dolington – Alternative Site 3 appear to be mostly intermittent drainages.

Swales

- There are three small drainage swales located within the upland forest and along the southern bank of Stream 3-B. These ditches are all located where the slope started to gradually become steeper and all three are approximately one-foot wide with six inches to one-foot high banks. All of the swales have evidence of wetland hydrology at the time of the site investigation and appeared to have been formed as a result of sheetwater runoff from the adjacent cornfield.

At Dolington – Alternative Site 3, the wetlands observed mostly contained native vegetation with some dense multiflora rose thickets along creek banks. The vegetation is further described in Section 3.17. At the time of the 2005 site visits the wetlands were being utilized by wildlife, particularly mammals and birds.

3.6.3 Coastal Zone

Pennhurst – Alternative Site 1 is located in Chester County, which is not a coastal county. Sites Riegelsville – Alternative Site 2 and Dolington – Alternative Site 3 are located in Bucks County, which, in part, makes up the coast of the Delaware Estuary in Pennsylvania (Figure 2-1). However, the coastal zone boundary does not extend to either of these sites (PADEP, 2005).

3.7 Geology

Southeast Pennsylvania shows the dominant effect of downfaulting and erosion on a landscape that once consisted of a significant mountain range (Rima, Meisler & Longwill, 1962). Deposition of various sediments along alluvial fans, lakes and swamps account for much of the formations present today. This extensive erosion of a once great mountain range has led to the rolling hills which are found in this region (Barnes and Sevon, 2002).

3.7.1 Pennhurst – Alternative Site 1

Pennhurst – Alternative Site 1 lies in the Triassic Lowlands Physiographic province, south of the limit of Quaternary continental glaciation. The Pennhurst – Alternative Site 1 is underlain by the Triassic-age Brunswick Formation. The Brunswick Formation consists of very fine-grained, moderately well-bedded, reddish-brown shale, mudstone, and siltstone with a maximum thickness of 6,000 feet. The formation is moderately resistant to weathering. Joint and bedding planes provide secondary porosity and permeability (Geyer & Wilshusen, 1982). Outcroppings of bedrock were observed at Pennhurst – Alternative Site 1 during the site visit conducted in June 2004.

3.7.2 Riegelsville – Alternative Site 2

Riegelsville – Alternative Site 2 lies in the Great Valley section of the Ridge and Valley Physiographic province [Pennsylvania Department of Conservation and Natural Resources (PADCNR), 2000a]. The Site's underlying geology is the Allentown formation which consists of medium-to-medium-dark-gray, thick-bedded dolomite and impure limestone (PADCNR, 2000b). Bedrock outcroppings were not observed at Riegelsville – Alternative Site 2 during the site visit conducted in March, 2005, but the observed sink holes are likely a result of the underlying limestone formation at the Riegelsville – Alternative Site 2. Approximately 12 sinkholes were observed at the Riegelsville – Alternative Site 2. Sinkholes were observed along the higher elevated portions of Riegelsville – Alternative Site 2 on the western and southwestern sections.

3.7.3 Dolington – Alternative Site 3

Dolington – Alternative Site 3 lies in the Gettysburg-Newark Lowland Section of the Piedmont Physiographic Province (PADCNR, 2000). The Dolington – Alternative Site 3 is underlain by the Triassic-age Lockatong and Brunswick Formations. The Lockatong Formation, which is

located along most of the central and southern sections of the Dolington – Alternative Site 3, is a thick-bedded dark-gray to black mudstone with occasional zones of black shale. The Brunswick Formation is located along the northern portion of the Dolington – Alternative Site 3. During the Dolington – Alternative Site 3 visits conducted in August and September 2005, outcroppings of bedrock were not observed.

A stormwater infiltration study was completed at Dolington – Alternative Site 3 in January 2005, by Del Val Soil & Environmental Consultants (Del Val), of Doylestown, Pennsylvania. The purpose of the study was to determine the feasibility for the installation of septic systems and stormwater infiltration facilities for a residential community proposed for the Dolington – Alternative Site 3. The study included digging test pits at Dolington – Alternative Site 3 and recording the characteristics of the overburdened soil. A total of 95 test pits were dug throughout the Dolington – Alternative Site 3 to depths ranging from 29-inches to 76-inches below ground surface (bgs). Bedrock was encountered in 28 (of the 95 total) test pits. The majority of the 28 test pits with bedrock encountered were dug in the north to north-central portion of the Dolington – Alternative Site 3 (Del Val, 2005). The depth to bedrock ranged from 23-inches bgs to 65-inches bgs, with an average depth of 45-inches bgs. The shallowest bedrock was found on the Leedom Parcel, located in the eastern portion of the Dolington – Alternative Site 3. The deepest bedrock was encountered on the Belke Parcel, located on the northeast side of the Dolington – Alternative Site 3.

3.8 Soils

3.8.1 General Area

Pennhurst – Alternative Site 1 is located in the Triassic Lowlands Physiographic province south of the limit of Quaternary continental glaciation within Chester County, Pennsylvania (Geyer & Wilshusen, 1982). Dolington – Alternative Site 3 lies in the Gettysburg-Newark Lowland Section of the Piedmont Physiographic Province (PADCNR, 2000). Sites Pennhurst – Alternative Site 1 and Dolington – Alternative Site 3 both share similar area characteristics as a result of the underlying weathered shale formations. Topography can be characterized in these areas as low rolling lowlands and valleys with relief generally in the area of 100 to 200 feet (Appendix D – Photographs 24 and 25). Localized isolated hills can have a relief of up to 600 feet. Soils at these two alternative sites range from poorly-drained to well-drained with streams that have branching drainage patterns (PADCNR, 2000) (Appendix D – Photograph 26). Riegelsville – Alternative Site 2 is located in the Great Valley section of the Ridge and Valley Physiographic province within Bucks County, Pennsylvania. Topography can be characterized as very broad valleys with low karst terrain dominated by the underlying limestone and dolomite formations (PADCNR, 2000). Relief is generally less than 100 feet in the carbonate areas. Soils in this area range from moderately drained to well-drained with streams that have karst and branching drainage patterns (PADCNR, 2000) (Table 3-2).

Table 3-2. Soils Information by Site

Character	No Action Alternative	Pennhurst – Alternative Site 1	Riegelsville – Alternative Site 2	Dolington – Alternative Site 3
Rock Stratigraphic Unit				
Era	N/A	Mesozoic	Precambrian	Mesozoic
System	N/A	Triassic	Precambrian	Triassic
Series	N/A	Triassic	Paragneiss and schist	Triassic
Geologic Age Identification				
Category	N/A	Metamorphic Rocks	Stratified Sequence	Stratified Sequence
Dominant Soil Composition in General Area				
Soil Component	N/A	Penn	Urban land	Abbottstown
Surface Texture	N/A	Channery – silt	Variable	Silt loam
Hydrologic Group	N/A	Class C	Not reported	Class C
Drainage Class	N/A	Well drained	Not reported	Somewhat Poorly Drained
Hydric Status	N/A	Not hydric	Not hydric	Not hydric
Corrosion Potential	N/A	Low	Not reported	High
Depth to Bedrock (Min/Max)	N/A	> 20 / > 40	> 10 / > 10	> 40 / > 60
Other Soil Types in Area				
Surface Soil Textures	N/A	Very stony – loam, silt loam, loam, extremely stony – silt loam, Extremely stony - loam	Fine sandy loam, gravelly – loam, loamy sand, mucky - peat	Channery – silt loam
Extremely stony - loam	Fine sandy loam, gravelly – loam, loamy sand, mucky - peat	Very stony – loam, silt loam, loam, extremely stony – silt loam, Extremely stony - loam	Fine sandy loam, gravelly – loam, loamy sand, mucky - peat	Channery – silt loam
Surficial Soil Types	N/A	Sandy loam, loam, silt loam	No other soil types	Channery – silt loam, loam
Extremely stony - loam	Fine sandy loam, gravelly – loam, loamy sand, mucky - peat	Weathered bedrock, stratified, loam	Loamy sand, very gravelly – sand, stratified, silt loam	Stratified weathered bedrock, shaly – silt loam
Shallow Soil Types	N/A	Very stony – loam, silt loam, loam, extremely stony – silt loam, Extremely stony - loam	Fine sandy loam, gravelly – loam, loamy sand, mucky - peat	Channery – silt loam
Deeper Soil Types	N/A	Very stony – loam, silt loam, loam, extremely stony – silt loam, Extremely stony - loam	Fine sandy loam, gravelly – loam, loamy sand, mucky - peat	Channery – silt loam

Sources: USGS DDS – 11 (1994); STATSGO as cited in the Environmental Data Resources, Inc. (EDR) reports.
Prepared by: SC Checked by: JR

3.8.2 Site Soils

The soils on the three alternative sites have been altered from their natural state. The soils may have been tilled, filled or drained. There are 31 primary soil units identified on the three sites.

3.8.2.1 Pennhurst – Alternative Site 1

According to the Soil Conservation Service (SCS) *Soil Survey of Chester County and Delaware Counties, Pennsylvania* (USDA, 1963), the majority of the soil types present at Pennhurst – Alternative Site 1 are part of the Penn-Croton-Bucks Association, which consists of shallow to deep silty soils overlying red shale and sandstone (Table 3-3). These soils are found on uplands and tend to be shallow to moderately deep and well-drained. Scattered sections along the southern portion of the Pennhurst – Alternative Site 1 are covered with the Readington series soils. Review of the soil series information shows the depth to unweathered shale or sandstone (bedrock) ranges from about 18 to 34 bgs. The Pennhurst – Alternative Site 1 has several areas where there are steep slopes. The most prominent slopes are along the northern portion of the property that abuts the Schuylkill River (Figure 3-13).

The typical natural water table level for Pennhurst – Alternative Site 1 soils experiences a seasonal high of 18 to 36 inches below the surface. During periods of drought, the water table may recede to a depth of more than 60 inches (Penn State, 2005) (see also Section 3.9).

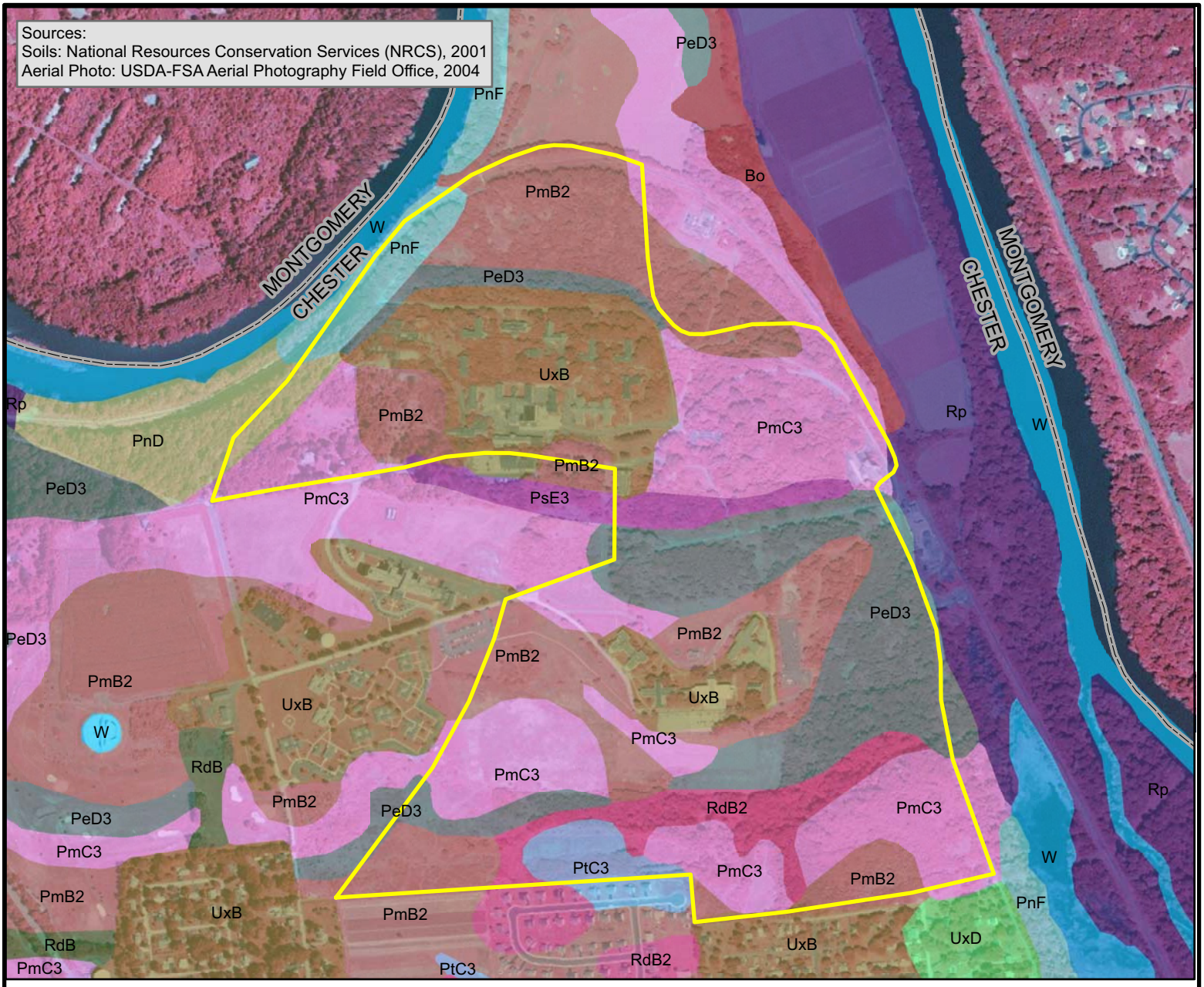
Table 3-3. Soil Units Pennhurst – Alternative Site 1

Soil	Hydric	Soil Description
Penn Silt Loam (PmB2)	No	This soil type consists of a well-drained silt-loam found on three to eight percent slopes. Permeability is moderate with a moderate potential for erosion.
Penn Shaly Silt Loam (PeD3)	No	This soil type consists of a somewhat excessively draining shaly silt-loam found on 15 to 25 percent slopes. Permeability is moderately rapid with a high potential for erosion.
Penn Silt Loam (PmC3)	No	This soil type consists of a well-drained silt-loam found on three to eight to fifteen percent slopes. Permeability is moderate with a high potential for erosion.
Urban Land – Penn Complex (UxB)	Not Rated	This soil type consists of a variable well-drained soil group found on level to eight percent grades. Permeability is moderate with a moderate to high potential for erosion.
Penn Soils (PsE3)	No	This soil type consists of a somewhat excessively drained silt-loam found on 25 to 35 percent slopes. Permeability is moderately rapid to very rapid with a high potential for erosion.
Readington Silt Loam (RdB2)	No	This soil type consists of a moderately well-drained silt-loam found on three to eight percent slopes. Permeability is moderately slow with a moderate potential for erosion.

Source: Penn State, 2005.
Prepared by: SC Checked by: JR

3.8.2.2 Riegelsville - Alternative Site 2

The Washington, Duffield-Ryder and the Glenville soils account for the majority of the soil types on this site (Penn State, 2005). These soils consist of moderately deep to very deep silty soils overlying dolomite and limestone (Table 3-4). These soils are found on uplands and tend to be moderately deep to very deep and moderately well-drained to well-drained. Sections along the southwestern, western and portions of the central regions are covered with theses series soils. Site 2 has several areas where there are steep slopes. The most prominent slopes are along the central and south-central portions of the property (Figure 3-14).



Legend

- Approximate Site Boundary
- County Boundary

Soil Classification (NRCS)

- Bowmansville silt loam
- Chewacla silt loam
- Penn and Lansdale sandy loams, 8 to 15 percent slopes
- Penn shaly silt loam, very shallow, 15 to 25 percent sl opes,
- Penn silt loam, 3 to 8 percent slopes
- Penn silt loam, 8 to 15 percent slopes
- Penn soils, 25 to 35 percent slopes
- Penn very stony silt loam, 25 to 50 percent slopes
- Penn very stony silt loam, 8 to 25 percent slopes
- Readington silt loam, 3 to 8 percent slopes
- Readington silt loam, 3 to 8 percent slopes
- Rowland silt loam, dark surface
- Urban land, 0 to 8 percent slopes
- Urban land-Penn complex, 0 to 8 percent slopes
- Urban land-Penn complex, 8 to 25 percent slopes
- Water

0 0.1 0.2 Miles

N

FIGURE 3-13. SOIL CLASSIFICATION(NRCS), PENNHURST – ALTERNATIVE SITE 1

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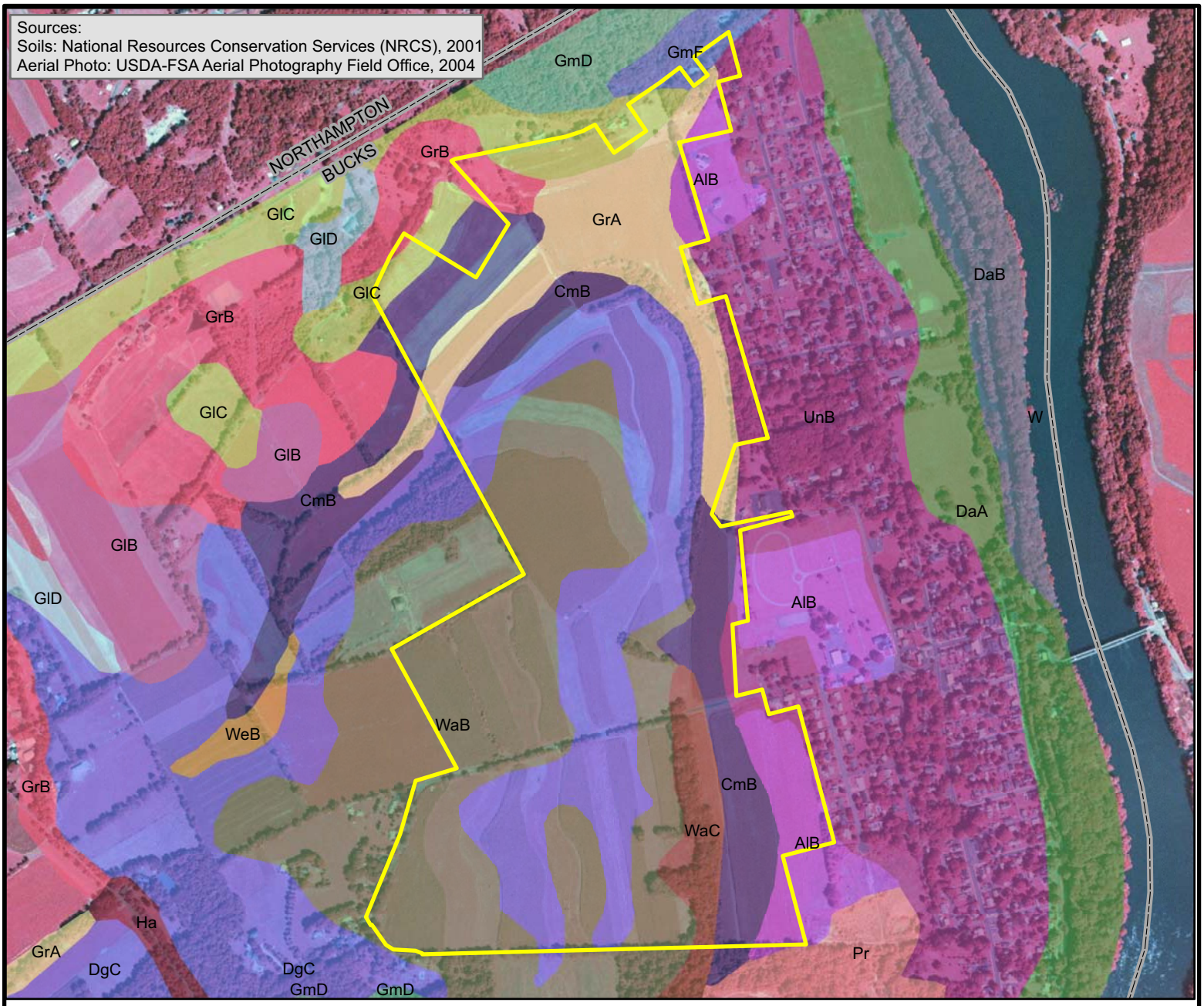

Legend

- Approximate Site Boundary
- County Boundary

Soil Classification (NRCS)

- Alton gravelly loam, 3 to 8 percent slopes
- Clarksburg silt loam, 3 to 8 percent slopes
- Delaware loam, 0 to 3 percent slopes
- Delaware loam, 3 to 8 percent slopes
- Duffield-Ryder silt loams, 8 to 15 percent slopes
- Gladstone gravelly silt loam, 15 to 25 percent slopes
- Gladstone gravelly silt loam, 25 to 55 percent slopes
- Gladstone gravelly silt loam, 3 to 8 percent slopes
- Gladstone gravelly silt loam, 8 to 15 percent slopes
- Gladstone gravelly silt loam, 8 to 25 percent slopes
- Glenville silt loam, 0 to 3 percent slopes
- Glenville silt loam, 3 to 8 percent slopes
- Hatboro silt loam
- Pits, quarry
- Urban land-Duffield complex, 0 to 8 percent slopes
- Washington silt loam, 3 to 8 percent slopes
- Washington silt loam, 8 to 15 percent slopes
- Weikert channery silt loam, 0 to 8 percent slopes

0 0.1 0.2 Miles

FIGURE 3-14. SOIL CLASSIFICATION (NRCS), RIEGELSVILLE – ALTERNATIVE SITE 2

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The typical natural water table level for Riegelsville – Alternative Site 2 soils experiences a seasonal high ranging from 6 to 36 inches below the surface. During periods of drought, the water table may recede to a depth of more than 60 inches (Penn State, 2005).

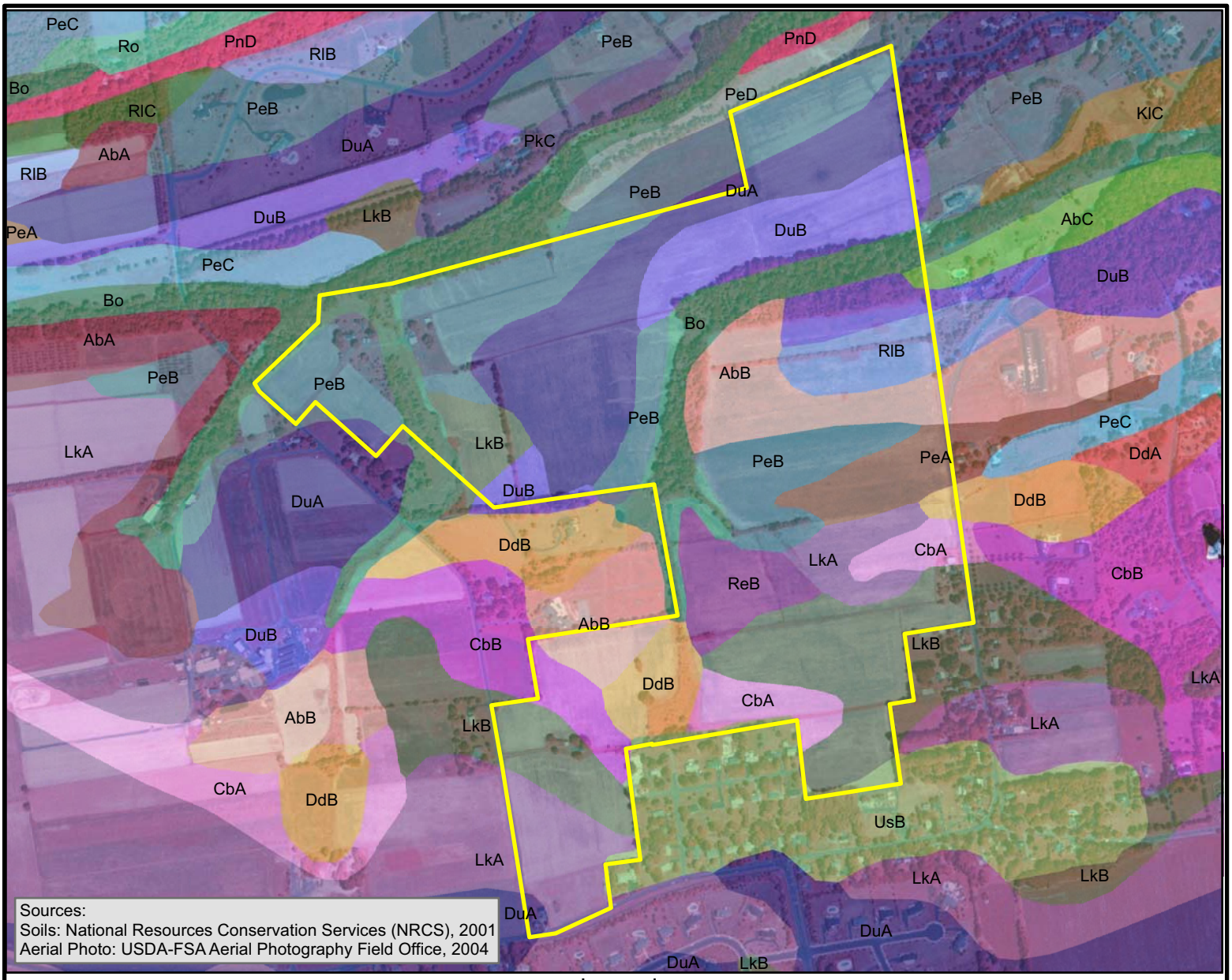
Table 3-4. Soil Units Riegelsville – Alternative Site 2

Soil	Hydric	Soil Description
Alton Gravelly Loam (AlB)	No	This soil type consists of a well-drained gravelly-loam found on three to eight percent slopes. Permeability is moderately rapid to very rapid with a low potential for erosion.
Clarkesburg Silt Loam (CmB)	No	This soil type consists of a moderately well-drained silt loam found on three to eight percent grades. Permeability is slow to moderately rapid with moderate potential for erosion.
Duffield-Ryder Silt Loam (DgC)	No	This group is about 60 percent Duffield silt loam and 30 percent Ryder silt loam. The Duffield-Ryder soil type consists of well-drained silt loam found on eight to fifteen percent slopes. Permeability is moderately slow to moderately rapid with a moderate to high potential for erosion.
Gladstone Gravelly Silt Loam (GlC)	No	This soil type consists of a well-drained gravelly-silt loam found on eight to fifteen percent grades. Permeability is moderately slow to rapid with a moderate to high potential for erosion.
Glenville Silt Loam (GrA and GrB)	No	This soil type consists of a moderately well-drained silt loam found on level to eight percent grades. Permeability is slow to moderately rapid with a medium to high potential for erosion.
Urban Land-Duffield Complex (UnB)	No	This soil type is about 50 percent Urbanland variable complex and 40 percent Duffield silt loam. This series consists of a variable well-drained soil group found on level to eight percent grades. Permeability is moderate to moderately rapid with a medium potential for erosion.
Washington Silt Loam (WaB and WaC)	No	This soil type consists of a well-drained silt loam found on three to fifteen percent grades. Permeability is moderate to rapid with a medium potential for erosion.

Source: Penn State, 2005.
Prepared by: SC Checked by: JR

3.8.2.3 Dolington – Alternative Site 3

The Penn, Duncannon, Bowmansville-Knauers and Lawrenceville soils account for the majority of the soil types on this site (Penn State, 2005). These soils consist of moderately deep to very deep silty soils overlying dark-gray to red shale (Table 3-5). Except for the Bowmansville-Knauers soil type, these soils are found on uplands and tend to be moderately deep to very deep and moderately well-drained to well-drained. The Bowmansville-Knauers soil type is found along sections of wetlands on the site and tends to be poorly drained and very deep. Sections spanning from the northern portions through the central area of the site are covered with theses series soils. Based on previous soil investigation information, the depth to shale (bedrock) ranges from about 29 inches to greater than 76 inches bgs. Dolington – Alternative Site 3 has several areas along the two un-named tributaries where there are steep slopes. The most prominent slopes are along the northeast portions of the property (Figure 3-15).



Legend

Approximate Site Boundary

0 0.1 0.2 Miles

Soil Classification (NRCS)

- Abbottstown silt loam, 0 to 3 percent slopes
- Abbottstown silt loam, 3 to 8 percent slopes
- Abbottstown silt loam, 8 to 15 percent slopes
- Bowmansville-Knauers silt loams
- Chalfont silt loam, 0 to 3 percent slopes
- Chalfont silt loam, 3 to 8 percent slopes
- Doylestown silt loam, 0 to 3 percent slopes
- Doylestown silt loam, 3 to 8 percent slopes
- Duncannon silt loam, 0 to 3 percent slopes
- Duncannon silt loam, 3 to 8 percent slopes
- Klinesville very channery silt loam, 8 to 15 percent slopes
- Lawrenceville silt loam, 0 to 3 percent slopes
- Lawrenceville silt loam, 3 to 8 percent slopes
- Penn channery silt loam, 0 to 3 percent slopes
- Penn channery silt loam, 15 to 25 percent slopes
- Penn channery silt loam, 3 to 8 percent slopes
- Penn channery silt loam, 8 to 15 percent slopes
- Penn-Klinesville channery silt loams, 8 to 15 percent slopes
- Penn-Lansdale complex, 15 to 25 percent slopes
- Readington silt loam, 3 to 8 percent slopes
- Reaville channery silt loam, 3 to 8 percent slopes
- Reaville channery silt loam, 8 to 15 percent slopes
- Rowland silt loam
- Urban land-Lawrenceville complex, 0 to 8 percent slopes

FIGURE 3-15. SOIL CLASSIFICATION (NRCS), DOLINGTON – ALTERNATIVE SITE 3

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The typical natural water table level for Dolington – Alternative Site 3 soils experiences a seasonal high ranging from flooding at surface level to 36 inches below the surface. During periods of drought, the water table may recede to a depth of more than 60 inches (Penn State, 2005).

Table 3-5. Soil Units Dolington – Alternative Site 3

Soil	Hydric	Soil Description
Abbottstown Silt Loam (AbB)	No	This soil type consists of poorly drained silt loam found on three to eight percent slopes. Permeability is slow to moderately rapid with a slight to moderate potential for erosion.
Bowmansville-Knauers Silt Loam (Bo)	No	This soil type consists of a poorly drained silt loam found on nearly level slopes. Permeability can range from moderately slow to very rapid with a slight potential for erosion.
Chalfont Silt Loam (CbA and CbB)	No	This soil type consists of a nearly level to gently sloping poorly drained silt loam found on level to eight percent slopes. Permeability is slow to moderately rapid with a slight to moderate potential for erosion.
Doylestown Silt Loam (DdB)	Yes	This soil type consists of a gently sloping poorly drained silt loam found on three to eight percent slopes. Permeability is slow to moderately rapid with a slight potential for erosion.
Duncannon Silt Loam (DuA and DuB)	No	This soil type consists of a nearly level to gently sloping well drained silt loam found on level to eight percent slopes. Permeability is moderate to moderately rapid with a moderate potential for erosion.
Lawrenceville Silt Loam (LkA and LkB)	No	This soil type consists of a nearly level to gently sloping moderately well drained silt loam found on level to eight percent slopes. Permeability is moderately slow to moderately rapid with a moderate potential for erosion.
Penn Channery Silt Loam (PeA, PeB and PeD)	No	This soil type consists of a nearly level to moderately steep well drained channery silt loam found on level to 25 percent slopes. Permeability is moderate slow to rapid with a moderate to high potential for erosion.
Readington Silt Loam (ReB)	No	This soil type consists of a gently sloping moderately well drained silt loam found on three to eight percent slopes. Permeability is moderately slow to moderately rapid with a moderate potential for erosion.
Reaville Channery Silt Loam (RlB)	No	This soil type consists of a gently sloping poorly drained channery silt loam found on three to eight percent slopes. Permeability is slow to moderately rapid with a slight to moderate potential for erosion.
Urban Land-Lawrenceville Complex (UsB)		This soil type consists of a nearly level to gently sloping moderately well drained soil found on level to eight percent slopes. Permeability is moderately slow to moderately rapid with a moderate potential for erosion.

Source: Penn State, 2005.
Prepared by: SC Checked by: JR

3.8.3 Hydric Soils

According to the Natural Resources Conservation Service (NRCS), the definition of a hydric soil is a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USDA NRCS, 2005). The concept of hydric soils includes soils developed under sufficiently wet conditions to support the

growth and regeneration of hydrophytic vegetation. Soils that are sufficiently wet because of artificial measures are included in the concept of hydric soils. Also, soils in which the hydrology has been artificially modified are hydric if the soil in an unaltered state was hydric. Some series, designated as hydric, have phases that are not hydric depending on water table, flooding, and ponding characteristics. On the three sites under consideration, hydric soils are often associated with wetlands, though not limited to wetlands. Certain engineering and environmental constraints will need to be considered before cemetery development is planned on hydric soils. See Figures 3-10 through 3-12 for the locations of hydric soils at each site. See Table 3-3, Table 3-4, and Table 3-5 for possible hydric soil units at each site. However, according to the NRCS, caution must be used when comparing the list of hydric soil series to soil survey maps. Many of the soils on the list have ranges in water table depths that allow the soil to range from hydric to nonhydric depending on the location.

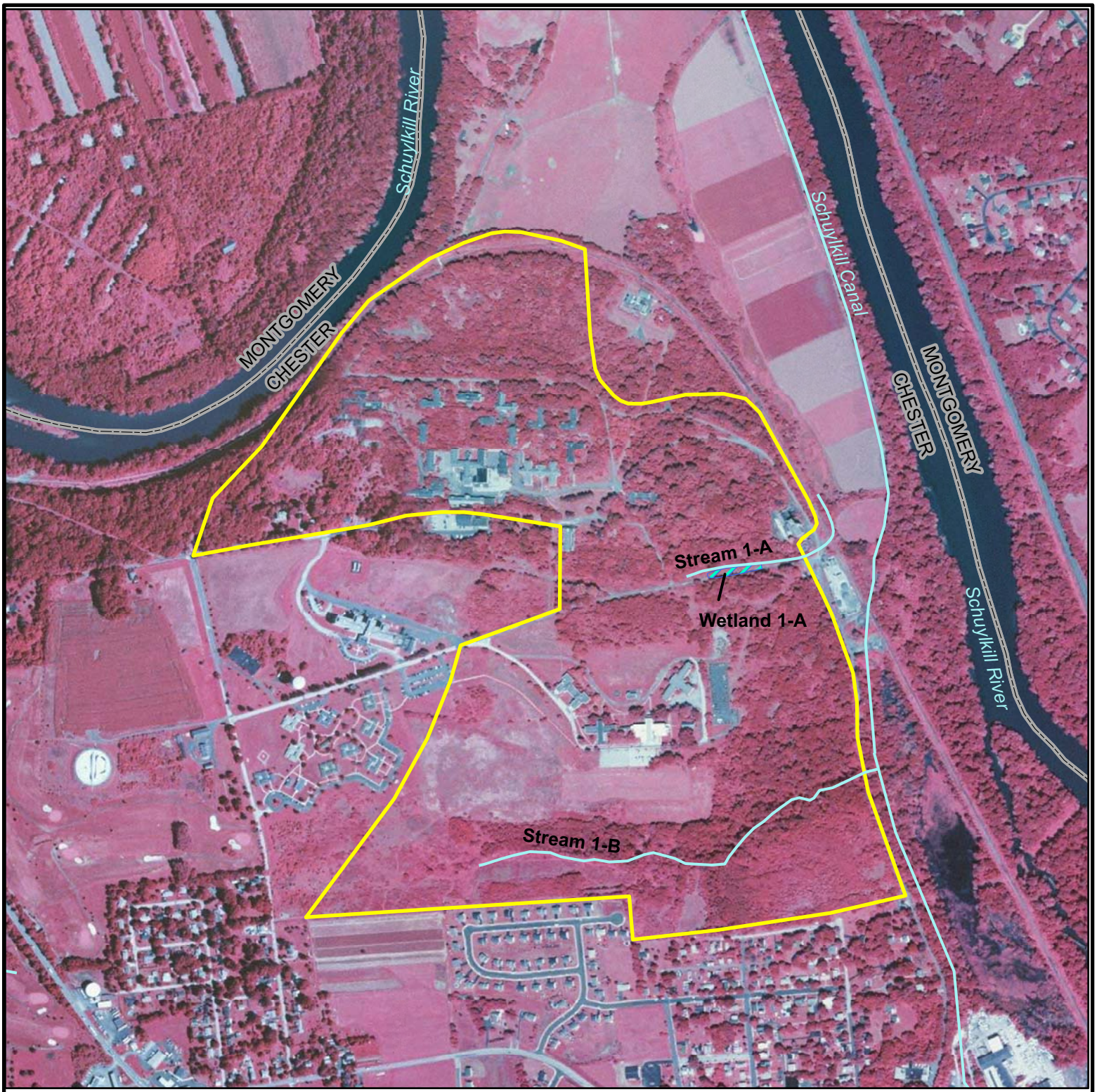
3.9 Hydrology

On average, southeastern Pennsylvania receives approximately 43 inches of rainfall per year. Typically, July is the wettest month with 4.39 inches of rainfall per month and February is the driest month with 2.74 inches of rainfall per month (NCDC, 2005).

The predominant surface water feature near Pennhurst - Alternative Site 1 is the Schuylkill River located within several hundred feet of the site's northwest corner, trending to the southeast and ultimately discharging to the Delaware River near Philadelphia, Pennsylvania. However, the majority of the land in Pennhurst – Alternative Site 1 drains through two intermittent tributaries located in the east central and southeast area of Site 1 (Figure 3-16). These tributaries empty into the Schuylkill River at an off-site location to the east, which eventually connects to the Delaware River. Riegelsville – Alternative Site 2 is drained by four unnamed tributaries located along the northern portion of the site (Figure 3-17). These streams eventually drain to the Delaware River at an offsite location. Dolington – Alternative Site 3 is drained to the north-northeast by two unnamed tributaries (Figure 3-18), which empty into Hough's Creek, located approximately 0.5 miles north of the Dolington – Alternative Site 3. Hough's Creek eventually drains to the Delaware Canal and Delaware River at an off-site location.

3.10 Water Resources

The predominant surface water feature in the area of Pennhurst – Alternative Site 1 is the Schuylkill River. The Schuylkill River bends around the area of Pennhurst – Alternative Site 1 and is located to the north, northeast and east of the site. The Pennsylvania U.S. Geological Survey (USGS) Pottstown gauging station (#1472000) is located about 6.5 miles upstream of the Pennhurst – Alternative Site 1 on the Schuylkill River. The Schuylkill River has a drainage basin area of approximately 1,147 square miles at that location. The annual peak flow for the Schuylkill River averages approximately 24,000 cubic foot per second (cfs), but in 1972 during Hurricane Agnes, the river discharge peaked at approximately 95,900 cfs (USGS, 2004).



Sources: Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004; Surface Water Features/Wetlands: MACTEC, 2005

0 0.1 0.2 Miles

Legend

- Water
- Wetlands (As Observed On Site)
- County Boundary
- Approximate Site Boundary

FIGURE 3-16. WATERS OF THE US, PENNHURST – ALTERNATIVE SITE 1

DRAWN	DATE
ALF	10/26/2005
CHECKED	DATE
ABS	10/27/2005

MACTEC
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3485-05-0049

NATIONAL CEMETERY SOUTHEASTERN PENNSYLVANIA

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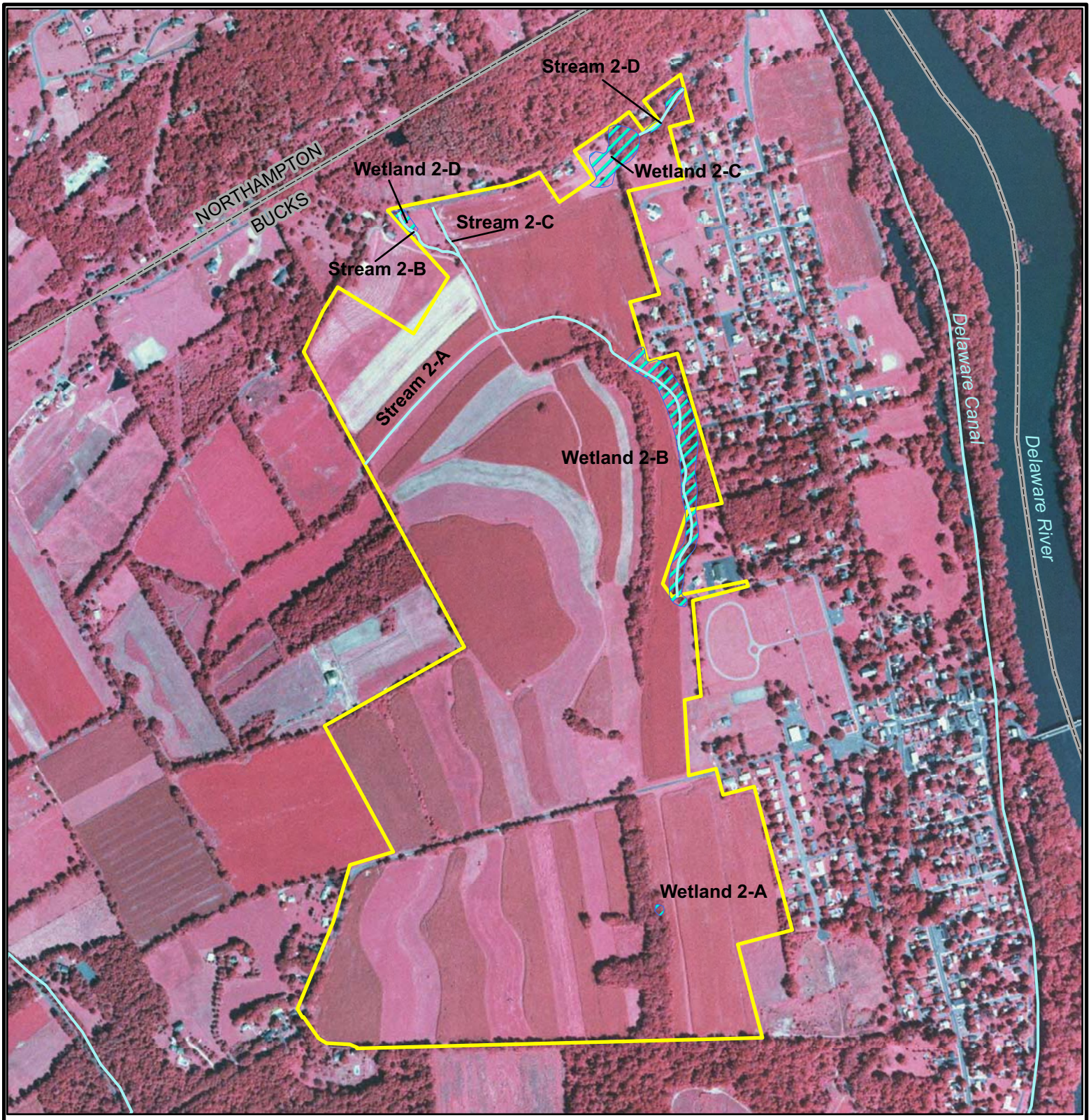

Sources:
Wetland/Surface Water Features: MACTEC, 2005
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004

0 0.09 0.18 Miles

Legend

- Water
- Wetlands (As Observed On Site)
- Approximate Site Boundary
- County Boundary

FIGURE 3-17. WATERS OF THE US, RIEGELSVILLE – ALTERNATIVE SITE 2

DRAWN	DATE
ALF	10/26/2005
CHECKED	DATE
ABS	10/27/2005

MACTEC
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3485-05-0049

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Sources:
Surface Water Features/Wetlands: MACTEC, 2005
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004

0 0.1 0.2 Miles

Legend

- Water
- Wetland (As Observed On Site)
- Approximate Site Boundary

N

FIGURE 3-18. WATERS OF THE US, DOLINGTON – ALTERNATIVE SITE 3

DRAWN	DATE
ALF	10/26/2005
CHECKED	DATE
ABS	10/27/2005

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A section of the Schuylkill River along the east side of Pennhurst – Alternative Site 1 is listed as an impaired water body [Section 303(D) list] along much of its main channel for a variety of reasons, including acid mine drainage, agricultural runoff, pesticides, metals, and priority organic compounds.

At Riegelsville – Alternative Site 2, the Delaware River is a prominent water feature located approximately 0.5 mile to the east of the site, which borders Pennsylvania and New Jersey. A gauging station is located on the Delaware River, upstream of the Riegelsville. The New Jersey USGS gauging station (directly across the Delaware River from Riegelsville, Pennsylvania), has a drainage basin area of approximately 6,328 square miles. The Riegelsville USGS gauging station of the Delaware River is located approximately one-half mile east of the Riegelsville – Alternative Site 2. Since 1907, the annual mean flow for the Delaware River averaged approximately 10,831 cfs (USGS 2005). The Middle Delaware-Musconetcong River watershed, which encompasses Riegelsville – Alternative Site 2, is listed as an impaired water body [Section 303(D) list] along much of its main channel for a variety of reasons including agricultural runoff, pesticides, and metals (USEPA, 1998).

At Dolington – Alternative Site 3, Hough's Creek, located approximately 0.5 miles to the north, is a prominent water feature in the area of Dolington – Alternative Site 3. Hough's Creek eventually drains to the Delaware River, located approximately 2 miles east of the Dolington – Alternative Site 3. The Delaware River, USGS gauging station, located in Trenton, New Jersey, has a drainage basin area of approximately 6,780 square miles. The Trenton, New Jersey USGS gauging station of the Delaware River is located approximately eight miles southeast of Dolington – Alternative Site 3. Since 1907, the annual mean flow for the Delaware River, at this gauging station, averaged approximately 11,703 cfs (USGS 2005). The Middle Delaware-Musconetcong River watershed, which encompasses Dolington – Alternative Site 3, is listed as an impaired water body [Section 303(D) list] along much of its main channel for a variety of reasons including agricultural runoff, pesticides, and metals (USEPA, 1998).

3.10.1 Water Use

Detailed information regarding local water use, water permitting and water regulatory compliance in the areas of all three alternative sites was requested from local government offices; however, at the time of this report, responses had not yet been received. This item should be completed prior to the proposed cemetery development at any of the alternative sites. Limited water use information collected for Riegelsville – Alternative Site 2 and Dolington – Alternative Site 3 are provided below.

Water use in the area of Riegelsville – Alternative Site 2 is controlled by both the Riegelsville Borough and Bucks County. The Riegelsville Water Company controls the supply for the borough and also issues the permits necessary for water supply connections (Personal Communication Macaluso, 2005).

Water use in the area of Dolington – Alternative Site 3 is regulated by Upper Makefield Township and Bucks County (Personnel Communiation Kuhns, 2005). Well construction permits are required prior to installation of a well within the Township. The permits ensure that wells are constructed by qualified contractors and meet rigid safety and durability standards.

According to the Environmental Data Resources, Inc. (EDR) records (See Appendix A) and a USGS ground-water data report (1989), two USGS-listed water wells are located at the Pennhurst – Alternative Site 1 and seven USGS water wells were mapped by EDR and located on adjacent parcels formerly owned by the Pennhurst Center. The wells were constructed between 1913 and 1928 with total well depths ranging from 327 feet bgs to 529 feet bgs. Water levels measured in the wells were reported to range from 52 feet bgs to 190 feet bgs. The yield of the wells ranged from 40 to 200 gallons per minute (gpm). According to Mr. Ralph DeFazio (Chester County Health Department), approximately 40 to 45 percent of Chester County's potable water is derived from groundwater wells (Personal Communication, October 14, 2004). In addition, there are two potable water supply wells that were observed on the Pennhurst – Alternative Site 1. These wells are reportedly not abandoned, but the equipment in the wells has been removed and the wells are out-of-service.

At Riegelsville – Alternative Site 2, according to the EDR report, no USGS federally-registered water wells or state-registered water wells are located on the Riegelsville – Alternative Site 2. During the Riegelsville – Alternative Site 2 reconnaissance, no water wells were observed on the property. In addition, St. Lawrence Catholic Church officials and Mr. Edward Thaler were also not aware of any wells on the Riegelsville – Alternative Site 2. The EDR database search listed one State-registered water well within one-quarter mile of the Riegelsville – Alternative Site 2. The well, located to the east of the Riegelsville – Alternative Site 2, was constructed in 1984 to a total well depth of 140 feet bgs. The water level measured in the well was 35 feet bgs and had a reported yield of 50 gpm.

Private water supply wells were observed at the residences on the Dolington – Alternative Site 3. In addition, five test wells, drilled by Bucks County Artesian Well Drilling, exist on the Dolington – Alternative Site 3 and were installed to test the aquifer yield for potential development (International, 2005). Four of the five test wells were observed on the Dolington – Alternative Site 3 during the site reconnaissance (See Section 3.10.3).

Water well information in the vicinity of the three sites is reflected in Table 3-6.

Table 3–6. Wells Reported from the Vicinity of the Sites

	0 – 1/8 mi	**¼ - ½ mi**	**½ - 1 mi**
Pennhurst – Alternative Site 1			
Agricultural wells	0	0	0
Test / Observation wells	0	0	0
Private Drinking Water wells	2	11	50
Riegelsville – Alternative Site 2			
Agricultural wells	0	0	0
Test / Observation wells	0	0	0
Private Drinking Water wells	0	4	18
Dolington – Alternative Site 3			
Agricultural wells	0	0	3
Test / Observation wells	0	0	0
Private Drinking Water wells	0	6	29

Source: EDR Reports (See Appendix A)
Prepared by: SC Checked by: ND

Existing surface water features at each site are also discussed more completely in the Wetlands Section of this document (Section 3.6). However, because many of the wetlands have on-site hydrological connections and/or off-site hydrological connections, it is important to note that on-site surface waters features can be connected to nearby waters.

3.10.2 Pennhurst – Alternative Site 1

At Pennhurst – Alternative Site 1, there are two unnamed intermittent tributaries (Figure 3-16) of the Schuylkill River present on Pennhurst – Alternative Site 1. The Schuylkill River bends around the area of Site 1 and is located to the north, northeast and east of Site 1approximately 600 to 900 feet from Site 1. A wetlands survey was completed in June 2004, which reflected one, small wetland area (less than 0.1 acre) located on the right bank of Stream 1-A (Figure 3-16). No other wetlands were observed at the time of the site visit conducted at Site 1.

3.10.3 Riegelsville Site – Alternative Site 2

Water resources identified at Rieglesville – Alternative Site 2 include four wetlands (Figure 3-11) and four tributaries (Figure 3-17). The tributaries drain into the Delaware River at an off-site location. The Delaware River is located approximately 0.5 miles east of Site 2 at the state boundary between Pennsylvania and New Jersey.

3.10.4 Dolington – Alternative Site 3

Water resources identified at Dolington – Alternative Site 3 include five wetlands (Figure 3-12) and two unnamed tributaries (Figure 3-18) that drain to Hough's Creek, located approximately 0.5 miles north of the Site. Hough's Creek eventually drains to the Delaware Canal and Delaware River at an off-site location. The Delaware River is located approximately 2 miles east of Dolington – Alternative Site 3.

During a stormwater infiltration study at Dolington – Alternative Site 3, groundwater was encountered in the overburden in many of the test pits dug on Site 3. Of the 95 total test pits dug, groundwater was observed in 23 test pits at depths that ranged from approximately 26-inches bgs to 65-inches bgs, with the average depth being 46-inches bgs. The shallowest groundwater was found on the Balderston Parcel, located in the central portion of Dolington – Alternative Site 3 (Del Val, 2004).

A preliminary hydrogeologic study was also completed at Dolington – Alternative Site 3 in March 2005, by International Hydrogeologists (IH), of West Chester, Pennsylvania for the Toll Brothers. The purpose of the study was to assess the site's geology and explore the availability and volume of ground water at the site prior to developing a residential subdivision at Dolington – Alternative Site 3. The conclusions of the hydrogeologic study reported in this EA are based on IH's review of relevant reports and available on-site maps and well data (International, 2005).

According to the study, ground water on the Dolington – Alternative Site 3 is provided by the Lockatong Aquifer, which extends to a depth greater than 500 feet bgs and contains numerous joints and fractures for water transmission. However, no faults or major bedrock structural features are mapped on, or in the vicinity of the Dolington – Alternative Site 3. Groundwater in the area of Dolington – Alternative Site 3 occurs under water table and artesian conditions at depths ranging from flowing conditions to approximately 25 feet bgs. An artesian test well was observed on the southern portion of the Dolington – Alternative Site 3 (Appendix D – Photograph 27).

Based on a statistical analysis performed by IH of wells in the area of Dolington – Alternative Site 3, there is a 90 percent chance of achieving a well yield of 3 gpm or more. Similarly, there is a 10 percent chance of achieving a well yield of 20 gpm or more. Well yields of this volume would comply with the Township Ordinance and could be developed as public water-supply wells (International, 2005).

During the Dolington – Alternative Site 3 reconnaissance in August and September 2005, MACTEC personnel observed existing water supply wells on the site. MACTEC also observed four test wells on Dolington – Alternative Site 3, reportedly utilized during IH's hydrogeologic study. One well, located on the southern portion of Dolington – Alternative Site 3 in the Balderston Parcel, was observed to be under artesian conditions, as water was flowing out of the steel well casing. This location also correlates to the general area of the shallowest groundwater encountered during Del Val's stormwater infiltration study.

3.11 Land Use and Prime Farmland

According to the 2000 U.S. census, the population of Chester County was 433,501, including 5,493 residing in East Vincent Township (Chester County Government, 2005). The population of Bucks County was 597,635 with 863 residing in Riegelsville Borough and 7,180 residing in

Upper Makefield Township, according to U.S. census data collected in 2000 (Bucks County Government, 2005).

The current zoning of the parcels at the alternative project sites is:

- Pennhurst – Alternative Site 1: Low-Density Residential.
- Riegelsville – Alternative Site 2: Resource protection (RP) district and residential district (R-2).
- Dolington – Alternative Site 3: Conservation management (CM) district and village residential district (VR-1).

Pennhurst – Alternate Site 1 is classified as state-surplus property and is available to be redeveloped as a national cemetery. Riegelsville – Alternative Site 2 is zoned RP to protect areas containing sensitive natural features and is shown to have underlying limestone formations. The R-2 district of Riegelsville – Alternative Site 2 is zoned for various residential property uses. Dolington – Alternative Site 3 is zoned to provide incentive tax breaks to owners who preserve the land as agricultural and open space (CM). The VR-1 district of Dolington – Alternative Site 3 is zoned for general residential purposes.

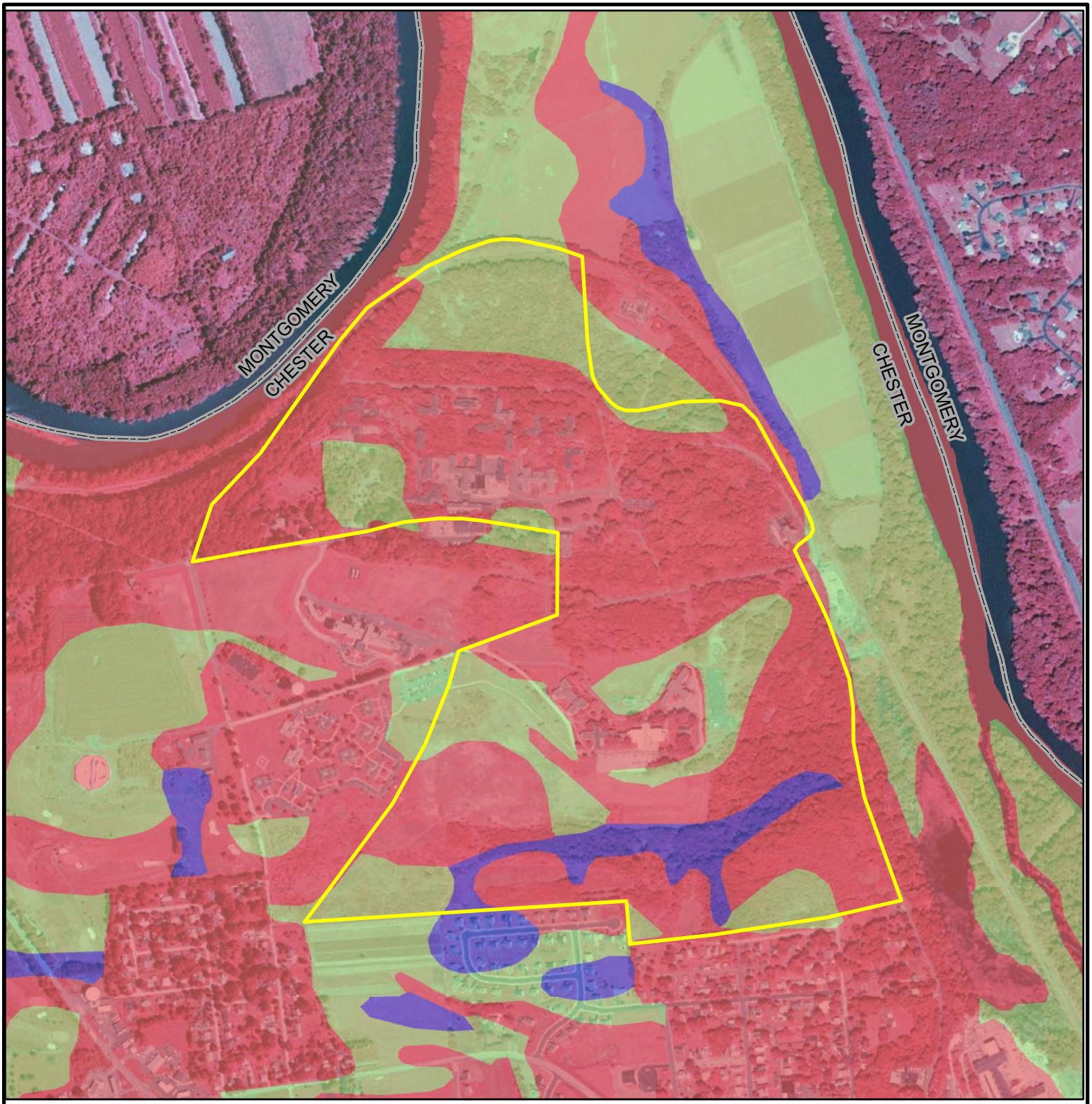
Pennhurst – Alternative Site 1 has a relatively small area of farmland located on the site. Prime farmland and/or farmland of statewide importance comprise approximately 72 acres of Site 1 (Figure 3-19). The majority of the site is not considered prime farmland or farmland of statewide importance.

Riegelsville – Alternative Site 2 is currently used as farmland. Consequently, approximately 252 acres of Site 2 are considered prime farmland by the NRCS (Figure 3-20) and/or farmland of Statewide importance (Figure 3-20).

Land use at Dolington – Alternative Site 3 is currently farmland with four residences. Prime farmland and/or farmland of Statewide importance comprise 182 acres of Site 3 (Figure 3-21).

3.12 Real Property

A former state hospital and school was located on the Pennhurst – Alternative Site 1. There are 33 buildings at the Pennhurst – Alternative Site 1. Four of the 33 buildings (Maintenance/ Storeroom, Chiller Building, Pershing and Buchanan) (Appendix D – Photograph 6) are currently used by the PADMVA and the PAARNG (Appendix D – Photograph 24). The Maintenance/ Storeroom building (Appendix D – Photograph 28), which is located on the Lower Campus, is used for storage of miscellaneous equipment by the PADMVA. The Pershing and Buchanan buildings, located on the Upper Campus, are occupied by the PAARNG and are located adjacent to the PAARNG training lands. The Chiller Building is located behind the Pershing Building on the Upper Campus and houses the power and cooling equipment for the Pershing Building.



Sources:
Soils: National Resources Conservation Services (NRCS), 2001
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004

0 0.1 0.2 Miles

Legend

Approximate Site Boundary
County Boundary

Prime Farmland (NRCS)

All areas are prime farmland
Farmland of statewide importance
Not prime farmland

N

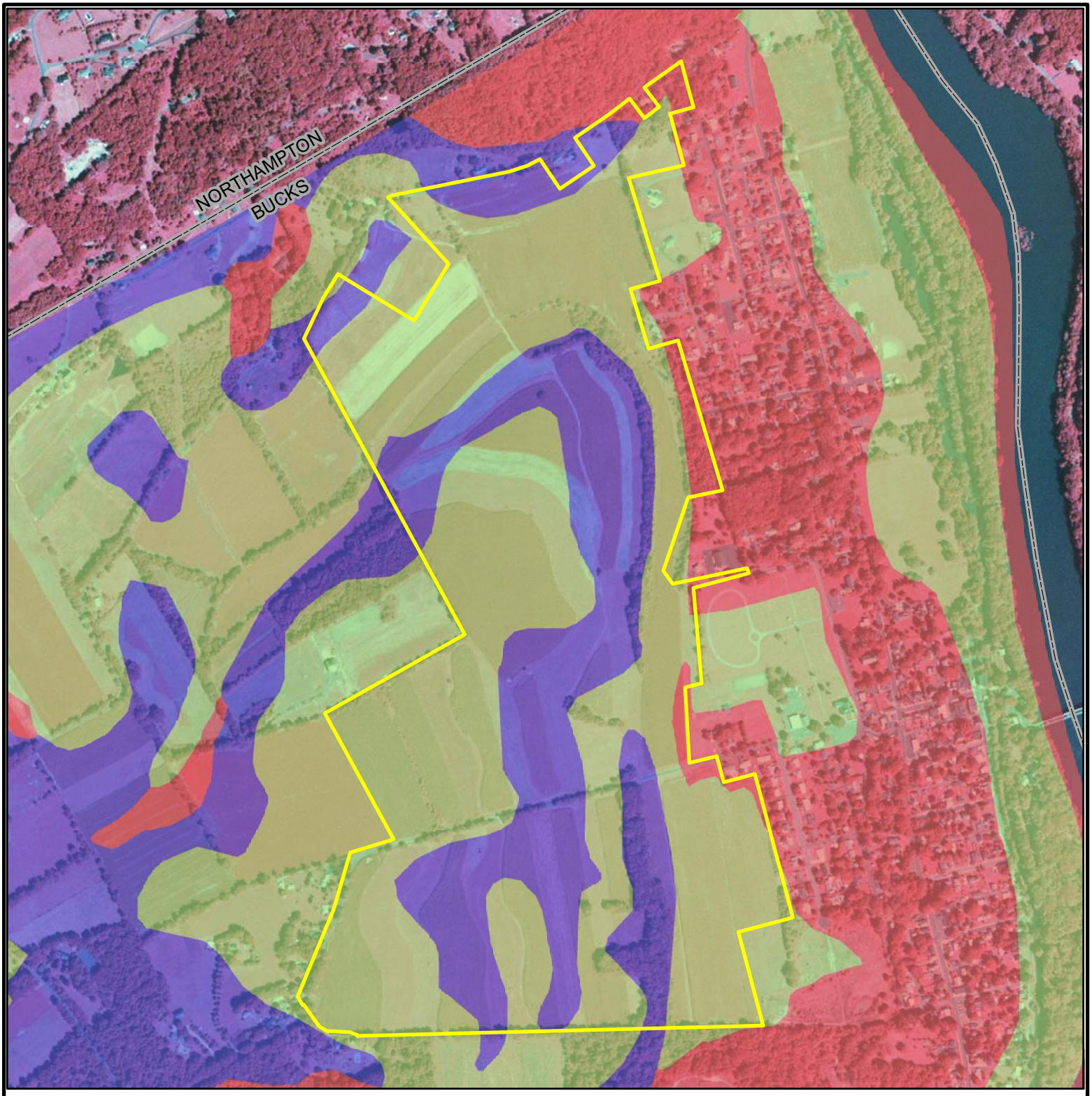
FIGURE 3-19. PRIME FARMLAND (NRCS), PENNHURST – ALTERNATIVE SITE 1

DRAWN	DATE
ALF	10/26/2005
CHECKED	DATE
ABS	10/27/2005

MACTEC
Plymouth Meeting, PA
3485-05-0049

NATIONAL CEMETERY
SOUTHEASTERN PENNSYLVANIA

DEPARTMENT OF VETERANS AFFAIRS
NATIONAL CEMETERY ADMINISTRATION



Sources:
Soils: National Resources Conservation Services (NRCS), 2001
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004

0 0.1 0.2 Miles

Legend

Approximate Site Boundary
County Boundary

Prime Farmland (NRCS)
All areas are prime farmland
Farmland of statewide importance
Not prime farmland

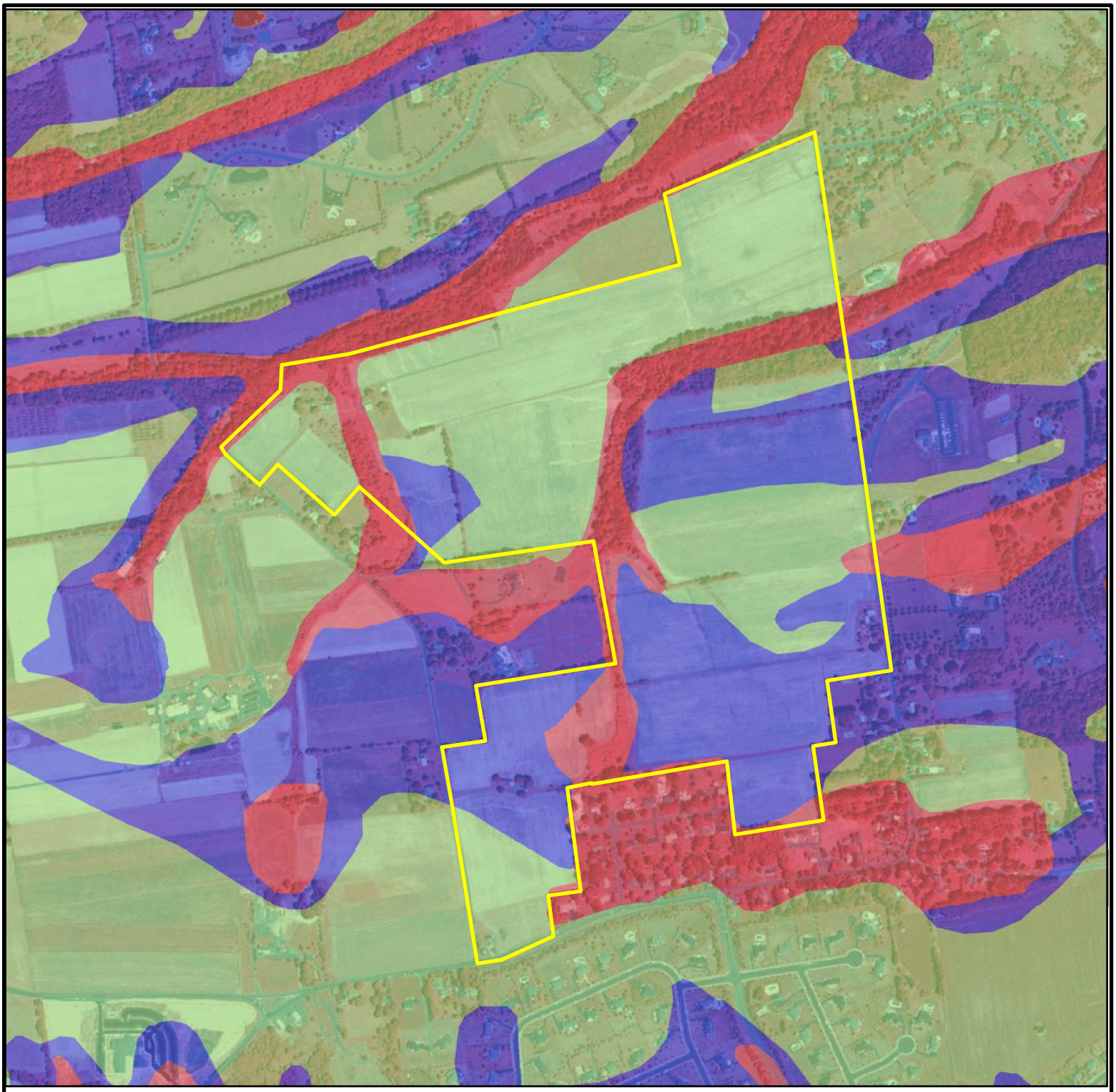
FIGURE 3-20. PRIME FARMLAND AND FARMLAND OF STATE IMPORTANCE, RIEGELSVILLE – ALTERNATIVE SITE 2

DRAWN	DATE
ALF	10/26/2005
CHECKED	DATE
ABS	10/27/2005

MACTEC
Plymouth Meeting, PA
3485-05-0049

NATIONAL CEMETERY
SOUTHEASTERN PENNSYLVANIA

DEPARTMENT OF VETERANS AFFAIRS
NATIONAL CEMETERY ADMINISTRATION



Sources:
Soils: National Resources Conservation Services (NRCS), 2001
Aerial Photo: USDA-FSA Aerial Photography Field Office, 2004

0 0.1 0.2 Miles

Legend

Approximate Site Boundary

Prime Farmland (NRCS)

All areas are prime farmland

Farmland of statewide importance

Not prime farmland

N

FIGURE 3-21. PRIME FARMLAND AND FARMLAND OF STATE IMPORTANCE, DOLINGTON – ALTERNATIVE SITE 3

DRAWN	DATE
ALF	10/26/2005
CHECKED	DATE
ABS	10/27/2005

MACTEC
Plymouth Meeting, PA
3485-05-0049

NATIONAL CEMETERY
SOUTHEASTERN PENNSYLVANIA

DEPARTMENT OF VETERANS AFFAIRS
NATIONAL CEMETERY ADMINISTRATION

The entire Riegelsville – Alternative Site 2 consists of active farm fields and wooded lots (Appendix D – Photograph 29). There are no buildings located on this Riegelsville – Alternative Site 2.

The Dolington – Alternative Site 3 consists of open agricultural fields (Appendix D – Photograph 30) and four residences including agricultural outbuildings. The residence located along Washington Crossing Road on the eastern site border is currently abandoned. All other residences are in use.

Data from the Chester and Bucks County tax assessor's office (2005) indicates that the values of the properties are as reflected in Table 3-7.

Table 3-7. Parcel Values at each Site

Site	Parcel #	Just (Market) Value	Taxable Value
Pennhurst – Alternative Site 1	21010092-000E*	Not Available	$35,165,360
	21010092-010E*	Not Available	$38,500
Riegelsville – Alternative Site 2	38-003-001	Not Available	$12,320
	38-002-072	Not Available	$138,600
	38-008-001	Not Available	$57,680
	38-004-001	Not Available	$20,320
Dolington – Alternative Site 3	47-008-059	$108,830	$43,440
	47-008-064-000	$27,170	$2,680
	47-017-002	$84,060	$17,360
	47-018-008-000	$50,800	Not Available
	47-017-003	$57,280	Not Available
	47-017-001	$22,000	Not Available

* Tax exempt parcel, owned by Commonwealth of Pennsylvania.
Source: Chester County Assessor, 2005; Bucks County Assessor, 2005.

Under the proposed action, structures (except for the former Pennhurst State Hospital and School buildings on the Lower Campus of Pennhurst – Alternative Site 1 and the historic building(s) on Dolington – Alternative Site 3) currently on-site would likely be demolished, and the agricultural lands would be converted to cemetery use.

3.13 Resident Population

There are no residences on the Pennhurst – Alternative Site 1 and Riegelsville – Alternative Site 2 sites. The Dolington – Alternative Site 3 has four residences, one of which is abandoned. The other three residences at the Dolington – Alternative Site 3 are currently in use. Demographics related to each site are reflected in Table 3-8.

Table 3-8. Demographics at each Site

	Pennhurst – Alternative Site 1	**Riegelsville – Alternative Site 2**	**Dolington – Alternative Site 3**
Residents	0	0	4
Workforce (FTE)	10	0	0
Reduction in Current Workforce if Converted to National Cemetery	10 FTE	0	0

Sources: Ogden, 2001; Thaler, 2005; White, 2005.

3.14 Solid / Hazardous Waste

At Pennhurst – Alternative Site 1, office waste is produced from the Pershing and Buchanon buildings occupied by PAARNG. The Lower Campus area, including the buildings associated with the former PSSH, is not currently under consideration for development by the NCA. The Upper Campus of the PSSH contains buildings and outbuildings on Pennhurst – Alternative Site 1, and is area of the site is under consideration by the NCA. Development of the cemetery may require these buildings be removed. At present, no solid waste is generated at Riegelsville – Alternative Site 2. It is assumed a modest amount of residential waste is generated by the families and farms in residence at Dolington – Alternative Site 3. Some of the residences and agricultural outbuildings on Dolington – Alternative Site 3 (described previously) may need to be removed as part of the cemetery construction process. It is anticipated Sites Pennhurst – Alternative Site 1 and Dolington – Alternative Site 3 will generate the most debris because of the presence of buildings, and Riegelsville – Alternative Site 2 would generate very little debris.

Garbage service is currently provided to Pennhurst – Alternative Site 1 by the Chester County Solid Waste Authority (Chester County Government 2005). Garbage service is not currently required for the farmland at Riegelsville – Alternative Site 2. Garbage service to the residences located on Dolington – Alternative Site 3 is provided by private haulers (Eastern States Engineering, Inc. 2005). The NCA will need to arrange with local counties for regular garbage and recycling pick-up once the cemetery construction process begins. Chester County has a ongoing recycling program that is required in East Vincent Township (Chester County Government 2005).

In the area of the former recreational fields on Pennhurst – Alternative Site 1, numerous fill piles were observed. These fill areas (Appendix D – Photograph 31) were also identified as potential environmental concerns during a previous Phase I Environmental Site Assessment (ESA) completed at the Pennhurst – Alternate Site 1 (TSD Environmental, Inc. 1993). These fill piles were subsequently investigated as part of a Phase II investigation performed by RMC Environmental Services, Inc. in 1994. The results of the Phase II investigation showed that these fill piles do not pose an environmental concern (MACTEC 2004).

Owner/leasee interviews at Riegelsville – Alternative Site 2 (March, 2005) indicated they are not aware of any dumps or underground storage tanks (UST) on the site. According to Mr. Thaler

(leasee), a "farm dump" previously was located on the southwestern portion of the Riegelsville – Alternative Site 2. Mr. Thaler stated that local neighbors and Riegelsville residents utilized the area for disposal of various items ranging from lawn clippings to refrigerators. During the late 1980's to early 1990's, Mellon Bank organized a cleanup of the "farm dump" and had the area re-graded following the cleanup. Mr. Thaler could not provide any additional information with regards to the "farm dump". Officials at the St. Lawrence Catholic Church were aware of minor debris dumping by local neighbors across the Riegelsville – Alternative Site 2 (Appendix D – Photograph 32), but could not verify, nor provide any additional information with regards to the "farm dump".

Owner interview at Dolington – Alternative Site 3 (March, 2005) indicated that Mr. White is not aware of any on-site solid waste dumps. However, he did explain that lawn clippings and landscaping debris were formerly dumped along the wooded wetland in the south central portion of the Dolington – Alternative Site 3. MACTEC did not observe any landscaping material in this area at the time of the Dolington – Alternative Site 3 visit. Results of hazardous waste records searches (EDR, 2004 and 2005) are reflected in Table 3-9.

Table 3-9. Results of Hazardous Waste Records Searches*

	No Action Alternative	**Pennhurst – Alternative Site 1**	**Riegelsville – Alternative Site 2**	**Dolington – Alternative Site 3**
Database Searched				
National Priority List	N/A	1	0	0
Proposed National Priority List Sites	N/A	0	0	0
Comprehensive Environmental Response, Compensation, and Liability Information System	N/A	2	0	0
CERCLIS No further Remedial Action Planned	N/A	0	0	0
Corrective Action Report	N/A	0	0	0
Resource Conservation and Recovery Act Information- Treatment, Storage, and Disposal Facility	N/A	0	0	0
Resource Conservation and Recovery Act Information- Large Quantity Generator	N/A	0	0	0
Resource Conservation and Recovery Act Information- Small Quantity Generator	N/A	2	0	1
Emergency Response Notification System	N/A	0	0	0
Pennsylvania's State Hazardous Waste Sites	N/A	0	0	0
Pennsylvania's State Landfill Sites	N/A	0	0	0
Leaking Underground Storage Tank (LUST)	N/A	2	1	1
UST	N/A	0	1	1
Voluntary Cleanup Sites	N/A	2	0	0
Archived UST	N/A	0	0	0
HSCA Remedial Site	N/A	0	0	0
Superfund (Comprehensive Environmental Response, Compensation, and Liability Act) Consent Decrees	N/A	0	0	0
Records of Decision	N/A	1	0	0
National Priority List Deletions	N/A	0	0	0
Facility Index System/ Facility Identification Initiative Program Summary Report	N/A	0	0	1

Table 3-9. Results of Hazardous Waste Records Searches (continued)*

	No Action Alternative	Pennhurst – Alternative Site 1	Riegelsville – Alternative Site 2	Dolington – Alternative Site 3
Hazardous Materials Information Reporting System	N/A	0	0	0
Material Licensing Tracking System	N/A	0	0	0
Mines Master Index File	N/A	0	0	0
Federal Superfund Liens	N/A	0	0	0
Polychloryl bi phenyl (PCB) Activity Database System	N/A	0	0	0
Indian Reservation	N/A	0	0	0
Uranium Mill Tailings Sites	N/A	0	0	0
Open Dump Inventory	N/A	0	0	0
U.S. Engineering Controls	N/A	0	0	0
Formerly Used Defense Sites	N/A	0	0	0
Department of Defense	N/A	0	0	0
Resource Conservation and Recovery Act Administrative Action Tracking System	N/A	0	0	0
Toxic Chemical Release Inventory System	N/A	0	0	0
Toxic Substances Control Act	N/A	0	0	0
Section Seven Tracking Systems	N/A	0	0	0
Federal Insecticide, Fungicide, and Rodenticide Act/ Toxic Substances Control Act Tracking System	N/A	0	0	0
Storage Tank Release Sites (LAST)	N/A	0	0	0
Act 2-Deed Acknowledgement Site	N/A	1	0	0
Historical Landfill	N/A	0	0	0
Dry Cleaning Facilities	N/A	0	0	0
Institutional Controls Registry (ENG CONTROLS)	N/A	0	0	0
Archive Aboveground Storage Tanks (AST)	N/A	0	0	0
Unregulated Storage Tanks	N/A	3	0	1
Coal Gas Manufacturing Site	N/A	0	0	0
A Listing of Brownfield Sites	N/A	0	0	0
Sites with Institutional Controls	N/A	0	0	0
Institutional Controls Registry	N/A	0	0	0
Voluntary Cleanup of Brownfields	N/A	2	0	0

* Searches were completed on May 7, 2004, March 8, 2005, and August 11, 2005 for the proposed Southeast PA Area NCA Project Sites (units are Total # Sites Plotted within project site Search Area). Search distances are provided in the EDR reports attached in Appendix A.
Source: EDR 2004 and 2005 (see Appendix A).
Prepared by: GKH Checked by: AMC

Materials observed at the Pennhurst – Alternate Site 1 that posed a potential Recognized Environmental Concern (REC) include: eight ASTs with unknown amounts of heating oil; numerous 5-gallon, 30-gallon and 55-gallon drums of unknown contents; lead paint; and transformers and other electrical equipment (Appendix D – Photograph 33) potentially containing polychlorinated biphenyls (PCBs). There are two ASTs used by the PAARNG that are located in the secured motor pool. The motor pool is underlain by an impermeable liner to prevent leaks, if any, from entering the subsurface. No leaks or stains were observed at the Pennhurst – Alternate Site 1. These two ASTs are not considered to pose an REC at this time (MACTEC 2004).

3.15 Transportation and Parking

3.15.1 Pennhurst – Alternative Site 1

Current Conditions

Pennhurst – Alternative Site 1 is located on to the north and east of State Road (SR) 724, which is under the jurisdiction of the Pennsylvania Department of Transportation (PENNDOT). Pennhurst Road intersects SR 724 south of the Pennhurst – Alternate Site 1, near Bridge Street (Rt. 1039), a major road in the area. Pennhurst Road would serve as the primary access road to the proposed project. Pennhurst Road is a two-lane road with no passing lanes available from Pennhurst – Alternate Site 1 to the intersection of SR 724 and Pennhurst Road. The current use of Pennhurst – Alternative Site 1 generates limited traffic. According to Odgen (2001), 260 soldiers with the PAARNG access the Pennhurst – Alternate Site 1 for training exercise on a periodic basis, typically as many as 14 weekends per year. Training exercises consist of traveling in convoys on existing roads of Pennhurst – Alternate Site 1 as well as setting up temporary field command centers with parking areas, command tents, firing exercises, field dining and other support facilities.

The PENNDOT monitors traffic volumes on SR 724. Traffic volumes are reported as current Average Daily Traffic (ADT) in units of vehicles per day. These values are obtained by monitoring the traffic in front of a monitoring site for a specific length of road. The monitoring site is not placed within 150 feet of intersections. The traffic volume of the portion of SR 724 south of Bridge Street and the portion of Bridge Street east of SR 724 is monitored by the PENNDOT, and the 2002 average daily traffic volume is reflected in Table 3-10. Pennhurst – Alternative Site 1 is located north of the two PENNDOT monitoring sites.

Table 3-10. 2002 Average Daily Traffic Volume on SR 724 near Pennhurst – Alternative Site 1

PENNDOT Monitoring Site Number	Area Monitored	Current Average Daily Traffic (vehicles per day)
14246	SR 724 south of Bridge Street	16,614
16566	Bridge Street (Rt. 1039) east of SR 724	7,915

Source: PENNDOT 2005.
Prepared by: GKH Checked by: RES

Current and Future Projects

According to the PENNDOT (2005), no current or future road improvement projects are planned for SR 724 or Bridge Street.

3.15.2 Riegelsville Site – Alternative 2

Current Conditions

Riegelsville Site – Alternative 2 is located on the south side of Spring Hill Road (Appendix D – Photograph 34), approximately 0.1 mile west of SR 611. SR 611 is under the jurisdiction of the PENNDOT. Spring Hill Road, a two-land road with no passing lanes, is the main access road to

Riegelsville Site – Alternative 2. The current use of Riegelsville Site – Alternative 2 generates very little traffic.

The PENNDOT monitors the annual average daily traffic volumes on SR 611, and the 2005 data is reflected in Table 3-11. The Riegelsville Site – Alternative 2 is located west of two PENNDOT monitoring sites on SR 611.

Table 3-11. 2005 Average Daily Traffic Volume on SR 611, near Riegelsville – Alternative Site 2

PENNDOT Monitoring Site Number	Area Monitored	Current Average Daily Traffic (vehicles per day)
3954	SR 611 north of Spring Hill Road	4982
742	SR 611 south of SR 1016	5543

Source: PENNDOT 2005
Prepared by: GKH Checked by: RES

Current and Future Projects

According to the PENNDOT (2005), no current or future road improvement projects are planned for SR 611.

3.15.3 Dolington Site – Alternative Site 3

Current Conditions

Dolington – Alternative Site 3 is located along the north and west side of Washington Crossing Road between Highland Road and Old Dolington Road. Washington Crossing Road is a state road, which is under the jurisdiction of the PENNDOT, while Highland Road and Old Dolington Road are maintained by Upper Makefield Township. The Dolington – Alternative Site 3 is located approximately three miles north of Interstate 95, the main regional access road to the site. The current use of Dolington – Alternative Site 3 generates limited traffic.

A Traffic Impact Study was conducted at Dolington – Alternative Site 3 and the surrounding area by McMahon Associates, Inc. (McMahon) for the Toll Brothers, in March 2005. The purpose of the study was to present an evaluation of the incremental traffic impacts as a result of developing Dolington – Alternative Site 3 into a residential subdivision (McMahon, 2005). MACTEC reviewed this report for the sole purpose of determining the current traffic conditions in the area of the Dolington – Alternative Site 3.

According to McMahon's Traffic Study report, roads are given a level-of-service (LOS) rating to assess effectiveness of travel. Based on the study, the intersection of Washington Crossing Road and Highland Road has an LOS rating of "D", which shows that the intersection currently operates with delayed travel. Per the Traffic Study Report, without the installation of a traffic signal and the widening of Washington Crossing Road at this intersection, this rating will not improve. The intersection of Washington Crossing Road and Lindenhurst Road, located south of the Dolington – Alternative Site 3, is currently operating at acceptable levels (McMahon, 2005).

The McMahon Traffic Study Report further states with the future growth of traffic, a modification in this intersection (widening of intersection for turning lane) may be required to sustain this rating. The Traffic Report indicates the rating for the intersection of Old Dolington Road and Washington Crossing Road (Appendix D – Photograph 35) is acceptable and is expected to remain acceptable with or without residential site development. To the north of the Dolington – Alternative Site 3 is Wrightstown Road, which intersects both Old Dolington Road and Highland Road. Both intersections with Wrightstown Road are currently operating at acceptable ratings and are expected to remain acceptable with or without future site development (McMahon 2005).

The PENNDOT monitors daily traffic volumes on Washington Crossing Road and annual 2004 average traffic volume is reflected in Table 3-12. The Dolington – Alternative Site 3 is located north of two PENNDOT monitoring sites on Washington Crossing Road.

Table 3-12. 2004 Average Daily Traffic Volume on Washington Crossing Road near Dolington – Alternative Site 3

PENNDOT Monitoring Site Number	Area Monitored	Current Average Daily Traffic (vehicles per day)
14042	Washington Crossing Road west of Lindenhurst Road	9297
14043	Washington Crossing Road east of Lindenhurst Road	9585

Source: PENNDOT 2005
Prepared by: GKH Checked by: RES

Current and Future Projects

A road modification along Stoopville Road and Creamery Road/Linton Hill Road, located approximately one mile west of the Dolington – Alternative Site 3, is currently in process. The proposed completion date of this modification/improvement is the end of year 2005. According to a review of PENNDOT *Twelve Year Transportation Program* completed by McMahon (2005), no additional plans to improve any of the roadways/intersections in the Dolington – Alternative Site 3 area would have a significant effect on the traffic operations.

3.16 Utilities

Based on site observances during the site visits, all three of the proposed sites have existing utilities on the properties.

3.16.1 Pennhurst – Alternative Site 1

Utilities present on the Pennhurst – Alternative Site 1 include: wastewater lines, storm water lines, overhead and underground electrical lines, telephone lines, municipal water supply lines and two potable water supply wells.

The wastewater lines run throughout Pennhurst – Alternative Site 1 to the East Vincent Township Municipal Authority Sewage Treatment plant, which is located north of the site on a parcel that was part of the original Pennhurst Center property. The existing storm water lines present throughout the Pennhurst – Alternative Site 1 drain onto the agricultural fields of the site. The two potable water supply wells are reportedly not abandoned, but the equipment in the wells has been removed and the wells are out-of-service (Personal Communication Schmidt, 2004). The municipal water supply is available and supplies the buildings occupied by the PAARNG. No irrigation lines were observed on the Pennhurst – Alternative Site 1 during the site visit in June 2004.

Also, aboveground storage tanks (ASTs) were observed in the basements of eight buildings. The capacity of each AST is approximately 175 gallons each, and the tanks were used to store diesel fuel for an emergency generator located in each building, except the AST in the Dietary building, which contained gasoline.

The following utility providers are utilized within the area of Pennhurst – Alternative Site 1:

Electricity:	Philadelphia Electric Company (PECO)
Water:	Citizen Home Utilities Water System
Sewage:	East Vincent Municipal Authority
Telephone:	Verizon Communications
Natural Gas:	PECO

3.16.2 Riegelsville – Alternative Site 2

Utilities present on the Riegelsville – Alternative Site 2 only include overhead electrical lines, which transect across the southwestern section of the site and along the western border. Overhead electrical lines with pole-mounted transformers were also observed along the Riegelsville – Alternative Site 2 on sections of Delaware Road and Spring Hill Road. Transformers appeared in good condition and no leaks were observed. No other utilities exist on the Riegelsville – Alternative Site 2.

The following utility providers are utilized within the area of Riegelsville – Alternative Site 2:

Electricity:	First Energy – Metropolitan Edison Company (Met Ed)
Water:	Riegelsville Water Company
Sewage:	None – On-Lot Septic Sewage Disposal
Telephone:	Verizon Communications
Natural Gas:	None
Cable TV:	Service Electric

3.16.3 Dolington – Alternative Site 3

Utilities present on the Dolington – Alternative Site 3 include: storm water drainage culverts, overhead electrical lines, telephone lines, potable water supply wells and on-lot septic systems. No other utilities were observed on the Dolington – Alternative Site 3.

Four concrete stormwater drainage culverts were observed on the Dolington – Alternative Site 3. All stormwater drainage culverts appeared to drain to the north-northwest toward Hough's Creek. Overhead electrical lines were observed at the Dolington – Alternative Site 3 along Washington Crossing Road, Highland Road and Old Dolington Road. All lines entering the Dolington – Alternative Site 3 from these roads lead to the four on-site residencies. Overhead electrical lines with pole-mounted transformers were also observed along the Dolington – Alternative Site 3 on sections of Highland Road. Transformers appeared in good condition and no leaks were observed by MACTEC at the time of the site reconnaissance conducted in August, 2005. Private water supply wells were observed at the occupied or unoccupied residencies on the Dolington – Alternative Site 3. In addition, five test wells, drilled by Bucks County Artesian Well Drilling, exist on the Dolington – Alternative Site 3 and were installed to test the aquifer yield for potential development (International, 2005). Four of the five test wells were observed on the Dolington – Alternative Site 3 during the site reconnaissance.

Also, heating oil ASTs are located within the basements of the four on-site residencies. These ASTs were presumed full/operational, at the time of the Dolington – Alternative Site 3 visit, as the residences were occupied. Vent and fill pipes for these tanks were observed leading into the basements of these houses. In addition, three ASTs were observed in fair condition on the northwest Belke property near the house and barn. The two approximate 550-gallon ASTs and one approximate 250-gallon AST store diesel fuel and gasoline utilized for agricultural activities were full at the time of the Dolington – Alternative Site 3 visit. The ASTs located on the Belke residence are not part of the Dolington – Alternative Site 3 being considered by the NCA.

The following utility providers are utilized within the area of Dolington – Alternative Site 3:

Electricity:	PECO
Water:	None – Private Well Water
Sewage:	None – On-Lot Sewage Disposal/Septic
Telephone:	Verizon Communications
Natural Gas:	None
Cable TV:	Comcast

3.17 Vegetation and Wildlife

3.17.1 Vegetation

Limited surveys of natural communities present on each site were conducted during site reconnaissance visits in June, 2004, March and September 2005.

3.17.1.1 Pennhurst – Alternative Site 1

At Pennhurst – Alternative Site 1 four plant communities were observed: Maintained Lawn, Old Field, Scrub/Shrub, and Mixed Deciduous Hardwood Riparian Forest. Near the Pershing and Buchanan buildings and the field located in front of these buildings, maintained lawn is the primary vegetation type. These areas are mowed regularly and have low species diversity. The southern portion of the Pennhurst – Alternative Site 1 and portions of the site north of the lower campus supports old field vegetation. Because these areas are no longer maintained, a more diverse, open field community has developed, with asters (Compositae), thistles (*Cirsium* sp.), common yarrow (*Achillea millefollium*), blackberry (*Rubus* spp.), poison ivy (*Toxicodendron radicans*), and several species of grasses. Scrub/shrub growth is present at the western boundaries of the Pennhurst – Alternative Site 1, at the head of the drainage swales of the unnamed tributaries, around the abandoned buildings and along the north and southeastern boundaries of the Pennhurst – Alternative Site 1. These areas support low-growing woody vegetation and some small trees (small maples and oaks). The Mixed Deciduous Hardwood Riparian Forest is found along the North and South tributaries at the Pennhurst – Alternative Site 1. These areas support dense understory vegetation dominated by blackberry and poison ivy. Canopy vegetation was comprised of maples (*Acer* spp.), oaks (*Quercus* spp.), sweetgum *(Liquidambar styraciflua),* and hickory *(Carya* sp.).

3.17.1.2 Riegelsville-Alternative Site 2

Riegelsville – Alternative Site 2 is generally covered by maintained agricultural fields and forested areas. The majority of the Riegelsville – Alternative Site 2 consists of agricultural fields with corn crop stubble from tillage from the previous year. The forested areas include a hardwood forest, shrub/scrub forest and an upland depression. Specific characteristics of each forested area are described in the following paragraphs.

The hardwood forest is approximately 600 feet west of the agricultural fields and can be described as an immature hardwood forest dominated by black walnut (*Juglans nigra*), muscadine (*Vitis rotundifolia*), and microstegium (*Mictostegium vimineum*).

The shrub/scrub forest is upslope of the forested area and is approximately 300 feet west of the hardwood forest. The dominant vegetation for the area are: blackberry (*Rubus sp.*), multiflora rose (*Rosa multiflora*), Japanese honeysuckle (*Lonicera japonica*), and dog fennel (*Eupatorium capillifolium*).

About 1200 feet west of the immature shrub/scrub forest is an upland depression. The upland depression has no canopy or subcanopy, and the herbaceous stratum is dominated by clover (*Trifolium repens*), false strawberry (*Duchesnea indica*), and lower grasses (*Poaceae spp.*).

Three small un-named, perennial, streams and four potentially jurisdictional wetlands are also located on the Riegelsville – Alternative Site 2 with various associated vegetation (see Section 3.6 for additional vegtetation description).

3.17.1.3 Dolington-Alternative Site 3

At Dolington – Alternative Site 3 there is a variety of vegetative cover types present on the site. The major portions of land on the project are agricultural fields that contain upland weeds (esp. cocklebur *Xanthium strumarium*) and planted crops (seasonally corn and wheat). Most of the remainder of the Dolington – Alternative Site 3 consists of open fields, hedgerows, and woodlands located on the eastern and northeastern portions of the site, primarily along the banks of the tributary to Hough's Creek.

The open fields are populated with a variety of grass and weed type plant species. The upland portions consist of non-wet plant species, including, meadow onion (*Alliums spp*.), dandelion (*Taxacum officinale*), narrow leaf plantain (*Plantago lanceolata*), and annual bluegrass (*Poa annua*).

The upland forested sections are dominated by hardwood species including red maple *(Acer rubrum)*, white oak *(Quercus alba)*, shag bark hickory *(Carya ovata)*, fire and black cherry *(Prunus pensylvanica, P. serotina)*, black walnut *(Juglands nigra)*, and Eastern red cedar *(Juniperus virginiana)*. The woodland understory consisted of woody shrubs, vines and herbaceous type plant species, the most common being multiflora rose *(Rosa multiflora)*, common red raspberry *(Rubus idaeus)*, white trout-lily *(Erythronium albidum)*, polkweed *(Phytolacca Americana)*, maple apple *(Podophyllum peltatum)*, meadow onion, poison ivy *(Toxicodendron radicans)*, common privet *(Ligustrum sinense)*, and Japanese honeysuckle *(Lonicera japonica)*, to name a few of the species present. The upland hedgerows on the Dolington – Alternative Site 3 had similar vegetation but also included more primary sere species such as sassafras *(Sassafras albidum)* and black cherry as co-dominants.

The wooded sections on the low-lying areas adjacent to the waterway are populated with a predominance of wet species. The upper canopy was mainly green ash *(Fraxinus pensylvanica)*, box elder *(Acer negundo)*, river birch *(Betula nigra)* and red maple with an understory of multiflora rose, false nettle *(Boehmeria cylindrical)*, impatiens *(Impatiens spp.)*, smartweed *(Polygonum spp.)*, skunk cabbage *(Symplocarpus spp.)*, sweet flag *(Acorus americanus)* and reed canary grass *(Phalaris arundinacea)* were the common forest floor species.

The open wetlands were dominated by a dense thicket of multiflora rose along the banks, with arrow-leafed tearthumb *(Polygonum sagittatum*), smartweed, barnyard grass *(Echinochloa crusgalli)*, impatiens, softrush *(Juncus effusus)* and goldenrod *(Solidago spp.)*.

3.17.2 Wildlife

3.17.2.1 Pennhurst – Alternative Site 1

Wildlife surveys were limited to casual observations as a part of the site reconnaissance visits completed in 2004/05. The on-site habitats support a variety of song-birds and raptors, in addition to small and large mammals. The intermittent streams and wetland area may support amphibians and possibly limited seasonal fish populations. A list of vertebrate species of special concern for Chester County was requested and received from PNHP to indicate the types of taxonomic groups which are distributed in this portion of the state, although habitat for some of these species may not be present at the site (Table 3-13).

The old-field succession which is occurring at the Pennhurst – Alternative Site 1 in addition to proximity to a large river likely promote songbird diversity. It is likely that deer, raccoons, oppossums, rabbits, and Canada geese are also present at the Pennhurst – Alternative Site 1.

Table 3-13. Vertebrates of special concern reported for Chester County, PA

Scientific Name	Common Name	State Status	Federal Status
Clemmys muhlenbergii	Bog Turtle	PE	LT, SAT
Pseudemys rubriventris	Redbelly Turtle	PT	PS
Ambystoma tigrinum	Tiger Salamander		PS
Haliaeetus leucocephalus	Bald Eagle	PE	PS:LT,PDL
Eumeces laticeps	Broadhead Skink	PC	
Asio flammeus	Short-eared Owl	PE	
Botaurus lentiginosus	American Bittern	PE	
Cryptotis parva	Least Shrew	PE	
Ixobrychus exilis	Least Bittern	PE	
Rallus elegans	King Rail	PE	
Rana sphenocephala	Coastal Plain Leopard Frog	PE	
Bartramia longicauda	Upland Sandpiper	PT	
Cistothorus platensis	Sedge Wren	PT	
Opheodrys aestivus	Rough Green Snake	PT	
Pandion haliaetus	Osprey	PT	
Asio otus	Long-eared Owl		
Cistothorus palustris	Marsh Wren		
Heterodon platirhinos	Eastern Hognose Snake		
Lampropeltis getula	Common Kingsnake		
Nycticorax nycticorax	Black-crowned Night-heron		

Note: LE = Listed Endangered PR = Proposed Rare
N = No Current Legal Status PT = Proposed Threatened
PE = Proposed Endangered

Source: Pennsylvania Natural Heritage Program; http://www.naturalheritage.state.pa.us

3.17.2.2 Riegelsville – Alternative Site 2 and Dolington – Alternative Site 3

Wildlife surveys on the Riegelsville – Alternative Site 2 and Dolington – Alternative Site 3 were limited to casual observations as a part of the site reconnaissance visits completed in 2004/05. The on-site habitats support a variety of song-birds and raptors, in addition to small and large mammals. The lower intermittent streams and wetland areas were observed in September 2005 to support aquatic snails and salamanders in the few remainng pools on Dolington – Alternative Site 3. The streams on the Riegelsville – Alternative Site 2 also may support amphibians and possibly limited seasonal fish populations. A list of vertebrate species of special concern for Bucks County was compiled in order to indicate the types of taxonomic groups which are distributed in this portion of the state although habitat for some of these species may not be present at the site (Table 3-14).

These two sites are dominated by agricultural row crops, a manipulated habitat that is supports opportunistic, mobile species such as mourning dove, American crow, white-tailed deer, raccoon, woodchuck, and Canada geese. The annual manipulation of the fields and limited adjacent wildlife cover restricts wildlife species diversity. However, the forested woodlots and stream corridors support songbird diversity at these two sites (Riegelsville – Alternative Site 2 and Dolington – Alternative Site 3).

Table 3-14. Vertebrates of special concern reported for Bucks County, PA

Scientific Name	Common Name	State Status	Federal Status
Acipenser brevirostrum	Shortnose Sturgeon	PE	LE
Clemmys muhlenbergii	Bog Turtle	PE	LT, SAT
Acipenser oxyrinchus	Atlantic Sturgeon	PE	LT,C
Pseudemys rubriventris	Redbelly Turtle	PT	PS
Falco peregrinus	Peregrine Falcon	PE	PS:LE
Lepisosteus osseus	Longnose Gar	PC	
Enneacanthus obesus	Banded Sunfish	PE	
Lepomis megalotis	Longear Sunfish	PE	
Notropis chalybaeus	Ironcolor Shiner	PE	
Pseudacris triseriata kalmi	New Jersey Chorus Frog	PE	
Rana sphenocephala	Coastal Plain Leopard Frog	PE	
Bartramia longicauda	Upland Sandpiper	PT	
Cistothorus platensis	Sedge Wren	PT	
Myotis leibii	Eastern Small-footed Myotis	PT	
Pandion haliaetus	Osprey	PT	
Acantharchus pomotis	Mud Sunfish		
Aphredoderus sayanus	Pirate Perch		
Ardea herodias	Great Blue Heron		
Cistothorus palustris	Marsh Wren		
Enneacanthus chaetodon	Blackbanded Sunfish		

Table 3-14. Vertebrates of special concern reported for Bucks County, PA (continued)

Scientific Name	Common Name	State Status	Federal Status
Etheostoma fusiforme	Swamp Darter		
Heterodon platirhinos	Eastern Hognose Snake		
Kinosternon subrubrum	Eastern Mud Turtle		
Lontra canadensis	Northern River Otter		
Myotis septentrionalis	Northern Myotis		
Nycticeius humeralis	Evening Bat		
Phoca vitulina	Harbor Seal		
Phocoena phocoena	Harbor Porpoise		
Protonotaria citrea	Prothonotary Warbler		
Rallus limicola	Virginia Rail		
Tyto alba	Barn-owl		

Note: LE = Listed Endangered PR = Proposed Rare
N = No Current Legal Status PT = Proposed Threatened
PE = Proposed Endangered
Source: Pennsylvania Natural Heritage Program; http://www.naturalheritage.state.pa.us

3.18 Threatened and Endangered Species

Public Law 93-205, or the Endangered Species Act (ESA) requires that all Federal agencies protect listed species and preserve their habitats. According to the U.S. Fish and Wildlife Service (USFWS), these agencies must utilize their authorities to conserve listed species and make sure their actions do not jeopardize the survival of listed species (USFWS, 2004).

The USFWS, Pennsylvania Fish and Boat Commission (PFBC), Pennsylvania Game Commssion (PGC), and Pennsylvania Department of Conservation and Natural Resources (PADCNR) were contacted to request information on rare, threatened, endangered, or sensitive animal species, or potential habitat for such species that may be present on each site. A copy of MACTEC's letter for request for information and responses from the USFWS, PFBC, PGC, and PADCNR are provided in Appendix B.

3.18.1 Pennhurst – Alternative Site 1

The USFWS (2005) stated that the project area is within the range of the bog turtle (*Clemmys muhlenbergii*), a species that is federally listed as threatened. The letter further states that bog turtles generally inhabit certain types of wetlands areas. During a Pennhurst – Alternative Site 1 visit in June, 2004 no threatened or endangered species were observed and available habitat for bog turtles was observed to be limited. The number of state-listed species in Chester County is large (Table 3-15) and Pennhurst – Alternative Site 1 reconnaissance activities completed thus far have not evaluated the potential for occurence of this these species, or their critical habitats are present.

Table 3-15. Threatened and Endangered Species in Chester County, PA.

Scientific Name	Common Name	State Status	Federal Status
INVERTEBRATES			
Alasmidonta heterodon	Dwarf Wedgemussel	LE	LE
Hesperia leonardus	Leonard's Skipper		PS
VERTEBRATES			
Clemmys muhlenbergii	Bog Turtle	PE	LT, SAT
Pseudemys rubriventris	Redbelly Turtle	PT	PS
Ambystoma tigrinum	Tiger Salamander		PS
Haliaeetus leucocephalus	Bald Eagle	PE	PS:LT,PDL
Eumeces laticeps	Broadhead Skink	PC	
Asio flammeus	Short-eared Owl	PE	
Botaurus lentiginosus	American Bittern	PE	
Cryptotis parva	Least Shrew	PE	
Ixobrychus exilis	Least Bittern	PE	
Rallus elegans	King Rail	PE	
Rana sphenocephala	Coastal Plain Leopard Frog	PE	
Bartramia longicauda	Upland Sandpiper	PT	
Cistothorus platensis	Sedge Wren	PT	
Opheodrys aestivus	Rough Green Snake	PT	
Pandion haliaetus	Osprey	PT	
PLANTS			
Isotria medeoloides	Small-whorled Pogonia	PE	LT
Alopecurus aequalis	Short-awn Foxtail	N	PS
Agalinis auriculata	Eared False-foxglove	PE	
Arethusa bulbosa	Swamp-pink	PE	
Arnica acaulis	Leopard's-bane	PE	
Carex bicknellii	Bicknell's Sedge	PE	
Carex bullata	Bull Sedge	PE	
Carex polymorpha	Variable Sedge	PE	
Carex typhina	Cattail Sedge	PE	
Cerastium arvense var. villosissimum	Serpentine Chickweed	PE	
Cirsium horridulum	Horrible Thistle	PE	
Clematis viorna	Vase-vine Leather-flower	PE	
Cyperus diandrus	Umbrella Flatsedge	PE	
Elephantopus carolinianus	Elephant's Foot	PE	
Eriophorum tenellum	Rough Cotton-grass	PE	
Euphorbia purpurea	Glade Spurge	PE	
Festuca paradoxa	Cluster Fescue	PE	
Gaylussacia dumosa	Dwarf Huckleberry	PE	
Helianthemum bicknellii	Bicknell's Hoary Rockrose	PE	
Iris prismatica	Slender Blue Iris	PE	
Juncus dichotomus	Forked Rush	PE	
Juncus scirpoides	Scirpus-like Rush	PE	
Linum intercursum	Sandplain Wild Flax	PE	

Table 3-15. Threatened and Endangered Species in Chester County, PA. (continued)

Scientific Name	Common Name	State Status	Federal Status
Listera australis	Southern Twayblade	PE	
Lobelia puberula	Downy Lobelia	PE	
Lyonia mariana	Stagger-bush	PE	
Panicum scoparium	Velvety Panic-grass	PE	
Phyllanthus caroliniensis	Carolina Leaf-flower	PE	
Poa autumnalis	Autumn Bluegrass	PE	
Polygala cruciata	Cross-leaved Milkwort	PE	
Polygala curtissii	Curtis's Milkwort	PE	
Polygala incarnata	Pink Milkwort	PE	
Quercus falcata	Southern Red Oak	PE	
Quercus phellos	Willow Oak	PE	
Ranunculus fascicularis	Tufted Buttercup	PE	
Rhamnus lanceolata	Lance-leaved Buckthorn	PE	
Rhexia mariana	Maryland Meadow-beauty	PE	
Scleria minor	Minor Nutrush	PE	
Sericocarpus linifolius	Narrow-leaved White-topped Aster	PE	
Sisyrinchium atlanticum	Eastern Blue-eyed Grass	PE	
Spiranthes vernalis	Spring Ladies'-tresses	PE	
Sporobolus heterolepis	Prairie Dropseed	PE	
Triphora trianthophora	Nodding Pogonia	PE	
Vernonia glauca	Tawny Ironweed	PE	
Viburnum nudum	Possum-haw	PE	
Aplectrum hyemale	Puttyroot	PR	
Baccharis halimifolia	Eastern Baccharis	PR	
Cyperus schweinitzii	Schweinitz's Flatsedge	PR	
Lupinus perennis	Lupine	PR	
Orontium aquaticum	Golden Club	PR	
Rotala ramosior	Tooth-cup	PR	
Senecio anonymus	Plain Ragwort	PR	
Tipularia discolor	Cranefly Orchid	PR	
Zizania aquatica	Indian Wild Rice	PR	
Aristida purpurascens	Arrow-feathered Three Awned	PT	
Asplenium bradleyi	Bradley's Spleenwort	PT	
Bouteloua curtipendula	Tall Gramma	PT	
Carex tetanica	A Sedge	PT	
Chrysopsis mariana	Maryland Golden-aster	PT	
Ellisia nyctelea	Ellisia	PT	
Fimbristylis annua	Annual Fimbry	PT	
Hypericum majus	Larger Canadian St. John's-wort	PT	
Ilex opaca	American Holly	PT	
Juncus torreyi	Torrey's Rush	PT	
Magnolia tripetala	Umbrella Magnolia	PT	
Magnolia virginiana	Sweet Bay Magnolia	PT	

Table 3-15. Threatened and Endangered Species in Chester County, PA. (continued)

Scientific Name	Common Name	State Status	Federal Status
Phemeranthus teretifolius	Round-leaved Fame-flower	PT	
Poa paludigena	Bog Bluegrass	PT	
Scleria pauciflora	Few Flowered Nutrush	PT	
Symphyotrichum depauperatum	Serpentine Aster	PT	

Note: LE = Listed Endangered PR = Proposed Rare
N = No Current Legal Status PT = Proposed Threatened
PE = Proposed Endangered
Source: Pennsylvania Natural Heritage Program; http://www.naturalheritage.state.pa.us

3.18.2 Riegelsville – Alternative Site 2

The Pennsylvania Department of Environmental Protection and the Pennsylvania Natural Diversity Inventory (PNDI) were contacted regarding listed protected species at this Riegelsville – Alternative Site 2. PNDI indicated that three known rare, threatened, endangered, sensitive plant species or potential habitat for such species were located in the project area. The three listed plant species include the showy goldenrod (*Solidago speciosa var. speciosa*), small white-snakeroot (*Eupatorium aronaticum*), and Sprengel's sedge (*Carex sprengelii*). In addition, their responses showed that four animal species of special concern may occur within the Riegelsville – Alternative Site 2: red-bellied turtle, bog turtle, Eastern small-footed myotis, and Northern myotis.

A Preliminary Protected Species Assessment for Site 2 was completed in March 2005. No vegetation or animal species listed as rare, threatened, endangered, or of special concern in Pennsylvania were observed during the survey, although the survey was completed outside the time that the plants would be in flower. However, the Riegelsville – Alternative Site 2 does have on-site potential bog turtle habitats limted to the wetland areas shown in Figure 3-11. As recommended by the USFWS, a Phase I habitat survey would need to be completed to further determine the potential impact to the bog turtle as a result of the proposed action. The details of the species assessment are discussed in the report titled "*Preliminary Protected Species Assessment Report for the 260-Acre Riegelsville Site, Riegelsville, Pennsylvania"*, provided in Appendix C.

3.18.3 Dolington – Alternative Site 3

In January 2001 and September 2003, ENSR International was retained by Toll Brothers to conduct species assessments for the red-bellied turtle (*Pseudemys rubiventris*) and the bog turtle (*Clemmys muhlenbergii*), two listed turtle species which were detected in the area of Dolington – Alternative Site 3 by the Pennsylvania Natural Diversity Inventory (PNDI) database (ENSR, 2001 & 2003). ENSR concluded that the site's natural habitat was not likely to support the red-bellied turtle and bog turtle species on the Dolington – Alternative Site 3. As a result, project development is not expected to impact these two species. In addition, Mr. Christopher Urban of the Pennsylvania Fish and Boat Commission was quoted as agreeing with the conclusion by

stating… "According to your report (red-bellied turtle report), there is no suitable nesting, hibernating, basking, or foraging habitat for the red-bellied turtle within the project area." (PFBC, 2003).

Information relating to other species of special concern is not available for Dolington – Alternative Site 3, although information request letters have been sent to federal and state officials (Appendix B). While there are relatively few federally-listed species in Bucks County, the number of state-listed species is large (Table 3-16) and Dolington – Alternative Site 3 reconnaissance activities completed thus far have not evaluated for the potential of the occurrence of these species.

Table 3-16. Threatened and Endangered Species in Bucks County, PA.

Scientific Name	Common Name	State Status	Federal Status
INVERTEBRATES			
Alasmidonta heterodon	Dwarf Wedgemussel	LE	LE
VERTEBRATES			
Acipenser brevirostrum	Shortnose Sturgeon	PE	LE
Clemmys muhlenbergii	Bog Turtle	PE	LT, SAT
Acipenser oxyrinchus	Atlantic Sturgeon	PE	LT,C
Pseudemys rubriventris	Redbelly Turtle	PT	PS
Falco peregrinus	Peregrine Falcon	PE	PS:LE
Lepisosteus osseus	Longnose Gar	PC	
Enneacanthus obesus	Banded Sunfish	PE	
Lepomis megalotis	Longear Sunfish	PE	
Notropis chalybaeus	Ironcolor Shiner	PE	
Pseudacris triseriata kalmi	New Jersey Chorus Frog	PE	
Rana sphenocephala	Coastal Plain Leopard Frog	PE	
Bartramia longicauda	Upland Sandpiper	PT	
Cistothorus platensis	Sedge Wren	PT	
Myotis leibii	Eastern Small-footed Myotis	PT	
Pandion haliaetus	Osprey	PT	
PLANTS			
Alopecurus aequalis	Short-awn Foxtail	N	PS
Agalinis auriculata	Eared False-foxglove	PE	
Ammannia coccinea	Scarlet Ammannia	PE	
Carex bicknellii	Bicknell's Sedge	PE	
Carex bullata	Bull Sedge	PE	
Carex crinita var. brevicrinis	Short Hair Sedge	PE	
Carex typhina	Cattail Sedge	PE	
Chasmanthium laxum	Slender Sea-oats	PE	
Cyperus diandrus	Umbrella Flatsedge	PE	
Cyperus retrorsus	Retrorse Flatsedge	PE	
Echinochloa walteri	Walter's Barnyard-grass	PE	

Table 3-16. Threatened and Endangered Species in Bucks County, PA. (continued)

Scientific Name	Common Name	State Status	Federal Status
Eleocharis obtusa var. peasei	Wrights Spike Rush	PE	
Eleocharis parvula	Little-spike Spike-rush	PE	
Eleocharis quadrangulata	Four-angled Spike-rush	PE	
Epilobium strictum	Downy Willow-herb	PE	
Eriophorum gracile	Slender Cotton-grass	PE	
Euphorbia ipecacuanhae	Wild Ipecac	PE	
Eurybia spectabilis	Low Showy Aster	PE	
Helianthemum bicknellii	Bicknell's Hoary Rockrose	PE	
Heteranthera multiflora	Multiflowered Mud-plantain	PE	
Iris prismatica	Slender Blue Iris	PE	
Iris verna	Dwarf Iris	PE	
Juncus dichotomus	Forked Rush	PE	
Juncus scirpoides	Scirpus-like Rush	PE	
Linum intercursum	Sandplain Wild Flax	PE	
Listera cordata	Heart-leaved Twayblade	PE	
Lycopodiella alopecuroides	Foxtail Clubmoss	PE	
Lycopus rubellus	Bugleweed	PE	
Lyonia mariana	Stagger-bush	PE	
Myriophyllum farwellii	Farwell's Water-milfoil	PE	
Myriophyllum heterophyllum	Broad-leaved Water-milfoil	PE	
Panicum amarum var. amarulum	Southern Sea-beach Panic-grass	PE	
Panicum scoparium	Velvety Panic-grass	PE	
Parnassia glauca	Carolina Grass-of-parnassus	PE	
Poa autumnalis	Autumn Bluegrass	PE	
Polygala cruciata	Cross-leaved Milkwort	PE	
Polystichum braunii	Braun's Holly Fern	PE	
Potamogeton pulcher	Spotted Pondweed	PE	
Prunus maritima	Beach Plum	PE	
Ptilimnium capillaceum	Mock Bishop-weed	PE	
Pycnanthemum torrei	Torrey's Mountain-mint	PE	
Quercus falcata	Southern Red Oak	PE	
Quercus phellos	Willow Oak	PE	
Rhexia mariana	Maryland Meadow-beauty	PE	
Rhynchospora capillacea	Capillary Beaked-rush	PE	
Sagittaria calycina var. spongiosa	Long-lobed Arrow-head	PE	
Schoenoplectus smithii	Smith's Bulrush	PE	
Sedum rosea	Roseroot Stonecrop	PE	
Sericocarpus linifolius	Narrow-leaved White-topped Aster	PE	
Sisyrinchium atlanticum	Eastern Blue-eyed Grass	PE	
Sparganium androcladum	Branching Bur-reed	PE	
Triphora trianthophora	Nodding Pogonia	PE	
Triplasis purpurea	Purple Sandgrass	PE	
Trollius laxus sensu stricto		PE	

Table 3-16. Threatened and Endangered Species in Bucks County, PA. (continued)

Scientific Name	Common Name	State Status	Federal Status
Utricularia radiate	Small Swollen Bladderwort	PE	
Viburnum nudum	Possum-haw	PE	
Viola brittoniana	Coast Violet	PE	
Amaranthus cannabinus	Waterhemp Ragweed	PR	
Baccharis halimifolia	Eastern Baccharis	PR	
Eleocharis olivacea	Capitate Spike-rush	PR	
Lupinus perennis	Lupine	PR	
Opuntia humifusa	Prickly-pear Cactus	PR	
Orontium aquaticum	Golden Club	PR	
Potamogeton zosteriformis	Flat-stem Pondweed	PR	
Rotala ramosior	Tooth-cup	PR	
Sagittaria subulata	Subulate Arrowhead	PR	
Schoenoplectus fluviatilis	River Bulrush	PR	
Senecio anonymus	Plain Ragwort	PR	
Tipularia discolor	Cranefly Orchid	PR	
Zizania aquatica	Indian Wild Rice	PR	
Aristida purpurascens	Arrow-feathered Three Awned	PT	
Bidens bidentoides	Swamp Beggar-ticks	PT	
Carex alata	Broad-winged Sedge	PT	
Carex prairea	Prairie Sedge	PT	
Carex sterilis	Sterile Sedge	PT	
Carex tetanica	A Sedge	PT	
Chrysopsis mariana	Maryland Golden-aster	PT	
Eleocharis intermedia	Matted Spike-rush	PT	
Ellisia nyctelea	Ellisia	PT	
Eriophorum viridicarinatum	Thin-leaved Cotton-grass	PT	
Euthamia tenuifolia	Grass-leaved Goldenrod	PT	
Ilex opaca	American Holly	PT	
Lycopodiella appressa	Southern Bog Clubmoss	PT	
Magnolia tripetala	Umbrella Magnolia	PT	
Magnolia virginiana	Sweet Bay Magnolia	PT	
Nymphoides cordata	Floating-heart	PT	
Ptelea trifoliata	Common Hop-tree	PT	
Scleria pauciflora	Few Flowered Nutrush	PT	
Symphyotrichum novi-belgii	New York Aster	PT	
Utricularia intermedia	Flat-leaved Bladderwort	PT	

Note: LE = Listed Endangered PR = Proposed Rare
N = No Current Legal Status PT = Proposed Threatened
PE = Proposed Endangered

Source: Pennsylvania Natural Heritage Program; http://www.naturalheritage.state.pa.us

3.19 Exotic and Invasive Species

Executive Order 11987, Exotic Organisms, addresses requirements related to the control of exotic species. Exotic and invasive species are those plants or animals which are not native to Pennsylvania, but were introduced as a result of human-related activities. Exotic and invasive species have fewer natural enemies and may have a higher survival rate than native species. Thus, control or removal of exotic and invasive species from native natural communities is desirable.

A variety of invasive plants are distributed in SE Pennsylvania and are considered by resource agencies to be "noxious weeds". The state requires that certain noxious weeds be managed to diminish their spread and it prohibits the sale or importation of other species. Plants which are considered to be noxious weeds in SE Pennsylvania are listed in Tables 3–17.

Table 3-17. Pennsylvania Noxious Weeds

Scientific Name	Common Name	Citation
Alliaria petiolata	Garlic Mustard	1
Carduus nutans	Musk thistle	1, 2
Cirsium arvense	Canada thistle	1, 2
Cirsium vulgare	Bull thistle	1, 2
Datura stramonium	Jimsonweed	1, 2
Galega officinalis	Goatsrue	1, 2
Lythrum salicaria	Purple Loosestrife	1, 2
Microstegium vimineum	Japanese stilt grass	1
Phragmites australis	Common reed	1
Sorghum bicolor ssp. drummondii	Shattercane	1, 2
Sorghum halepense	Johnson grass	1, 2
Eleagnus umbellate	Autumn olive	1
Lonicera maackii	Amur honeysuckle	1
Lonicera morrowii	Morrow's honeysuckle	1
Lonicera standishii	Standish honeysuckle	1
Lonicera tartarica	Tartarian honeysuckle	1
Lonicera japonica	Japanese honeysuckle	1
Rosa multiflora	Multiflora rose	1, 2
Acer platanoides	Norway maple	1
Ailanthus altissima	Tree of heaven	1
Celastrus orbiculatus	Oriental bittersweet	1
Polygonum perfoliatum	Mile-a-minute vine	1, 2
Polygonum cuspidatum	Japanese Knotweed	1
Pueraria lobata	Kudzu	1, 2
Heracleum mantegazzianum	Giant Hogweed	2
Cannabis sativa	Marijuana	2

Sources: 1 = Pennsylvania Department of Conservation and Natural Resources, 2005
2 = Pennsylvania Department of Agriculture, 2005

3.19.1 Pennhurst – Alternative Site 1

The wetland and stream corridors at Pennhurst – Alternative Site 1 were dominated by the noxious weed, *Phragmites australis* during a site visit in June, 2004. The presence of other noxious weeds was not noted during the 2004/05 site visits, although "thistles" were reported. It is likely that a variety of state-listed noxious weeds occur on the Pennhurst – Alternative Site 1 and would need to be eradicated and/or managed.

3.19.2 Riegelsville – Alternative Site 2

The noxious weed *Rosa multiflora* is a dominant species in some of the on-site wetlands. Japanese honeysuckle was also observed on-site in 2005. The site visits were conducted during the late winter when identification of perennial species is difficult and annual plants are not in evidence. It is likely that other noxious weeds (perennials and annuals) are present on the Riegelsville – Alternative Site 2, but not reported. The multiflora rose is the most prolific invasive, exotic specie observed on Riegelsville – Alternative Site 2. It occurred in dense homogeneous thickets on creek banks, in and around wetland areas, and in lower concentrations in forested areas. Multiflora rose offers certain limited habitat value for wildlife including escape and nesting cover for birds and small mammals and food from leaves and its fruit. However, the thorny, dense growth habitat has the potential to exclude native species and will aggressively dominate disturbed and un-maintained areas. It is likely that a variety of state-listed noxious weeds occur on the Riegelsville – Alternative Site 2 and would need to be eradicated and/or managed.

3.19.3 Dolington – Alternative Site 3

Four species of noxious weeds were observed at the Dolington – Alternative Site 3 in September 2005: multiflora rose, Japanese honeysuckle, common reed, and common privet. The multiflora rose is the most prolific invasive, exotic species observed on the Dolington – Alternative Site 3. It occurred in dense homogeneous thickets on creek banks, in and around wetland areas, and in lower concentrations in forested areas and hedgerows. The common privet and Japanese honeysuckle were observed commonly throughout the upland and low-lying woodlands on Dolington – Alternative Site 3, however in less dense concentrations in the forested areas. Multiflora rose offers certain limited habitat value for wildlife including escape and nesting cover for birds and small mammals and food from leaves and its fruit. However, the thorny, dense growth habitat has the potential to excluding native species and will aggressively dominate disturbed and un-maintained areas. Other invasive or exotic species may occur on the Dolington – Alternative Site 3 and are not recorded due to the limited seasonal observation of vegetation. It is likely that a variety of state-listed noxious weeds occur on the Dolington – Alternative Site 3 and would need to be eradicated and/or managed.

3.20 Environmental Justice

Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) requires that federal projects consider whether the project would have an adverse effect on minority or low-income populations.

Chester and Bucks Counties have a high average income with Chester County having the highest income levels in southeastern Pennsylvania (2000 census data; see also Section 3.5). In East Vincent Township of Chester County, which includes Pennhurst – Alternative Site 1, educational levels and per capita income are both slightly below the county wide average. Riegelsville – Alternative Site 2 is in an area with similar per capita income (see Section 3.5). Per capita incomes in Upper Makefield Township, which includes Dolington – Alternative Site 3, is roughly double the Bucks County average. None of the three sites are located in low-income areas.

According to 2000 census data, 90.8% of the population in census tract 3012.01, which contains Pennhurst – Alternative Site 1, is of the white race. The remaining population in this census tract is 8.5% black or African American and 0.7% two or more races (USCB, 2000). According to 2000 census data, Riegelsville – Alternative Site 2, located in census tract 1036, is 99.2% white, 0.1% black or African American, 0.2% Asian, 0.1% two or more races, and 0.3% some other race (USCB, 2000). Dolington – Alternative Site 3 is located in census tract 1054, which is 97.1% white, 0.8% black or African American, 1.3% Asian, 0.5% two or more races, 0.1% American Indian or Alaskan Native, and 0.2% some other race (USCB, 2000). Thus, the three sites are located in areas with similar minority population representation.

The economic and demographic information available for the areas surrounding the three alternavie sites indicate that the siting of a national cemetery at any of these sites would not have a predictable adverse effect on minority or low-income populations.

4.0 Environmental Consequences and Mitigation Opportunities

Section 4.0 describes the environmental consequences associated with the four alternatives defined in Section 2.0.

4.1 Geology

Under the No Action Alternative, there would be no impacts on the geology of the area.

Under Proposed Alternatives, Pennhurst – Alternative Site 1, Riegelsville – Alternative Site 2 and Dolington – Alternative Site 3 minimal impacts to the geology of the area are expected, resulting from the development of a cemetery at the sites. It is assumed that excavations for stormwater basins, burial vaults, building foundations into the subsoils, etc., will be required, but no large-scale excavations into the deeper strata would occur.

Proximity of bedrock at Pennhurst – Alternative Site 1 and Dolington – Alternative Site 3, and proximity of groundwater at the Riegelsville – Alternative Site 2 will pose challenges for vault placement. Similarly, at the Riegelsville – Alternative Site 2, the existence of limestone bedrock will pose a challenge due to the occurrence of sinkholes on the site. The potential shallow depth-to-bedrock and depth-to-groundwater may impede vault placement without alteration of the natural hydrology and/or placement of substantial fill material. Cemetery development at these sites may require the addition of up to several feet of fill to increase surface elevations above the bedrock and water table in certain areas. The filling activities will need to be planned with attention to using material that will provide the proper drainage characteristics. An additional geotechnical assessment is recommended at these sites to determine the depth-to-bedrock, depth-to-groundwater or to further delineate the karst topography areas of limestone to determine the encumbrance with regards to the engineering and planning for the future development of the national cemetery.

4.2 Soils

Under the No Action Alternative, there would be no new impacts to site soils.

Construction of a veteran's cemetery on Pennhurst – Alternative Site 1, Riegelsville – Alternative Site 2 or Dolington – Alternative Site 3, would result in a moderate adverse impact to soils as a result of the mass grading and disturbance of existing prime farmland. In addition, the anticipated placement of several feet of fill, as discussed above, would also impact soil conditions.

As previously discussed, it is anticipated that the development of the National Cemetery would include the construction of buildings, roadways, and the installation of crypts. This typically

involves mass grading. Typical burial practices usually involve the placement of a concrete burial vault to allow interment during winter months and to prevent subsurface soil subsidence. The placement of vaults makes for a smooth surface in the burial area. It is anticipated that vaults would be installed during the initial site development, with soil fill placed over the vaults and then sodded. The spoils would be removed from the pre-positioned vaults in a single phase during cemetery construction. For several reasons, the installation of vaults would be completed with the vault bottom at an elevation above the normal high water table.

Earthmoving is the excavating of lakes, pits, and depressions, and/or mounding, stockpiling, creating berms, installing or transporting fill. Earthmoving activities are regulated because of the adverse impacts these activities may cause to the environment. Earthmoving activities may adversely impact watersheds, drainage patterns, native habitats, water quality, historical resources, and may cause erosion and sedimentation problems. Changes in topography, such as filling of drainageways, could increase the flood potential of the surrounding area. Additionally, earthmoving activities may cause adverse visual, noise, vibration, dust, and safety impacts to surrounding areas.

Burying topsoil would destroy the biota, many of which are necessary for ecological health/function. As mitigation against this adverse impact, NCA could stockpile topsoil in a manner that protects its natural biota, and then re-use the topsoil on site once the additional fill and vaults have been placed. This type of soil conservation mitigation measure will have the added benefit of assisting with water conservation and conserving soil productivity.

Construction activities, excavation for fill, and site grading would result in the increased potential for sediment impacts to on-site and adjacent wetlands and surface waters. Some soil erosion would also occur during construction activities; however, implementation of a sediment and erosion control plan, including use of best management practices (BMPs) such as silt fencing and hay bales, would dramatically reduce erosion associated with the project.

Mitigation against soil erosion that should be considered during cemetery construction include:

- Require grading contractor to prepare and adhere to a plan for management of excavated material
- Stabilize soft / loose soils during excavation and fill activities
- Soft and near surface soils should be stabilized as soon as practical after disturbance.
- A qualified engineer should monitor construction, excavation, fill and compaction activities.
- Installation of silt fences / erosion control fabric on slopes created during construction.
- Re-vegetation of bare areas as soon as practical after their creation.

4.2.1 Farmland Protection Policy Act Compliance

Under the No Action Alternative, there would be no new impacts to farmland.

Although cemetery construction plans were not available during preparation of this report, it is assumed that implementation of Pennhurst – Alternative Site 1, Riegelsville – Alternative Site 2, or Dolington – Alternative Site 3 would also result in the disturbance to existing prime farmland soils. Potential impact is anticipated to be minimal at Site 1 and moderate at Sites 2 and 3. Existing acreages of prime and/or statewide important farmland soils present at Pennhurst – Alternative Site 1, Riegelsville – Alternative Site 2, and Dolington – Alternative Site 3 are 72 acres, 252 acres and 182 acres, respectively (Figures 3-19 to 3-21).

According to the NRCS, the federal Farmland Protection Policy Act (FPPA) was created to protect farmland and address urban sprawl (USDA NRCS, 1994). Consequently, soils specifically suited to agricultural uses may be protected under FPPA. Conversion of these soils from agricultural to nonagricultural uses may be limited. Specifically protected are cultivated areas identified by the FPPA as prime farmland, unique farmland, and farmland that is of local or statewide importance. Areas that have been cultivated within the last five years may also qualify. It is anticipated that all three alternatives would result in the conversion of viable farmland to a non-renewable use. The NRCS offices in each respective county were contacted in order to determine whether or not portions of the alternative sites considered in this EA are regulated by the FPPA (USDA NRCS, 1994); however, responses from these offices have not yet been received. This item should be completed prior to the proposed cemetery development at any of the alternative sites. Form AD-1006 should be completed and submitted to the NRCS office in Chester or Bucks County in order to assist in determining the disposition of the portions of the site that may be protected by the FPPA (USDA NRCS, 1999).

Of the alternative sites considered in this EA, it should be noted Pennhurst – Alternative Site 1 is no longer used for agriculture, and has fewer acres of prime farmland compared with Sites 2 and 3. However, sites Riegelsville – Alternative Site 2, and Dolington – Alternative Site 3 currently consist of actively farmed cropland, leased by local farmers. The proposed development of a National Cemetery would result in the loss of occupation for the property farmers. However, developing the selected alternative site in a phased approach, by only converting enough land for a 10-year cemetery use, would allow the farmers to continue to farm sections of the site not yet developed and also delay the conversion of viable farmland to a non-renewable use.

4.3 Surface Water and Water Quality

Under the No Action alternative there would be no new impacts to water resources.

The proposed action would cause minor impacts to water resources at the Pennhurst – Alternative Site 1 in the following ways: temporary water quality modification during construction (discussed below under stormwater concerns); increase impervious surfaces on-site; and runoff of excess

water and landscaping chemicals as a part of lawn/turf maintenance activities. As discussed in Section 3.10, a section of the Schuylkill River along the east side of Site 1 is listed as an impaired water body [Section 303(D) list] along much of its main channel for a variety of reasons, including acid mine drainage, agricultural runoff, pesticides, metals, and priority organic compounds. The development of a national cemetery would improve the water quality along this impaired section of the river by eliminating the agricultural runoff associated due the Site's former agricultural fields. Pesticide impairment could be reduced by the proposed action by limiting or ceasing the application of these chemicals during cemetery maintenance. The other impairments associated with the river should not be impacted by the proposed action.

The proposed action would likely cause no impact or improvements to water resources at Riegelsville – Alternative Site 2 and Dolington – Alternative Site 3. The Middle Delaware-Musconetcong River watershed, which encompasses both Sites 2 and 3, is listed as an impaired water body [Section 303(D) list] along much of its main channel for a variety of reasons including agricultural runoff, pesticides, and metals (USEPA, 1998). The development of a national cemetery at either alternative site would improve the water quality of this watershed by reducing/eliminating the agricultural runoff associated with the current usage of the sites. As discussed above with Site 1, depending on the management practices at the cemetery, the proposed action may or may not impact the current pesticide impairment in the Delaware-Musconetcong River. The proposed action should not impact the metal impairment associated with this watershed.

The mitigation measures discussed above for minimizing soil erosion, in addition to others described below for stormwater management, floodplain protection, and wetland protection will be implemented during construction to also protect surface water quality.

Mitigation measures that can be implemented during cemetery operation and management to protect water quality include:

- Selecting or improving internment sites to be above the seasonal water table.
- Managing turf under an integrated plan to minimize the use of pesticides and fertilizers.
- Implementation of an integrated pest management plan (IPM).
- Landscaping with native plants.
- Maximizing stormwater retention times on-site.
- Creating sizable vegetated (natural) buffer areas in and around wetlands and surface waters.

4.3.1 Stormwater

According to the US Environmental Protection Agency (EPA), the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The NPDES Stormwater Program regulates stormwater discharges. Stormwater runoff from construction sites contains

sediments and other pollutants which degrade water quality and habitat of surrounding streams and water bodies. The NPDES Stormwater Program requires all construction sites 1 acre or larger, or smaller sites within a larger development, to obtain a permit to discharge stormwater and utilize BMPs to mitigate the effects of the construction activity (USEPA, NPDES, 2005).

Cemetery construction at any of the alternative sites will require compliance with the federal stormwater program, and implementation of BMPs for stormwater control. An additional stormwater management consideration could be the construction of storm water detention/retention areas which would collect storm water runoff to enhance infiltration before discharge to surface waters. Compliance with the stormwater management sections of 40 CFR 122 (USEPA's NPDES Regulations) is anticipated with reasonable implementation of State/County BMP's.

During construction of the proposed national cemetery, impacts to the impaired water bodies [Section 303(D) List] in the area of the three alternative sites can be mitigated by implementing some of the following measures:

- Controlling all stormwater runoff and erosion from the site with the use of silt fencing.
- Managing turf without, or with minimal, use of pesticides or fertilizers.
- Maximizing stormwater retention times on-site through detention/retention ponds.
- Creating sizable vegetated (natural) buffer areas in and around wetlands and surface waters.

These mitigative measures will reduce the agricultural runoff and pesticides added to these rivers under the current area activities.

4.3.2 Floodplain

In accordance with the requirements of EO 11988, the National Cemetery Administration must demonstrate that there is no practicable alternative to carrying out the Proposed Action within the 100-year floodplain.

Under the No Action Alternative, there would be no impacts to the floodplain.

For Pennhurst – Alternative Site 1 and Dolington – Alternative Site 3, the majority of the proposed cemetery would be located outside the 100-year floodplain. Buildings, such as the Public Information Center, Administration/Maintenance Complex, and Committal Service Shelter, will be constructed above the 100-year floodplain. Constructing the new buildings outside the floodplain would reduce the risk of flood loss and dramatically reduce the impacts from floods on human safety, health and welfare.

For Riegelsville – Alternative Site 2 there would be no impacts to the 100-year floodplain because no 100-year floodplains exist on this site.

4.3.3 Surface Water Protection

Under the No Action Alternative, no impact to current surface water quality is expected.

Under Pennhurst – Alternative Site 1, Riegelsville – Alternative Site 2, and Dolington – Alternative Site 3, there is potential for minor impacts to the surface waters on the sites. Surface water quality on the sites could be maintained with the creation of appropriately-sized stream and wetland buffers (see Section 4.5), implementation of an appropriate turf-management program that minimizes fertilizer or pesticide runoff, and restoration of native vegetation via exotic species management (discussed below).

4.4 Groundwater

Under the No Action Alternative, there would be no impacts to groundwater resources at the three alternative sites (Pennhurst – Alternative Site 1, Riegelsville – Alternative Site 2 and Dolington – Alternative Site 3).

With regard to each site, the development of the national cemetery is not anticipated to have negative impacts on the groundwater provided the site is developed so that any interments are above the seasonal high groundwater level. Assuming a burial depth of five to seven feet below ground surface in conjunction with the seasonal high water tables requires additional fill in order to provide a suitable separation from seasonal groundwater for the interments. Periodic saturation at the grave sites would appear difficult to avoid; therefore, the selected Site should be designed to ensure graves are not saturated for long periods of time.

In terms of developmental costs, water table elevations at each site could require at least several feet of fill for the development in certain areas. On-site subsoils, which generally consist of a mixture of silt loam varieties, would be suitable for the selected site grading fill.

At present, there are groundwater wells at each of the sites. These wells are used either for on-going agricultural practices or residential water supplies. The wells will need to be re-evaluated, re-permitted, or "closed" in consultation with local and state offices.

A potential for negative impacts to the groundwater is due to the use of formaldehyde in modern embalming techniques. However, the funeral services industry claims much of the formaldehyde and other chemicals used in embalming fluids will combine with deteriorating proteins to form complex compounds that are relatively stable. As such, use of the selected site for interments should not pose a significant threat to groundwater quality.

There is an extremely limited body of literature available on research conducted in the US on migration of embalming fluids (formaldehyde in particular) into soils or groundwater. The funeral services industry has conducted a number of studies on the environmental impact of funeral home wastewater. In most of those studies the industry concluded that properly constructed and maintained septic systems neutralize the potential hazards (NFDA, 2005; NFDMA, 2002). It should be noted that no embalming activities will be conducted on the selected alternative site and no embalming fluids will be discharged into the proposed septic or sanitary sewer system. Based on this funeral industry data, funeral crypts which are properly built and maintained should prevent embalming fluids or pathogens from entering the surrounding environment.

4.5 Wetlands

Under the No Action Alternative, there would be no new impacts to wetlands.

For Pennhurst – Alternative Site 1, the proposed action would not significantly impact the wetland resources of the area. One wetlands area and two jurisdictional stream features were identified during the site visits that would be potential locations for mitigation via enhancement for Site 1. The total area of wetlands and streams on the Pennhurst – Alternative Site 1 is approximately 0.1 acre and 3383 linear feet, respectively. Although site design has not been completed, it is likely that impacts to onsite wetlands will be avoided by the desired cemetery development and/or minimized. If impacts were to occur, The Clean Water Act (CWA) Section 404 permit program relies on the use of compensatory mitigation to offset unavoidable damage to wetlands and other aquatic resources, which can be accomplished by several options. Mitigation for wetland impacts may take place on-site, off-site, through mitigation banks, or be funded by in-lieu fees. Mitigation may include creation, enhancement or restoration of wetlands and their functions or, in some cases, may include preservation of wetlands and associated upland buffers (USACE, 2005).

For Riegelsville – Alternative Site 2, there is potential for minor impacts to the wetlands. Four wetland areas and four jurisdictional stream features were identified during the site visits that would be potential locations for on-site mitigation. The total area of wetlands and streams on the Riegelsville – Alternative Site 2 is approximately 4.9 acres and 5,072 linear feet respectively. Based on the layout of the streams and wetlands on Riegelsville – Alternative Site 2, a number of road and/or utility crossings would have to be implemented to allow reasonable access. Fill of significant areas of streams and/or wetlands for burial space or site infrastructure is not anticipated for development of the Riegelsville – Alternative Site 2. Should unavoidable minor fill be required for the project, it will be done in accordance with CWA Section 404. The Clean Water Act (CWA) Section 404 permit program relies on the use of compensatory mitigation to offset unavoidable damage to wetlands and other aquatic resources, which can be accomplished by several options. Mitigation for wetland impacts may take place on-site, off-site, through mitigation banks, or be funded by in-lieu fees. Mitigation may include creation, enhancement or

restoration of wetlands and their functions or, in some cases, may include preservation of wetlands and associated upland buffers (USACE, 2005).

Under Dolington – Alternative Site 3, there is potential for minor impacts to the wetlands. Based on the layout of the streams and wetlands on Dolington – Alternative Site 3, a number of road and/or utility crossings would have to be implemented to allow reasonable access. Fill of significant areas of streams and/or wetlands for burial space or site infrastructure is not anticipated for development of the Dolington – Alternative Site 3. Should unavoidable minor fill be required for the project, it will be done in accordance with CWA Section 404. The Clean Water Act (CWA) Section 404 permit program relies on the use of compensatory mitigation to offset unavoidable damage to wetlands and other aquatic resources, which can be accomplished by several options. Mitigation for wetland impacts may take place on-site, off-site, in mitigation banks, or be funded by in-lieu fees. Mitigation may include creation, enhancement or restoration of wetlands and their functions or, in some cases, may include preservation of wetlands and associated upland buffers (USACE, 2005). Five wetlands areas were identified during the site visits that would be potential locations for on-site mitigation. The total area of wetlands and associated streams on the Dolington – Alternative Site 3 is apporoximately 6.2 acres and 6,431 linear feet, respectively.

For wetlands that will not be impacted as a result of the cemetery development, upland buffers would be placed on streams and wetlands to ensure they are not disturbed. The local zoning ordinance specifies a minimum buffer distance from the top of a stream bank as 25 feet on both sides of the stream. Though, if the slope on the first 25 feet of the stream bank is greater than ten percent, the buffer distance increases to 50 feet on both sides of the stream (Takacs, 2005). Limited exotic and invasive species currently occur in the on-site wetlands and stream buffers. As those undersirable species are controlled, habitat quality should improve thereby resulting in an increase in wetlands functions and values.

For Pennhurst – Alternative Site 1, Riegelsville – Alternative Site 2, and Dolington – Alternative Site 3, there is potential for minor impacts to the wetlands on the site. It is anticipated that the site chosen for construction of the new cemetery may require filling of federal jurisdictional wetlands.

Depending on the type and extent of waters of the U.S. (including wetlands) to be impacted, Section 404 permitting requirements can range from activities that are authorized under a General Permit (GP) or requiring a Section 404 Individual Permit (IP) from the USACE. Wetlands permitting requirements are generally based on the acreage of impact, however, adjacent streams that directly influence the wetlands in question are also considered.

Under GP No. 7, the Pennsylvania Department of Environmental Protection (DEP) authorizes; (1) the construction, operation, and maintence of a minor road crossing across wetlands which

disturbs less than 0.1 acre of wetlands, (2) the construction, operation, and maintence of a minor road crossing across a stream where the watershed drainage area is 1.0 square mile or less, and (3) the removal of an existing minor road crossing across a stream where the drainage area is 1.0 square mile or less. This authorization is pursuant to Section 7(b) of the Dam Safety and Encroachment Act, 32 P.S. 693.7(b) and the rules and regulations promulgated thereunder at 25 Pennsylvania Code §§105.441-105.449.

If jurisdictional areas to be impacted exceed the above described thresholds, then a Section 404 Individual Permit (IP) would likely be required for the proposed development. The IP process involves a rigorous documentation procedure and will require addressing protected species and cultural resources issues, alternatives analysis, wetland impact avoidance and minimization strategies, and compensatory wetland mitigation. Given the relatively small wetland acreage on the three alternative sites avoiding and minimizing wetland impacts should be a design priority.

Permitting under Section 404 of the Clean Water Act may require coordination with interested agencies including, but not limited to, the USACE, the PADEP, the U.S. Fish and Wildlife Service (USFWS), and the U.S. Environmental Protection Agency (USEPA).

If future development of these properties is considered, on-site wetland areas and stream areas should be delineated and surveyed prior to site development, and the jurisdictional wetland determinations/delineations and stream assessments be verified by the USACE and PADEP. The verification will provide appropriate documentation for VA-NCA files concerning the area of jurisdictional waters of the U.S. located on the subject property. An overlay of proposed site plans on verified jurisdictional boundaries would then allow an approximation of impacts and subsequent determination of permitting requirements.

A GP would require a discussion of the project's purpose and need, measures taken to avoid/minimize impacts, wetland mitigation strategies, and the likelihood of having to address storm-water management. In the event project impacts exceed GP thresholds, an Individual Permit may be required.

Cemetery construction will require mitigation to protect water quality in wetlands and streams. At a minimum this should include:

- Clearly marked boundaries to keep heavy equipment out of the critical areas and their buffers,
- Implementation (and maintenance) of erosion-control BMPs,
- Regular on-site inspections of BMP's by a qualified engineer.

Cemetery operations will require that staff and visitors respect and protect critical areas. At a minimum this should include:

- Establish and maintain vegetated buffers around critical areas.

- Implement an integrated pest management (IPM) program designed to keep turf chemicals (fertilizers, fungicides, etc.) out of the critical areas and their buffers.
- Manage stormwater in a way that it does not degrade the critical areas.

4.6 Vegetation, Fish and Wildlife

Under the No Action Alternative, there would be no impacts to vegetation, fish, and wildlife.

Cemetery development at Alternative Sites 1-3 will include clearing and grading activities that will result in the complete removal of existing vegetation in large areas. This will not only result in replacement of existing vegetation with turf, but will also result in unavoidable mortality to burrowing and less mobile fauna. However, large areas of Alternative Sites 1 and 2 are active farmland. The conversion of these row crops to internment areas will have a less severve impact on vegetation fish and wildlife.

Site development will occur in phases so mobile wildlife will be able to seek refuge elsewhere on-site. At build-out natural wildlife habitat will be restricted to wooded buffers, streams and wetlands, associated buffers, and internment area and maintained turf areas (which may be attractive to Canada geese, rabbits, and possibly deer).

Cemetery operations will impact the on-site vegetation and wildlife in the following ways:

- Site vegetation mostly will change from current conditions (i.e. agricultural lands at Sites 2 and 3 and old-field succession/scrub forest at Site 1) to turf and ornamental plantings
- Gun salutes will occur with committal ceremonies which may deter/frighten some wildlife
- Ornamental plantings are likely to include shade trees which may improve song-bird habitat at Sites 2 and 3.
- The conversion of agricultural lands at sites 2 and 3 to cemetery use may result in improved water quality in on-site streams and wetlands over time due to less soil erosion and reduced filling and agrochemical inputs.
- Plant species diversity is likely to increase at Riegelsville – Alternative Site 2 and Dolington – Alternative Site 3 as a result of cemetery development, but it would probably decrease at Pennhurst – Alternative Site 1.

In general, it is usually the desire of the NCA to retain cemetery sites in as natural a state as possible, retaining features such as natural drainage ways, valuable trees, etc. Therefore, construction activities should avoid and/or minimize impacts to these features.

NCA will have an opportunity to incorporate native species into its planting plan at the site, which could ultimately result in more habitat diversity for a wider variety of species at sites – Alternative Site 2 and Dolington – Alternative Site 3. For example, managing/eradicating

nuisance species in on-site stream corridors and wetlands, and replacing them with native species would increase available habitat for wildlife and birds.

Most of the species expected to inhabit the sites are mobile generalist species that can survive within wide ranges of food and habitats, and/or are migratory and would use the sites seasonally. Therefore, it is anticipated that most wildlife species would avoid the disturbance during construction activities. The surrounding available habitat could support additional individuals, but the overall carrying-capacity of the habitat would be reduced. Phased construction will provide some relief to resident wildlife. Clearing of vegetation and earth moving activities would result in some unavoidable mortality to burrowing and less mobile fauna.

4.7 Threatened and Endangered Species

Under the no action alternative, there would be no impacts to threatened and endangered species.

The Pennhurst – Alternative Site 1 has the potential to support the Federally-protected bog turtle, bald eagle, and small whorled pogonia populations. Given the high degree of historic and current anthrpogenic disturbance at this site, it is unlikely that these species are present. The Riegelsville – Alternative Site 2 has the potential to support Federally-protected bog turtle populations. The Dolington – Alternative Site 3 has been confirmed to lack potential bog turtle habitat and would not appear to support populations of other Federally-listed species known to occur in Bucks County.

Although all three sites are unlikely to support populations of listed threatened and endangered species, a final determination of the presence or absence of these species and the potential impact of the proposaed action has not been concluded. This is due to the limited scope of the protected species investigations and the timing of field observations, having occurred outside times when the animals of concern would have been most active and/or the plants of concern would have been flowering.

When the site-selection process is complete, a comprehensive protected species survey should be completed at the selected site. The same should take place within the flowering season of listed plants and within the breeding/spawning/nesting season of listed animals. Personnel from the USFWS, PA Fish and Boat Commission, and Pennsylvania Natural Diversity Inventory should be invited to participate in the survey.

If a listed species is found on the site, a conservation plan will be developed in consultation with the appropriate state and federal agencies. Avoiding any encroachment into the protected species habitat would be the prime objective of such a plan, however, if that interfered substantially with NCA's ability to deliver services at the site, then appropriate and prudent measures to minimize the effect of the project would be considered.

The majority of the development would occur in man-induced landscapes including old fields and agricultural fields. We further understand that the facility will not require significant impacts to jurisdictional wetlands and other waters of the U.S. Site discharges will be properly permitted and managed to avoid significant off-site impacts to fish and wildlife and their habitats.

Based on information obtained from USFWS, State agencies, other reports and the site development requirements, a determination of "may affect, not adversely effect" has been made for Federally-listed species is offered for the three Alternative Sites that have the potential to occur in the vicinity of the site

This determination is support by the either the lack of suitable habitat on the site, the unlikelihood of occurrence of these listed species on the site, and the expected limited off-site impacts of the proposed development.

Details relating to on-site investigations for protected species, and agency correspondence related to this issue can be found in Sections 3.18 and Appendix C.

4.8 Exotic and Invasive Species

The NCA should comply with EO 13112, Invasive Species, which requires all federal agencies to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause.

Under the No Action Alternative, there would be no impact as a result of invasive species.

Under the Proposed Action Alternatives, all three sites have invasive species that would need to be controlled as part of site development and operation. The control of invasive species would allow for native species to flourish. A more intensive survey should be completed to identify invasive species and their distribution on the selected site prior to site development. Additionally, it is anticipated that the selected site would require a long-term invasive species management plan to control invasive species. All efforts associated with control of nuisance species should be conducted under the auspices of the cemetery's IPM, in order to ensure that any herbicides used do not end up in the food chain.

4.9 Archaeological Resources and Historical Structures

4.9.1 No Action-Alternative 4

The selection of this alternative would not impact NRHP eligible cultural resources.

4.9.2 Pennhurst - Alternative Site 1

The Pennhurst - Alternative Site 1 contains a NRHP eligible district, an associated cemetery, and two (2) previously identified archaeological sites on the subject property. The Pennhurst State School & Hospital is considered eligible for inclusion in the NRHP under Criterion A and Criterion C of the National Register Criteria for Evaluation. While much of the subject property has been historically impacted by the development of the PHHS, the existence of two previously identified archaeological sites confirms the probability that additional archaeological sites are likely present on the Pennhurst - Alternative Site 1 property.

Selection of this alternative for the location of a National Cemetery would result in a finding of historic properties affected under the rules governing the protection of historic properties. However, measures could potentially be employed by the VA - NCA that would avoid a finding of historic properties affected-adverse effect. Such measures would include consultation with the SHPO and other consulting parties as specified under 36 CFR 800.2 at the earliest possible date, SHPO review of project design plans, and incorporation of SHPO recommendations to ensure consistency with the Secretary of Interior's standards for the treatment of historic properties. A Phase I Intensive Cultural Resource Assessment is recommended in order to meet the standard of identification of historic properties specified in 36 CFR 800.4. Upon completion of the Phase I Intensive Cultural Resource Assessment, the VA would be in an informed position to allow avoidance of NRHP eligible resources on the subject property.

4.9.3 Riegelsville-Alternative Site 2

The Riegelsville - Alternative Site 2 contains one previously identified archaeological site (36Bu123) and seven previously unidentified archaeological sites. Additionally, the Riegelsville - Alternative Site 2 property is located adjacent to the Riegelsville NRHP eligible District and three individual NRHP eligible properties, and is within the viewshed of the Delaware Canal National Landmark.

Based on the results of the preliminary assessment, the Riegelsville - Alternative Site 2 exhibits a high potential for the occurrence of additional cultural resources, particularly low intensity archaeological sites that may be identified through Phase I intensive archaeological survey.

Selection of this alternative for the location of a National Cemetery would result in a finding of historic properties affected under the rules governing the protection of historic properties. However, measures could potentially be employed by the VA - NCA that would avoid a finding of historic properties affected - adverse effect. Such measures would include consultation with the SHPO and other consulting parties as specified under 36 CFR 800.2 at the earliest possible date, SHPO review of project design plans, and incorporation of SHPO recommendations to ensure consistency with the Secretary of Interior's standards for the treatment of historic properties. A Phase I Intensive Cultural Resource Assessment is recommended in order to meet

the standard of identification of historic properties specified in 36 CFR 800.4. Upon completion of the Phase I Intensive Cultural Resource Assessment, the VA would be in an informed position to allow avoidance of NRHP eligible resources on the subject property.

4.9.4 Dolington - Alternative Site 3

The Dolington - Alternative Site 3 property contains one (1) National Register of Historic Places (NRHP) Historic District partially within the direct - effect APE of the proposed undertaking. Two historic standing structures that contribute to the NRHP district and a portion of an agricultural field are located within the portion of the district that is included in the boundary of the proposed undertaking. Six (6) additional NRHP eligible historic standing structures are also located on the subject property and are not currently included in the NRHP district. One previously identified archaeological site 36Bu371 and one previously unidentified archaeological site were also identified on the subject property.

Three NRHP eligible properties were identified within the indirect - effect APE during the literature and documents review although one of these NRHP eligible properties is no longer extant. The remaining two properties appear to retain sufficient integrity for listing on the NRHP. Based on the results of the preliminary assessment, the Dolington - Alternative Site 3 exhibits a high potential for the occurrence of additional cultural resources, particularly low intensity archaeological sites that may be identified through Phase I intensive archaeological survey.

Selection of this alternative for the location of a National Cemetery would result in a finding of historic properties affected under the rules governing the protection of historic properties. However, measures could potentially be employed by the VA - NCA that would avoid a finding of historic properties affected-adverse effect. Such measures would include consultation with the SHPO and other consulting parties as specified under 36 CFR 800.2 at the earliest possible date, SHPO review of project design plans, and incorporation of SHPO recommendations to ensure consistency with the Secretary of Interior's standards for the treatment of historic properties. A Phase I Intensive Cultural Resource Assessment is recommended in order to meet the standard of identification of historic properties specified in 36 CFR 800.4. Upon completion of the Phase I Intensive Cultural Resource Assessment, the VA would be in an informed position to allow avoidance of NRHP eligible resources on the subject property.

4.10 Noise and Other Aesthetic Concerns

Under the No Action Alternative, there would be no impacts on the noise levels or aesthetics of the area.

For the Alternative Sites 1, 2, and 3, there would be minimal impacts to noise and no impact to the aesthetics of the area resulting from the development of a cemetery at any of the three

proposed sites. National cemeteries are required to maintain a park-like setting and keep the grounds visually pleasing. NCA guidelines recommend that native vegetation be used in site landscaping, and valuable trees be preserved (Section 2.1.1). Thus, the pastoral landscape which currently exists at these sites would probably remain, although in an altered form.

Gun salutes will occur at most interments. The short bursts of noise with the salutes will only occur during weekday business hours and should not be disruptive to neighbors in these rural sites. Firearms are currently used in the area of all proposed sites (i.e., hunting, target practice) and were noted during a site visit to the Dolington - Alternative Site 3 in September 2005 (MACTEC, 2005). Training exercises at Pennhurst – Alternative Site 1, including firing exercises, are conducted by the PAARNG on a periodic basis, typically as many as 14 weekends per year (Odgen, 2001).

Nesting birds and resident wildlife would be subjected to temporary increases in noise levels during each phase of cemetery construction, especially during initial construction. A normal scenario for cemetery development would consist of an intense initial construction phase of approximately six months in order to construct administrative buildings, support buildings, and burial space to last 10 years. Approximately every 10 years, an additional 30±-acre area will be developed for burial space in shorter and less intense construction phases. Sources of construction noise would likely include earthmoving equipment, trucks, and paving equipment. Impacts could be minimized by limiting construction activity to daylight hours and by using properly muffled equipment. The VA will need to comply with federal noise regulations during construction and operation, and ensure that all contractors use properly muffled equipment. Compliance with County noise regulations may also be required during project permitting.

Once the cemetery is in operation, daily noises will include gardening equipment (mowers, weed eaters, etc.), backhoes, and dump trucks. Such noises are similar to the daily noises associated with farm equipment currently used on sites Riegelsville – Alternative Site 2 and Dolington – Alternative Site 3. Noises associated with funerals will include traffic from the corteges, “Taps” or other music, and gun salutes. These sounds will add a human component to the noise in the vicinity which is currently limited to road traffic noise.

4.11 Air Quality

Under the No Action Alternative, there would be no impacts on the air quality of the area.

Under the Proposed Alternatives, there would be minimal impacts to the air quality of the area resulting from the development of a cemetery at any of the three proposed sites. Because there will be no major sources of continuous emissions, there will not be a need for a Plan Approval for the construction of the cemeteries. More specifically, no boilers or crematories will be built at the sites. After construction minuscule amounts of emissions from automobiles, tractors and trucks

will occur intermittently. These activities do not require any Plan Approval nor would they require a Conformity Analysis under the Pennsylvania SIP.

During construction there will be air emissions discharged at the site from the off-road vehicles involved with moving of earth for the construction of buildings, roads and the cemetery plots. Additionally there will be emissions from fugitive dust associated with vehicles using unpaved roads, windblown dust from areas not covered by vegetation, material handling, etc. Best management practices to control erosion and re-entrained dust should also help to minimize releases of fugitive emissions to the atmosphere. The successful contractor will have to employ a dust mitigation program (watering) to assure that these emissions are kept at a minimum. At build-out there may be as many as several hundred vehicle trips per weekday to the cemetery. These vehicles' emissions will result in an insignificant increase in air pollutants. Neither the emissions during construction nor the emissions occurring after the facility is built will result in any anticipated violations of air quality standards. The PADEP has accounted for this type of growth in their State Implementation Plan. Finally, there are no EPA or PADEP air permits that will be needed prior to or after construction of this facility.

4.12 Community Services

Under the No Action Alternative, there would be no impacts on community services in the area.

Under the Proposed Alternatives, no significant impacts to community services would be expected. The Pennhurst Site is located in Chester County and the Riegelsville and Dolington sites are located in Bucks County, and are all expected to retain that status into the future. There will be no live-in personnel, thus there would be no noticeable effect on the school districts. There will be jobs created at the site for temporary construction workers and permanent employees. These employees may be drawn from current residents, or they may be recruited from elsewhere and become new residents. Chester and Bucks Counties have adequate capacity in their emergency and non-emergency service departments to support the employees of and visitors to the proposed cemetery.

4.13 Land Use

Under the No Action Alternative, there would be no impacts to zoning or land use.

Under the Proposed Alternatives for the Pennhurst Site, construction of the national cemetery would alter the existing use of the land. The subject parcel would be redeveloped from the existing vacant former state hospital and school, to an active national cemetery. Construction of the national cemetery would have a minimal impact on current land use.

Under the Proposed Alternatives for the Riegelsville and Dolington Sites, there would be moderate impacts to zoning and land use of the area resulting from the development of a cemetery at these two proposed sites. Neither of these proposed sites is specifically zoned for cemetery use. However, with cemetery construction the ultimate landscape would still be open space with many of the existing habitat functions either preserved or improved. Cemetery operation may require a "special exception" to zoning. Alternatively, an application to have Sites 2 and 3 rezoned to a Government Use (GU) zoning category does include "cemetery" as an allowable use. With regards to the partial inclusion in the Historic District of the Dolington Site, discussion with the BHP will need to be held to determine the feasibility of development of a national cemetery adjacent and in this district.

Development of a national cemetery at Pennhurst – Alternative Site 1 would have a minimal impact on prime farmland and farmland of statewide importance. A total of 54.68-acres of farmland (47.34-acres of prime farmland and 7.34-acres of farmland of statewide importance) would be converted to cemetery use at this site (Figure 3-19).

Under the Proposed Alternatives for Riegelsville and Dolington, development of a national cemetery would have moderate impacts on the prime farmland and farmland of statewide importance. 251.67-acres of total farmland would be converted to cemetery use at site 2 (Figure 3-20) and 182.21-acres at site 3 (Figure 3-21). Both of these sites are located in rural areas where farming still occurs on surrounding lands.

4.14 Infrastructure

Under the No Action Alternative, there would be no impacts to infrastructure.

Construction of a veteran's cemetery on Pennhurst – Alternative Site 1, Riegelsville – Alternative Site 2 or Dolington – Alternative Site 3 would result in minimal impacts to infrastructure at the three alternative sites. The demand on local utilities would increase and the installation of certain utilities will be necessary depending on what alternative site is selected. Utilities most affected by the construction of a National Cemetery include water supply, sanitary and stormwater sewers.

At Pennhurst – Alternative Site 1, the local utilities most affected by the cemetery construction are public water supply. The anticipated need for irrigation on the cemetery will require an ample water supply. Although the impact will be minimal, this increase in demand could be mitigated by installing on-site water supply wells utilized for the sole purpose of maintenance activities for the cemetery. Should this action be necessary, consultation with the local water utility may be needed to ensure a minimal effect to the water supply of local residents with on-site water wells. All other on-site utilities, including stormwater and sanitary disposal of sewerage, will be affected by the proposed construction; however, their impact is anticipated to be minimal.

At Riegelsville – Alternative Site 2, the local utility most affected by the cemetery construction will also be the public water supply. Connections to the local water supply will need to be made, since no on-site water lines currently exist. In addition, except for electric lines, all remaining necessary utilities will need to be installed including stormwater sewers, communication lines and on-site septic sewage systems.

At Dolington – Alternative Site 3, local utilities are not expected to be adversely impacted by the construction of a National Cemetery. Due to utility accessibility in the area of Dolington – Alternative Site 3, on-site water supply wells, on-site sewage disposal systems and stormwater sewer installation will be required. These utilities are not expected to affect the local utility demand.

4.15 Local Economy

Under the No Action Alternative, there would be no effect on the local economy.

Under the Proposed Alternatives, construction of a national cemetery is expected to have a beneficial effect on economic activity in the area as a result of temporary jobs associated with the construction activities and permanent jobs associated with operating and maintaining the cemetery. Cemetery construction and operation likely will result in creation of more jobs than would be lost. The land at Pennhurst is currently tax exempt since it is owned by the Commonwealth of Pennsylvania (Chester County Government, 2005). The taxable value of the land at the Riegelsville – Alternative Site 2 and Dolington – Alternative Site 3 sites is low due to a tax incentive assigned to these agricultural properties to promote the conservation of open space (Bucks County Government, 2005). Removing these properties from the tax roll in Chester or Bucks Counties would have a minimal effect on that County's tax base.

4.16 Traffic, Transportation, and Parking

Under the No Action Alternative, there would be no impacts on local traffic or transportation.

Funerals and employee activity at the proposed cemetery would increase the traffic volume at the chosen site. According to an analysis completed for another proposed national cemetery in Florida (URS, 2002) funerals occur between 9:00 AM and 3:00 PM Monday through Friday. This would constitute the majority of traffic to and from the cemetery. Additional traffic would be generated by visitors to the cemetery, mainly on weekends and holidays. Employees commuting to and from the cemetery would generate the cemetery's only peak hour traffic.

At other similarly-sized cemeteries in Florida, the VA employs approximately 15 people (VA NCA, 2005). A workforce of that size would therefore increase the volume of traffic on the road, at peak hour, by approximately 15 vehicles.

The cemetery will likely be available for services for approximately 250 days out of the year, on non-holiday weekdays only. The NCA estimates the number of interments will peak at 4,079 in 2012. Assuming approximately 16 funerals per day with approximately 17 vehicles in each funeral procession (URS, 2002), there would be approximately 272 vehicles entering and exiting the cemetery for funerals each day.

Non-funeral visits to the cemetery would most likely occur during weekends and holidays. The VA expects approximately 3,000 such visitors a year, averaging about 10 visitors per day (URS, 2002). This data is summarized below in Table 4-1.

Table 4-1. Expected Daily Traffic Volumes Generated by VA Cemetery for Year 2012

Reason for Visit	Vehicles Entering VA Cemetery (vehicles/day)	Vehicles Leaving VA Cemetery (vehicles/day)	During Peak Hours (vehicles/day)	During Off-Peak Hours (vehicles/day)
Attending Funeral	272	272	0	544
Other visitations	10	10	0	20
Employed by VA	15	15	30	0
Total	297	297	30	564
Total daily traffic generated by VA Cemetery (vehicles/day): 594				

Source: URS, 2002; VA NCA 2005.
Created by: SEB Checked by: RES

4.16.1 Pennhurst – Alternative Site 1

With the VA expecting to add approximately 594 daily vehicle trips to both lanes (with only 30 of those during peak hours) there should be minimal to no impact on the traffic volumes of SR 724, the major access road to the site, and Bridge Street (Route 1039). Table 4-2 summarizes the anticipated change in traffic volume. Development of the cemetery at this site would potentially increase the traffic volume on SR 724 by 3 percent, and by 7 percent on Bridge Street. Currently, there are ten full time PAARNG staff at this site (Odgen, 2001). Therefore, the approximate 15-member workforce for the cemetery would have minimal to no impact on the traffic volume during peak hours for this site.

Table 4-2. Expected Peak Change in Traffic Volume on SR 724 and Bridge Street (Rt. 1039) if Site 1 is Selected for Cemetery Development

Portion of Road	Current Traffic Volume (vehicles/day)	Traffic Volume after completion of VA Cemetery (vehicles/day)	Percent Increase of Traffic Volume as a Result of VA Cemetery
SR 724 south of Bridge Street	16,614	17,208	3%
Bridge Street east of SR 724	7,915	8,509	7%

Source: PENNDOT, 2005; MACTEC, 2005.
Prepared by: GKH Checked by: RES

4.16.2 Riegelsville – Alternative Site 2

There should be minimal to no impact on the traffic volume of SR 611 with the VA expecting to add approximately 594 daily vehicle trips to both lanes (with only 30 of those during peak hours). Table 4-3 summarizes the change in traffic volume expected and shows a potential 10% increase in the traffic volume of SR 611. Currently, no workforce is associated with this site as it is leased and farmed by Mr. Thaler. The addition of approximately 15 people to the workforce of this site would have minimal impacts to the peak traffic volume in this area. With funerals occurring between 9:00 AM and 3:00 PM, traffic in the local community is likely to increase more during off-peak hours (URS, 2002).

Table 4-3. Expected Peak Change in Traffic Volume on SR 611 if Site 2 is Selected for Cemetery Development

Portion of SR 611	Current Traffic Volume (vehicles/day)	Traffic Volume after completion of VA Cemetery (vehicles/day)	Percent Increase of Traffic Volume as a Result of VA Cemetery
North of Spring Hill Road	4,982	5,576	12%
South of SR 1016	5,543	6,137	11%

Source: PENNDOT, 2005; MACTEC, 2005.
Prepared by: GKH Checked by: RES

4.16.3 Dolington – Alternative Site 3

Traffic in the local communities is likely to increase more during off-peak hours as a result of funerals occurring between 9:00 AM and 3:00 PM (URS, 2002). Peak hour traffic (both morning and evening) is not likely to increase significantly as a result of development of a national cemetery at the Dolington Site. Based on McMahon's Traffic Study report, the development of a national cemetery would have less of an effect on peak-hour traffic than the development of a residential subdivision. A residential subdivision would likely increase the area peak-hour traffic by 178-vehicles/day (McMahon, 2005).

Traffic volumes are expected to increase along Washington Crossing Road, Old Dolington Road, Lindenhurst Road, Highland Road and Wrightstown Road during and after development and completion of a national cemetery. Table 4-4 summarizes the change in traffic volume expected on Washington Crossing Road, the major access road to the site. With the VA expecting to add approximately 594 daily vehicle trips to the east and west bound lanes each (with only 30 of those during peak hours) there should be minimal to no impact on the traffic volume of Washington Crossing Road. However, without the installation of a traffic signal and the widening of Washington Crossing Road, at its intersection with Highland Road, the "D" LOS rating (delayed travel) will not improve (McMahon, 2005).

Table 4-4. Expected Peak Changes in Traffic Volume on Washington Crossing Road if Site 3 is Selected for Cemetery Development

Portion of Washington Crossing Road	Current Traffic Volume (vehicles/day)	Traffic Volume after completion of VA Cemetery (vehicles/day)	Percent Increase of Traffic Volume as a Result of VA Cemetery
West of Lindenhurst Road	9,297	9,891	6%
East of Lindenhurst Road	9,585	10,179	6%

Source: PENNDOT, 2005; MACTEC, 2005.
Prepared by: GKH Checked by: RES

Therefore, it is assumed that construction of a national cemetery at any of the alternative sites will have minimal impact on traffic.

4.17 Potential for Generating Controversy

Under the No Action Alternative, controversy may be generated by local veterans, their local, state, and federal officials, due to no access to local burial services.

Local news coverage for this project during the current site identification phase has been generally positive (Petersen, 2005 and Patel, 2004).

Local controversy should be minimal for Pennhurst – Alternative Site 1 due to the current presence of the PADMVA at the site. The Southeastern Veterans Center, run by the PADMVA, is currently located adjacent to the site. The Maintenance/Storeroom building, which is located on the Lower Campus, is currently used for storage of miscellaneous equipment by the PADMVA.

Development of the cemetery at the Riegelsville – Alternative Site 2 will create minimal local controversy. Controversy may be generated by the Riegelsville community due to the 10% increase in traffic volume (discussed in 4.16).

Local support for a national cemetery is evident at Dolington – Alternative Site 3 and thus potential for controversy is low. In addition, due to an active movement in the Dolington area to preserve the Dolington Group Tract Site as open space. Additonally, local township officials have passed a resolution in favor of the VA NCA selecting Site 3 for development.

4.18 Solid and Hazardous Wastes

Under the No Action Alternative, there would be no new impacts related to waste generation or disposal.

Any solid and hazardous material associated with the buildings located on the Upper Campus of Pennhurst – Alternative Site 1 may require proper disposal should these buildings be demolished

for cemetery construction (MACTEC, 2004). At Riegelsville – Alternative Site 2 and Dolington – Alternative Site 3, cemetery development would have no impact on hazardous materials as there are no known hazardous materials on these sites (MACTEC, 2005).

Cemetery development at any of the three alternative sites would require proper disposal of trash, construction debris, fencing, etc. Once the cemetery is in operation, proper disposal of trash and yard waste would be required. The cemetery is not likely to generate hazardous wastes.

4.19 Federal Compliance

The analysis and recommendations in this EA support the conclusion that NCA's proposed project will be in compliance with Federal Regulations (see Table 4-5).

Table 4-5. Compliance with Federal Regulations

Regulation	Subject	Project Compliance Issues
EO 11988	Floodplain Management	100-year floodplain occupies small areas of the Pennhurst – Alternative Site 1 and Dolington – Alternative Site 2. 100-year floodplain is not located at the Riegelsville– Alternative Site 2. Project objectives can be accomplished with avoidance and/or minimization of impacts to the regulatory floodplain.
EO 11990	Protection of Wetlands	Appropriate Section 404 permits may need to be obtained from the USACE. Wetlands protections will include: avoid impacts; minimize impacts; and/or mitigation.
EO 11987	Exotic Organisms	Exotic / invasive species are present at each of the three alternative sites. The IPM and planting / landscaping plans for the developed site will need to be developed and implemented to ensure that invasive species are not inadvertently introduced and that those present are controlled.
EO 12898	Environmental Justice	No issues identified.
33 USC 1323, Section 313; 40 CFR 122	Clean Water	This project will not require a discharge permit, but coverage under an NPDES stormwater permit will be required. BMPs for construction and operation phases associated with protection of surface- and ground-water are discussed in the report.
PL 93-205	Endangered Species	No incidental "take" of federally-listed species are expected as a result of cemetery development at any of the alternative sites.
16 USC 1274 ET SEQ	Wild and Scenic Rivers	None of the sites are in areas that have federal designation as Wild and Scenic.
Noise Control Act of 1972	Noise Control	Compliance with federal noise standards is expected during construction and operation.
PL 93-523	Safe Drinking Water	BMPs for construction and operation of the cemetery as they relate to groundwater protection are discussed in the report.
PL 97-348	Coastal Barriers	The alternative sites do not overlap coastal barrier resources.
16 USC 1451 Et SEQ, Amended by PL 101-508	Coastal Zone Management	Chester County is a not coastal county. The Coastal Zone Boundary does not extend to either site Riegelsville – Alternative Site 2 and Dolington – Alternative Site 3 in Bucks County.
40 CFR 230	Discharge of Dredge or Fill Material	Once a site has been selected and a design plan prepared, NCA will need to consult with the USACE to determine whether or not a dredge and fill permit would be required.

Table 4-5. Compliance with Federal Regulations

Regulation	Subject	Project Compliance Issues
40 CFR 117	Reportable Quantities of Hazardous Substances	Reportable quantities of hazardous substances are not known from any of the alternative sites.
40 CFR 761	PCB Issues	PCBs are not reported from any of the alternative sites.
36 CFR 800	Historic Preservation	SHPO consultation and Section 106 compliance are necessary. SHPO coordination is ongoing for this project.

Created by: GKH Checked by: AWC

5.0 Summary and Conclusions

Environmental Assessment Summary

Project Location: Bucks and Chester Counties, Pennsylvania

Project Title: National Cemetery

Assessed By: MACTEC

Summary of Environmental Impact of the Proposed Project:

With implementation of the design, construction and operational measures identified in the EA, no significant adverse environmental impacts are anticipated, for cemetery development at the Pennhurst – Alternative Site 1, Riegelsville – Alternative Site 2, or Dolington – Alternative Site 3 sites or with the no action alternative. The potential analyzed impacts are similar at all three sites. A summary of potential effects at each site are reflected in Table 5-1.

Recommendation:

X Finding of No Significant Impact. (This project will not result in a significant adverse impact on the environment and will not result in highly controversial adverse public reaction; therefore an environmental impact statement is not required.)

__ An Environmental Impact Statement is required.

Table 5-1. Effects Summary

Attributes	Alternatives			
	No Action	**Pennhurst - Alternative Site 1**	**Riegelsville - Alternative Site 2**	**Dolington – Alternative Site 3**
Aesthetics	0	0	0	0
Air Quality	0	0	0	0
Cultural Resources	0	-2	-2	-2
Economic Activity	0	0	0	0
Floodplains and Coastal Zone.	0	-1	0	0
Geology and Soils	0	-2	-2	-2
Wetlands	0	0	-1	-1
Hydrology and Water Quality	0	-1	1	1
Groundwater	0	0	0	0
Prime Farmland	0	-1	-2	-2
Land Use	0	0	0	0
Noise	0	-1	-1	-1
Potential for Generating Substantial Controversy	0	0	0	0
Real Property	0	0	0	-1

Table 5-1. Effects Summary (continued)

Attributes	Alternatives			
	No Action	**Pennhurst - Alternative Site 1**	**Riegelsville - Alternative Site 2**	**Dolington – Alternative Site 3**
Current Workforce	0	-1	0	0
Solid / Hazardous Waste	0	0	0	0
Traffic, Transportation and Parking	0	-1	-2	-1
Utilities	0	0	0	0
Vegetation and Wildlife	0	-1	-1	-1
Provide Burial Services to Veterans	-3	1	1	1
Total Rank	**-3**	**-10**	**-9**	**-9**

Source: MACTEC, 2005.
Created by: ABS Checked by: AWC
Note: 1 = Beneficial Effect
-3 = Severe Effect
-2 = Moderate Effect
-1 = Minimal Effect
0 = No Significant Effect

Environmental Assessment Summary

Project Location: Bucks and Chester Counties, Pennsylvania
Project Title: National Cemetery

Definitions of Impacts

1. Severe — Complete destruction, disruption, violation of standards, incompatibility, disturbance, or surpassing capability of the attribute under consideration.
2. Moderate — Considerable destruction, disruption, violation of standards incompatibility, disturbance or surpassing of capability of the attribute. However, the effect can be minimized through further study and mitigation.
3. Minimal — Temporary or minor destruction, disruption, violation of standards, incompatibility, disturbance or surpassing of capability of the attribute. This effect can be mitigated through standard design, construction or operational procedures.
4. None — No effect anticipated.

Project Description:
Refer to Section 2 of the EA.

Alternatives Considered:
The "No Action" alternative and various alternatives sites were considered under a separate process, which identified three sites considered for a national cemetery. As part of the current design effort, three alternative sites were evaluated. The alternatives are described in Sections 2 and 3 of the EA.

Environmental Impacts:
Refer to Section 4 of the EA.

Mitigative Actions:
Refer to Section 4 of the EA.

Environmental Assessment Summary for Pennhurst – Alternative Site 1

Aesthetics

Impacts		Attributes			
	Adverse	X	Vegetation Removal		Building Restoration
X	Beneficial		Landform Alteration		Service Area Development
X	Long Term	X	Open Space Alteration	X	Grounds Improvements
	Short Term	X	New Building Construction		

Air Quality

Impacts		Attributes			
X	Adverse	X	Dust		Presence Of Odors
	Beneficial	X	Occurs in an Air Quality	X	Particulate Emissions
	Long Term		Non-Attainment Area		
X	Short Term				

Community Service

Impacts		Attributes	
	Adverse		Alteration of Public Facilities
	Beneficial		Alteration of Public Services
	Long Term		Alteration of Public Utilities
	Short Term		

Cultural Resources

Impacts		Attributes			
X	Adverse		National Register Property	X	Requires SHPO Consultation
	Beneficial	X	Eligible Property		
X	Long Term				
X	Short Term				

Economic Activity

Impacts		Attributes	
	Adverse		Reduction in Wages to Area
X	Beneficial	X	Additional Wages in Area
X	Long Term	X	Local Purchase of Goods and Services
X	Short Term	X	Increase in Direct Work Force

Floodplains, Wetlands, Coastal Zone

Impacts		Attributes	
X	Adverse	X	100-Year Floodplain
	Beneficial		Critical Action (E.O. 11988)
X	Long Term		Coastal Zone Management Area
	Short Term		Critical Wetlands Areas

Geology and Soils

Impacts		Attributes			
X	Adverse		Rock Excavation	X	Soil Erosion
	Beneficial		Cut/Fill Operations	X	Soil Compaction
X	Long Term	X	Grading	X	Soil Horizon Removal & Mixing
X	Short Term				

Hydrology, Water Quality

Impacts		Attributes			
X	Adverse	X	Potential for Erosion and/or Sedimentation	X	Alteration/Quality Change of Surface Water Drainage
	Beneficial				
X	Long Term		Potential for Contamination	X	Alteration/Quality Change of Groundwater Regime
X	Short Term		of Water Regime from Toxins		

Land Use

Impacts		Attributes	
	Adverse		Encroachment on Existing Land Use
X	Beneficial	X	Change in Land Use Pattern
X	Long Term	X	Public Service (to veterans)
	Short Term		

Noise

Impacts		Attributes	
X	Adverse		Utility Source Generation
	Beneficial	X	Traffic
X	Long Term	X	Construction (Short Term)
X	Short Term	X	Operational (Long Term)

Potential for Generating Substantial Controversy

Impacts		Attributes			
	Adverse		Indirect or Direct Effects on Community Organizations		Community Response is in Question
X	Beneficial				
X	Long Term	X	Consistent with Profile of the Community	X	Provide Needed Benefit to Local Veterans
	Short Term				

Real Property

Impacts		Attributes			
X	Adverse	X	Change of Land Values	X	Change in Ownership Boundaries
	Beneficial				
X	Long Term		Change of Easement or Right of Way	X	Encroachment on Critical Areas
	Short Term				

Residential Population

Impacts		Attributes
X	Adverse	Addition of Staff to Facility
	Beneficial	Alteration of Demographic Characteristics
X	Long Term	Change in Neighborhood Characteristics
	Short Term	

Solid/Hazardous Waste

Impacts		Attributes			
	Adverse		Steel Removal/Demolition		Construction Site
	Beneficial		Bulk Operational Waste		Stockpiling
	Long Term		Earth and/or Rock Debris		
	Short Term		Concrete Debris		

Transportation/Traffic and Parking

Impacts		Attributes			
X	Adverse		Alteration of Public Transit		Alteration of Existing
	Beneficial	X	Alteration of Access Roads		Onsite Roads or Parking
X	Long Term	X	Construction of New Roads	X	Additional Traffic on
X	Short Term	X	Construction of New Parking		Existing Roads

Utilities

Impacts		Attributes	
	Adverse		Water System, Supply
	Beneficial	X	Storm Water Drainage
	Long Term		Sewage Treatment
	Short Term		

Vegetation and Wildlife

Impacts		Attributes			
X	Adverse		Tree Removal	X	Groundcover Removal
	Beneficial	X	Potential Presence of		Presence of Significant
X	Long Term		Endangered Wildlife Species		Wildlife Habitat
	Short Term				

Environmental Assessment Summary for Riegelsville – Alternative Site 2

Aesthetics

Impacts		Attributes			
	Adverse	X	Vegetation Removal		Building Restoration
X	Beneficial		Landform Alteration		Service Area Development
X	Long Term	X	Open Space Alteration	X	Grounds Improvements
	Short Term	X	New Building Construction		

Air Quality

Impacts		Attributes			
X	Adverse	X	Dust		Presence Of Odors
	Beneficial	X	Occurs in an Air Quality	X	Particulate Emissions
	Long Term		Non-Attainment Area		
X	Short Term				

Community Service

Impacts		Attributes	
	Adverse		Alteration of Public Facilities
	Beneficial		Alteration of Public Services
	Long Term		Alteration of Public Utilities
	Short Term		

Cultural Resources

Impacts		Attributes			
X	Adverse	X	National Register Property	X	Requires SHPO Consultation
	Beneficial	X	Eligible Property		
X	Long Term				
X	Short Term				

Economic Activity

Impacts		Attributes	
	Adverse		Reduction in Wages to Area
X	Beneficial	X	Additional Wages in Area
X	Long Term	X	Local Purchase of Goods and Services
X	Short Term	X	Increase in Direct Work Force

Floodplains, Wetlands, Coastal Zone

Impacts		Attributes	
X	Adverse		100-Year Floodplain
	Beneficial		Critical Action (E.O. 11988)
X	Long Term		Coastal Zone Management Area
	Short Term	X	Critical Wetlands Areas

Geology and Soils

Impacts		Attributes			
X	Adverse		Rock Excavation	X	Soil Erosion
	Beneficial		Cut/Fill Operations	X	Soil Compaction
X	Long Term	X	Grading	X	Soil Horizon Removal & Mixing
X	Short Term				

Hydrology, Water Quality

Impacts		Attributes			
	Adverse	X	Potential for Erosion and/or Sedimentation	X	Alteration/Quality Change of Surface Water Drainage
X	Beneficial				
X	Long Term		Potential for Contamination of Water Regime from Toxins	X	Alteration/Quality Change of Groundwater Regime
X	Short Term				

Land Use

Impacts		Attributes	
	Adverse		Encroachment on Existing Land Use
X	Beneficial	X	Change in Land Use Pattern
X	Long Term	X	Public Service (to veterans)
	Short Term		

Noise

Impacts		Attributes	
X	Adverse		Utility Source Generation
	Beneficial	X	Traffic
X	Long Term	X	Construction (Short Term)
X	Short Term	X	Operational (Long Term)

Potential for Generating Substantial Controversy

Impacts		Attributes			
	Adverse		Indirect or Direct Effects on Community Organizations		Community Response is in Question
X	Beneficial				
X	Long Term	X	Consistent with Profile of the Community	X	Provide Needed Benefit to Local Veterans
	Short Term				

Real Property

Impacts		Attributes			
X	Adverse	X	Change of Land Values	X	Change in Ownership Boundaries
	Beneficial				
X	Long Term		Change of Easement or Right of Way	X	Encroachment on Critical Areas
	Short Term				

Residential Population

Impacts		Attributes	
X	Adverse		Addition of Staff to Facility
	Beneficial		Alteration of Demographic Characteristics
X	Long Term		Change in Neighborhood Characteristics
	Short Term		

Solid/Hazardous Waste

Impacts		Attributes			
	Adverse		Steel Removal/Demolition	X	Construction Site Stockpiling
	Beneficial		Bulk Operational Waste		
	Long Term		Earth and/or Rock Debris		
	Short Term		Concrete Debris		

Transportation/Traffic and Parking

Impacts		Attributes			
X	Adverse		Alteration of Public Transit		Alteration of Existing Onsite Roads or Parking
	Beneficial	X	Alteration of Access Roads		
X	Long Term	X	Construction of New Roads	X	Additional Traffic on Existing Roads
X	Short Term	X	Construction of New Parking		

Utilities

Impacts		Attributes	
	Adverse		Water System, Supply
	Beneficial	X	Storm Water Drainage
	Long Term		Sewage Treatment
	Short Term		

Vegetation and Wildlife

Impacts		Attributes			
X	Adverse		Tree Removal	X	Groundcover Removal
	Beneficial	X	Potential Presence of Endangered Wildlife Species		Presence of Significant Wildlife Habitat
X	Long Term				
	Short Term				

Environmental Assessment Summary for Dolington – Alternative Site 3

Aesthetics

Impacts		Attributes			
	Adverse	X	Vegetation Removal		Building Restoration
X	Beneficial		Landform Alteration		Service Area Development
X	Long Term	X	Open Space Alteration	X	Grounds Improvements
	Short Term	X	New Building Construction		

Air Quality

Impacts		Attributes			
X	Adverse	X	Dust		Presence Of Odors
	Beneficial	X	Occurs in an Air Quality	X	Particulate Emissions
	Long Term		Non-Attainment Area		
X	Short Term				

Community Service

Impacts		Attributes
	Adverse	Alteration of Public Facilities
	Beneficial	Alteration of Public Services
	Long Term	Alteration of Public Utilities
	Short Term	

Cultural Resources

Impacts		Attributes			
X	Adverse	X	National Register Property	X	Requires SHPO Consultation
	Beneficial	X	Eligible Property		
X	Long Term				
X	Short Term				

Economic Activity

Impacts		Attributes
	Adverse	Reduction in Wages to Area
X	Beneficial	X Additional Wages in Area
X	Long Term	X Local Purchase of Goods and Services
X	Short Term	X Increase in Direct Work Force

Floodplains, Wetlands, Coastal Zone

Impacts		Attributes
X	Adverse	100-Year Floodplain
	Beneficial	Critical Action (E.O. 11988)
X	Long Term	Coastal Zone Management Area
	Short Term	X Critical Wetlands Areas

Geology and Soils

Impacts		Attributes			
X	Adverse		Rock Excavation	X	Soil Erosion
	Beneficial		Cut/Fill Operations	X	Soil Compaction
X	Long Term	X	Grading	X	Soil Horizon Removal & Mixing
X	Short Term				

Hydrology, Water Quality

Impacts		Attributes			
	Adverse	X	Potential for Erosion and/or Sedimentation	X	Alteration/Quality Change of Surface Water Drainage
X	Beneficial				
X	Long Term		Potential for Contamination of Water Regime from Toxins	X	Alteration/Quality Change of Groundwater Regime
X	Short Term				

Land Use

Impacts		Attributes	
	Adverse		Encroachment on Existing Land Use
	Beneficial	X	Change in Land Use Pattern
X	Long Term	X	Public Service (to veterans)
	Short Term		

Noise

Impacts		Attributes	
X	Adverse		Utility Source Generation
	Beneficial	X	Traffic
X	Long Term	X	Construction (Short Term)
X	Short Term	X	Operational (Long Term)

Potential for Generating Substantial Controversy

Impacts		Attributes			
	Adverse		Indirect or Direct Effects on Community Organizations		Community Response is in Question
X	Beneficial				
X	Long Term	X	Consistent with Profile of the Community	X	Provide Needed Benefit to Local Veterans
	Short Term				

Real Property

Impacts		Attributes			
X	Adverse	X	Change of Land Values	X	Change in Ownership Boundaries
	Beneficial				
X	Long Term		Change of Easement or Right of Way	X	Encroachment on Critical Areas
	Short Term				

Residential Population

Impacts		Attributes	
	Adverse		Addition of Staff to Facility
	Beneficial		Alteration of Demographic Characteristics
	Long Term		Change in Neighborhood Characteristics
	Short Term		

Solid/Hazardous Waste

Impacts		Attributes			
	Adverse		Demolition		Construction Site
	Beneficial		Bulk Operational Waste		Stockpiling
	Long Term		Earth and/or Rock Debris		
	Short Term		Concrete Debris		

Transportation/Traffic and Parking

Impacts		Attributes			
X	Adverse		Alteration of Public Transit		Alteration of Existing
	Beneficial	X	Alteration of Access Roads		Onsite Roads or Parking
X	Long Term	X	Construction of New Roads	X	Additional Traffic on
X	Short Term	X	Construction of New Parking		Existing Roads

Utilities

Impacts		Attributes	
X	Adverse		Water System, Supply
	Beneficial	X	Storm Water Drainage
X	Long Term		Sewage Treatment
	Short Term		

Vegetation and Wildlife

Impacts		Attributes			
X	Adverse		Tree Removal	X	Groundcover Removal
	Beneficial	X	Presence of Endangered	X	Presence of Significant
X	Long Term		Wildlife Species		Wildlife Habitat
	Short Term				

6.0 Agency Coordination/Contact List

The following agencies and persons were contacted during the preparation of this EA:

Federal Agencies

U.S. Fish and Wildlife Service
315 South Allen Street, Suite 322
State College, Pennsylvania 16801-4850

State Agencies

Bureau for Historic Preservation
Pennsylvania Historical and Museum Commission
April Frantz
Preservation Specialist, Preservation Services
Commonwealth Keystone Building, Second Floor
400 North Street
Harrisburg, PA 17120-0093

Pennsylvania Department of Environmental Protection Air Quality
Shawn Mountain
484-250-3840

Pennsylvania Department of Environmental Protection Right-to-Know
John Kennedy
484-250-7504

Pennsylvania Gaming Commission
Department Of Land Management
Kevin Mixin
717-787-6818

Pennsylvania Natural Diversity Inventory
www.naturalheritage.state.pa.us

County Agencies

Bucks County Department of Community and Business Development
Vitor Vicente
215-345-3840

Bucks County Heritage Conservancy
David Kimmerly
215-345-7020

Bucks County Planning Commision
Lynn Bush
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Mr. Ralph DeFazio
Chester County Department of Health

Other Contacts

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Heritage Conservancy
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Doylestown, Pennsylvania 18901
Telephone: (215) 345-7020

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