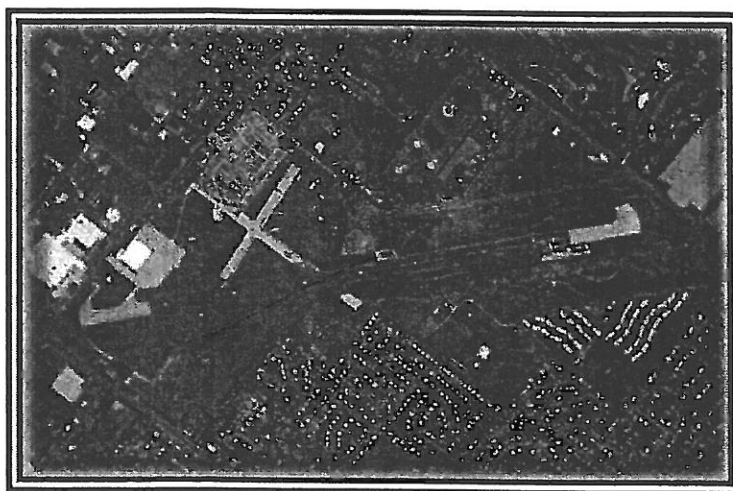


- Final -

ENVIRONMENTAL CONDITION OF PROPERTY REPORT

for the

**OFF-BASE HOUSING AREAS OF THE
NAVAL AIR STATION
JOINT RESERVE BASE
WILLOW GROVE, PENNSYLVANIA**



Department of the Navy BRAC Program Management Office

Department of the Navy
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11 May 2006



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APPENDIX C

**Environmental Condition of Property Report
for
Off-Site Housing Areas**



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ABBREVIATIONS, ACRONYMS, AND SYMBOLS

ACM	Asbestos Containing Material	NADS	Naval Air Development Station
AST	Aboveground Storage Tank	NAMU	Naval Air Material Unit
BCW&SA	Bucks County Water & Sewer Authority	NAWC	Naval Air Warfare Center
BRAC	Base Realignment and Closure	NAS JRB	Naval Air Station Joint Reserve Base
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	NPL	National Priorities List
CERFA	Community Environmental Response Facilitation Act	OU	Operational Unit
DoD	Department of Defense	PADEP	Pennsylvania Department of Environmental Protection
EBS	Environmental Baseline Survey	PCB	Polychlorinated Biphenyl
ECP	Environmental Condition of Property	pCi/L	picoCuries per Liter
EFH	Essential Fish Habitat	PMO	Program Management Office
EIS	Environmental Impact Statement	ppm	parts per million
FEMA	Federal Emergency Management Agency	RI	Remedial Investigations
ft.	foot/feet	ROD	Record of Decision
IRP	Installation Restoration Program	SDWA	Safe Drinking Water Act
MEC	Munitions and Explosives of Concern	U.S.	United States
NADC	Naval Air Development Center	U.S.C.	United States Code
		USEPA	United States Environmental Protection Agency
		UST	Underground Storage Tank



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EXECUTIVE SUMMARY

This Environmental Condition of Property (ECP) report for the off-base housing areas of the Naval Air Station Joint Reserve Base (NAS JRB) Willow Grove, Montgomery County, Pennsylvania summarizes the historical, cultural, and environmental conditions of the property as part of the United States (U.S.) Navy Base Realignment and Closure (BRAC) documentation associated with closure of NAS JRB Willow Grove. Information was reviewed with installation points of contact to ensure all data are current and accurate. Where information was not available, the sources contacted and reference materials sought were documented.

The Naval Air Material Unit (NAMU) was established in 1943 in Warminster, Bucks County, Pennsylvania, where the U.S. Navy coordinated its activities with the National Defense Research Committee and the Special Weapons Experimental Tactical Test Unit (Department of the Navy 1999, UPENN 1982). The NAMU Warminster was then designated the Naval Air Development Station (NADS) Warminster, prior to being changed to the Naval Air Development Center (NADC) Warminster in 1949 (Department of the Navy 1999, UPENN 1982). The NADC Warminster was renamed in January 1993 to the Naval Air Warfare Center (NAWC) Warminster; however, NAWC Warminster was disestablished on September 30, 1996 under the DoD BRAC II program (Department of the Navy 2000). Ownership of two housing areas located on the NAWC Warminster property was transferred to NAS JRB Willow Grove located in nearby Horsham Township, Montgomery County, Pennsylvania. These housing areas include Shenandoah Woods and the Jacksonville Road housing areas (Department of the Navy 1999, Edmond 2006, Szamborski 2006).

The Shenandoah Woods housing area currently encompasses 51 acres in Warminster Township, Bucks County, Pennsylvania, while the housing area on Jacksonville Road covers 2.5 acres in the Borough of Ivyland, Bucks County, Pennsylvania. Both of the housing areas were built prior to 1974 (Department of the Navy 1999).

The Shenandoah Woods housing area contains 199 residential units and includes a youth center, a small store, and a large garage for maintenance equipment (e.g., lawnmowers). The Jacksonville Road housing area includes six single-family houses (Department of the Navy 1999).

A brief summary of ECP findings is provided below by subject area.

- **Classifications of Environmental Conditions.** This ECP Report is not intended to identify uncontaminated property in compliance with the Community Environmental Response Facilitation Act (CERFA) and Department of Defense (DoD) policy. The Navy will comply with its statutory requirement to identify uncontaminated property through additional evaluations and documentation. An Environmental Baseline Survey (EBS) was completed in 1999 for all housing units at NAS JRB Willow Grove including the housing areas on Jacksonville Road and Shenandoah Woods (Department of the Navy 1999).
- **Installation Restoration Program Sites.** The U.S. Navy has identified one Installation Restoration Program (IRP) site, Site 5, known as Operational Unit (OU)-1B (groundwater) and OU-10 (soil) at the Shenandoah Woods housing area. The Navy, in conjunction with the U.S. Environmental Protection Agency (EPA) and Pennsylvania



Department of Environmental Protection (PADEP), issued a No Further Action Record of ROD for OU-1B (groundwater) on 20 June 2000, indicating that no further action is necessary to be protective of human health and the environment (Department of the Navy 2000). The Navy, in conjunction with the USEPA and PADEP issued a No Further Action Record of Decision for OU-10 (soil) on 28 September 2000, indicating that no further action is necessary to be protective of human health and the environment (Department of the Navy 2000).

- **Aboveground Storage Tanks.** There are no historical or existing aboveground storage tanks (ASTs) located at Shenandoah Woods housing area or the Jacksonville Road housing area (Department of the Navy 1999).
- **Underground Storage Tanks.** There are no underground storage tanks (USTs) currently in use at Shenandoah Woods housing area. There are six heating fuel USTs that are no longer in use located at each of the six housing units on Jacksonville Road. Each UST is encased in concrete and located underneath the foundation (Department of the Navy 1999). The tanks have not been cleaned. Removal of the tanks would impact the integrity of the housing structures.
- **Munitions and Explosives of Concern.** According to site personnel, there are no historical or current use or storage of munitions and explosives of concern (MEC) at the Shenandoah Woods housing area or the Jacksonville Road housing area (Szamborski 2006).
- **Hazardous Wastes.** Site personnel have indicated that the Shenandoah Woods and the Jacksonville Road housing areas do not generate hazardous wastes (Szamborski 2006).
- **Polychlorinated Biphenyls.** All transformers within the housing areas are U.S. Navy owned and are considered non-Polychlorinated biphenyls (PCB) (less than 50 parts per million [ppm] PCB or mineral oil). Sampling of the main pad-mounted transformer was conducted at the Shenandoah Woods housing area in 1998. The samples collected indicated that PCBs were found to be less than 1 ppm (Department of the Navy 1999, Reuters 1998).
- **Radiological Materials.** There is no documentation of past or present radiological materials located at the Shenandoah Woods or the Jacksonville Road housing areas (Szamborski 2006).
- **Pesticides.** Pesticide application at the Shenandoah Woods and the Jacksonville Road housing areas are performed by contracted pesticide services, although no documentation was available regarding these activities (Szamborski 2006).
- **Asbestos.** An asbestos survey was conducted as part of a U.S. Navy-wide program to evaluate asbestos in housing areas from 1996 to 1998. The survey indicated that asbestos was found to be present in the Jacksonville Road housing area. Asbestos containing material (ACM) was also determined to be present in the Shenandoah Woods housing area. The two housing areas have been abated by the housing department of NAS JRB Willow Grove and no further action is necessary related to ACM (Department of the Navy 1999).
- **Lead-Based Paint.** A lead-based paint survey has not been conducted for the housing areas (Snyder 2006). Due to the age of initial building construction (prior



to 1974), it is likely that lead paint was used at the housing areas and could still be present.

- **Radon.** A radon survey was conducted including representative sampling of the housing areas with radon levels found to be below the USEPA action level of 4.0 picoCuries per Liter (pCi/L) (Department of the Navy 1999).
- **Air Quality.** The Shenandoah Woods and the Jacksonville Road housing areas do not operate any emissions-generating equipment (Edmond 2006, Szamborski 2006).
- **Drinking Water.** The Shenandoah Woods and the Jacksonville Road housing areas obtain potable water from Bucks County Water & Sewer Authority (BCW&SA), a public utility (BCW&SA 2006, Edmond 2006, Szamborski 2006).
- **Stormwater.** Stormwater at Shenandoah Woods is managed through the use of an existing retention basin, referred to as East Pond, with a 425-foot long drainage swale that directs runoff into the retention basin, and several other storm drains that discharge into the basin (Dewberry & Davis 2005a, Dewberry & Davis 2005b). No information was available on stormwater management at the Jacksonville Road housing area.
- **Surface Water.** There are no surface water features located at the Shenandoah Woods or the Jacksonville Road housing areas (USFWS NWI 2006).
- **Wastewater.** The Shenandoah Woods and the Jacksonville Road housing areas do not operate on-site wastewater treatment facilities. Wastewater generated at the housing areas is conveyed to and treated by BCW&SA, a public utility (BCW&SA 2006, Edmond 2006, Szamborski 2006).
- **Floodplains.** The Federal Emergency Management Agency (FEMA) flood maps of Warminster Township and the Borough of Ivyland areas indicate that there are no portions of housing areas that would be inundated during a 100-year flood event (USDA 2005).
- **Wetlands and Aquatic Habitats.** There are no wetland features or aquatic habitats at the Shenandoah Woods or the Jacksonville Road housing areas (PADEP 2006).
- **Coastal Zone Areas.** The Shenandoah Woods and the Jacksonville Road housing areas are not located in a coastal area; therefore, Coastal Zone Protection Act is not applicable.
- **Coral Reefs.** The Shenandoah Woods and the Jacksonville Road housing areas do not have any coral reef habitat; therefore, coral reef protection is not applicable.
- **Fisheries.** There is no Essential Fish Habitat (EFH) designation for the Shenandoah Woods or Jacksonville Road housing areas due to the absence of on-site surface water features; therefore, the Magnuson-Stevens Fishery Conservation and Management Act is not applicable.
- **Marine Mammals.** The Marine Mammal Protection Act is not applicable for the Shenandoah Woods or the Jacksonville Road housing areas because there is no marine habitat present.
- **Threatened, Endangered, and Other Sensitive Species.** There are no known populations of State or Federally-listed rare, threatened, or endangered plant or animal



species residing at the Shenandoah Woods or the Jacksonville Road housing areas (USFWS 2006).

- **Geologic Hazards.** There are no geological hazards identified at the Shenanhoah Woods or the Jacksonville Road housing areas (PADEP 2006).
- **Historic Resources.** According to the NAWC Warminster Environmental Impact Statement, there are no buildings that possess sufficient integrity required for listing in the National Register (Navy 1998).
- **Archaeological Resources.** The NAWC Warminster Environmental Impact Statement, Phase I Archaeological Survey, indicated that majority of NAWC Warminster was classified as moderate or moderate to low sensitivity for historic or prehistoric resources but there were several areas classified as high sensitivity of historic resources. The Phase 1B Archaeological investigation indicated that these areas did not possess the potential for significant archeological resources due to the extensive subsurface disturbance (Navy 1998).
- **Native American Graves.** According to site personnel, a Final Environmental Impact Statement (EIS), Disposal and Reuse of NAWC Warminster, dated December 1998, concluded that no Native American graves were found at the Shenandoah Woods or the Jacksonville Road housing areas (Szamborski 2006).
- **Solid Wastes.** According to site personnel, the solid waste generated at the Shenandoah Woods housing area is disposed of by J.P. Mascaro and Sons and the housing area along Jacksonville Road is disposed of by Gorski Trash Removal (Borough of Ivyland 2006, Edmond 2006, Szamborski 2006, Warminster Township 2006).
- **Universal Wastes.** According to site personnel, the Shenandoah Woods and the Jacksonville Road housing areas do not generate universal wastes (Szamborski 2006).
- **Medical Wastes.** According to site personnel, the Shenandoah Woods and the Jacksonville Road housing areas do not generate medical wastes (Szamborski 2006).
- **Hazardous Materials.** Shenandoah Woods housing area has a small quantity of hazardous materials associated with the maintenance equipment garage which include fuel and lubricants. Information on the disposal of hazardous materials was not available.



1.0 Purpose

The United States (U.S.) Navy Base Realignment and Closure (BRAC) Program Management Office (PMO) prepared this Environmental Condition of Property (ECP) report for the off-base housing areas (Shenandoah Woods and Jacksonville Road) of the Naval Air Station Joint Reserve Base (NAS JRB) Willow Grove, Montgomery County, Pennsylvania.

This report used existing information to summarize the historical, cultural, and environmental conditions of the housing areas. Information was reviewed with installation personnel to ensure all data are current and accurate. Where information was not available, the sources contacted and reference materials sought were documented.

The purposes of the ECP report are to:

- Provide the BRAC PMO with the information it may use to make disposal decisions regarding the property;
- Provide the public with information relative to the environmental condition of the property;
- Assist the local government in planning for the reuse of BRAC property;
- Assist Federal agencies during the Federal property screening process;
- Provide information for prospective buyers;
- Assist new owners in meeting their obligations under the U.S. Environmental Protection Agency's (USEPA's) "All Appropriate Inquiry" regulations, at such time as they become final; and
- Assist in determining appropriate responsibilities, asset valuation, liabilities, and liabilities with other parties to a transaction.



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2.0 Background

The property of the former Naval Air Warfare Center (NAWC) Warminster, Bucks County, Pennsylvania was originally owned by the Brewster Aeronautical Corporation where aircraft engineering and production was established during the 1940's, and held a contract with the U.S. Navy for the production of Naval aircraft. The U.S. Navy took full control of the property and began a conversion to an aircraft engineering and modification center (UPENN 1982).

The establishment of the Naval Air Material Unit (NAMU) Warminster in 1943, enabled the U.S. Navy to begin mass production of aircraft and eventually become a leader in adapting radar in U.S. Navy planes; NAMU also began to coordinate activities with the National Defense Research Committee and the Special Weapons Experimental Tactical Test Unit during the 1940's (Department of the Navy 1999, UPENN 1982).

The NAMU Warminster was designated the Naval Air Development Station (NADS) Warminster, prior to being changed to the Naval Air Development Center (NADC) Warminster in 1949 (Department of the Navy 1999, UPENN 1982). The NADC Warminster was renamed in January 1993 to the NAWC Warminster; however, NAWC Warminster was disestablished on September 30, 1996, in response to the DoD BRAC II program (Department of the Navy 2000). Ownership of two housing areas, of the original NAWC Warminster property, was transferred to NAS JRB Willow Grove located in nearby Horsham Township, Montgomery County, Pennsylvania. These housing areas include Shenandoah Woods and the Jacksonville Road housing areas (Edmond 2006, Szamborski 2006).



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3.0 Property Description

The NAS JRB Willow Grove off-base housing consists of two non-contiguous land parcels. The Shenandoah Woods housing area currently encompasses 51 acres in Warminster Township, Bucks County, Pennsylvania. The housing area on Jacksonville Road contains six small houses which cover 2.5 acres in the Borough of Ivyland, Bucks County, Pennsylvania (Department of the Navy 1999). Both of the housing areas were built prior to 1974 (Department of the Navy 1999).

The Shenandoah Woods housing area contains 199 residential units and includes a youth center, a small store, and a large garage for maintenance equipment (e.g., lawnmowers). The Jacksonville Road housing area includes six houses (Department of the Navy 1999). Refer to **Figure 3-1** for the locations of the NAS JRB Willow Grove off-site housing areas.

The area of the former NAWC Warminster, including both housing areas, lies within a populated suburban area, containing several acres of a small wooded areas. The Shenandoah Woods housing area is located on Orion Road, Warminster Township, and is generally bound by the former NAWC Warminster and a residential area known as Casey Village (USEPA 2006b).



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4.0 Environmental Condition Overview – Existing Environmental Information

As part of ECP report preparation, activities included record reviews, a meeting at the BRAC PMO Northeast office, a site visit, and personnel interviews to document current and historic conditions of the NAS JRB Willow Grove off-base housing areas including Shenandoah Woods and Jacksonville Road. The meeting at BRAC PMO Northeast office was conducted on 26 September 2005. On-site inspection was conducted on 22 March 2006.

The BRAC PMO Northeast office and personnel located at NAS JRB Willow Grove provided relevant information for this ECP report. Additionally, available reports of previous environmental investigations at the Shenandoah Woods and the Jacksonville Road housing areas were obtained and reviewed. The information presented in this report was reviewed with installation personnel to ensure all data are current and accurate. Where information was not available, the sources contacted and reference materials sought were documented.

Interviews were conducted with NAS JRB Willow Grove personnel during the site visit and in subsequent telephone conversations and e-mail communications.

4.1 Classification of Environmental Conditions

The Community Environmental Response Facilitation Act (CERFA) of 1992 (amending the Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA] to add Section 120(h)(4) of CERCLA, 42 United States Code (U.S.C.) Section 9620(h)(4)) requires the identification and documentation of uncontaminated real property controlled by the Department of Defense (DoD) Components where DoD plans to make excess property available for reuse pursuant to a base closure law. Uncontaminated property is defined as any "real property on which no hazardous substances and no petroleum products or their derivatives were known to have been released, or disposed of." This includes aviation fuel and motor oil. This ECP Report is not intended to identify uncontaminated property in compliance with CERFA and DoD policy. The Navy will comply with its statutory requirement to identify uncontaminated property through additional evaluations and documentation.

An Environmental Baseline Survey (EBS) was conducted in 1999 for the housing areas of NAS JRB Willow Grove which included the off-base housing areas of Shenandoah Woods and Jacksonville Road (Department of the Navy 1999).

4.2 Installation Restoration Program Sites

The NAWC Warminster was placed on the National Priorities List (NPL) USEPA ID# PA6170024545) in 1989 (USEPA 2005). The NPL is a prioritized list of sites with known or threatened releases of hazardous substances, pollutants, or contaminants at locations throughout the U.S. and its territories. The NPL is intended primarily to guide the USEPA in prioritizing sites that warrant further investigation. NAWC Warminster was placed on the NPL in 1989. The center was subsequently closed under BRAC, and the custody and control of the housing areas were transferred to NAS JRB Willow Grove. One of the sites, Site 5 located at Shenandoah Woods, is currently under the custody of NAS JRB Willow Grove. The identified



source areas have undergone Remedial Investigations (RI) to characterize potential sources of contamination (Department of the Navy 2000). These investigation activities were completed as part of the Installation Restoration Program (IRP), a DoD program developed in 1975 to investigate and manage environmental impacts on military bases. The IRP adheres to all applicable regulations, including those issued by the USEPA, CERCLA, and the Superfund Amendments and Reauthorization Act of 1986.

The U.S. Navy has identified one IRP site at the Shenandoah Woods housing area. The IRP site encompasses housing units #401 and #402, paved roadways and walkways, and several housing unit lawns (see **Figure 4-1**). The site originally included trenches that were used as a disposal area for demolition wastes, paints, solvents, scrap metal, aircraft paints, cans and asphalt from the former NAWC Warminster (Department of the Navy 1999, Department of the Navy 2000). Reportedly, the IRP site at the Shenandoah Woods housing area was operated from 1955 to 1970 and was approximately 12 feet (ft.) by 70 ft. by 8 ft. in dimension, and was covered by 2 ft. of fill, graded and seeded.

RI had been conducted in several phases; Phases I, II, and III of the RI were performed at the IRP site between October 1989 and December 1999. The Phase I RI was conducted from 1989 through 1991, and included soil gas sampling, geophysical surveys, air sampling, soil borings, and surface water and sediments sampling (Department of the Navy 2000).

The Phase II RI included the collection of samples of soils, surface water and sediments; in addition, an Aerial Photographic Site Analysis Report was completed during Phase II RI and later resulted in a more comprehensive Phase III RI that began in 1995. The Aerial Photographic Site Analysis Report identified two potential waste trenches, TR3 and TR5, in the area of Site 5. The field activities conducted during the Phase III RI included sampling and analysis of surface soils, subsurface soils, and waste. The results of the Phase III RI field activities were reported and released in a draft Phase III RI report, and resulted in a supplemental soil investigation in December 1999 (Department of the Navy 2000).

The results of all the RI conducted at the IRP site within the Shenandoah Woods housing area were summarized and incorporated into the RI report for the Operational Unit (OU)-10 (soil), which contains several other IRP sites located at NAWC Warminster. The report identifies OU-1B (groundwater), including the site at Shenandoah Woods housing area, and contains an assessment of any risk to human health and the environment (Department of the Navy 2000). The Navy, in conjunction with the U.S. Environmental Protection Agency (USEPA) and Pennsylvania Department of Environmental Protection (PADEP), issued a No Further Action Record of Decision for OU-10 (soil) on 28 September 2000, indicating that no further action is necessary to be protective of human health and the environment (Department of the Navy 2000). A second RI report was released to address the potential impact of the site on area groundwater quality, addressed under OU-1B (groundwater), in August of 2000. The Navy, in conjunction with the USEPA and PADEP, issued a No Further Action Record of ROD for OU-1B (groundwater) on 20 June 2000, indicating that no further action is necessary to be protective of human health and the environment (Department of the Navy 2000).



4.3 Storage Tanks

4.3.1 Aboveground Storage Tanks

There are no historical or existing aboveground storage tanks (ASTs) located at Shenandoah Woods or the Jacksonville Road housing areas (Department of the Navy 1999).

4.3.2 Underground Storage Tanks

There are no underground storage tanks (USTs) in use at Shenandoah Woods housing area; however, heating fuel USTs, that are no longer in use, are located at each of the six housing units on Jacksonville Road. Each UST is encased in concrete and located underneath the foundation (Department of the Navy 1999). The tanks have not been cleaned. Removal of the tanks would impact the integrity of the housing structure.

4.4 Munitions and Explosives of Concern

According to site personnel, there are no munitions and explosives of concern (MEC) at the Shenandoah Woods or the Jacksonville Road housing areas (Szamborski 2006).

4.5 Hazardous Wastes

Site personnel have indicated that neither the Shenandoah Woods or the Jacksonville Road housing areas generate hazardous wastes (Szamborski 2006).

4.6 Polychlorinated Biphenyls

All transformers within the housing areas are U.S. Navy owned and are considered non-polychlorinated biphenyls (PCB) (less than 50 parts per million [ppm] PCB or mineral oil). Sampling of the main pad-mounted transformer was conducted at the Shenandoah Woods housing area in 1998. The samples collected indicated that PCBs were found to be less than 1 ppm (Department of the Navy 1999, Reuters 1998).

4.7 Radiological Materials

There is no documentation of past or present radiological materials located at the Shenandoah Woods or the Jacksonville Road housing areas (Szamborski 2006).

4.8 Pesticides

Pesticide used at the Shenandoah Woods and the Jacksonville Road housing areas are applied by contracted pesticide services, although no documentation was available regarding these activities (Szamborski 2006).



4.9 Asbestos

An asbestos survey was conducted as part of a U.S. Navy-wide program to evaluate asbestos in housing from 1996 through 1998. The survey indicated that asbestos was found to be present in the Jacksonville Road housing area. Asbestos containing material (ACM) was found in roofing materials, wallboard and drywall, as well as piping insulation and expansion joints. ACM was also determined to be present in the Shenandoah Woods housing area in flooring materials, sheet rock, and caulking compound. The housing areas were abated by the housing department of NAS JRB Willow Grove and no further action is necessary related to ACM (Department of the Navy 1999).

4.10 Lead-Based Paint

A lead-based paint survey has not been conducted for the housing areas (Snyder 2006). Due to the age of initial building construction (prior to 1974), it is likely that lead paint was used at the housing areas and could still be present.

4.11 Radon

A radon survey was conducted in a representative sampling of the housing areas with radon levels found to be below the USEPA action level of 4.0 picoCuries per Liter (pCi/L) (Department of the Navy 1999).

4.12 Air Quality

The Shenandoah Woods and the Jacksonville Road housing areas do not operate any emissions-generating equipment (Edmond 2006, Szamborski 2006).

4.13 Water Quality

4.13.1 Drinking Water

The Safe Drinking Water Act (SDWA) of 1974, amended in 1986 and 1996, was passed to protect public health by regulating the nation's public drinking water supply and its sources including rivers, lakes, reservoirs, springs, and groundwater drinking wells. The Shenandoah Woods and the Jacksonville Road housing areas obtain potable water from Bucks County Water & Sewer Authority (BCW&SA), a public utility (BCW&SA 2006, Edmond 2006, Szamborski 2006).

4.13.2 Stormwater

Currently, stormwater at the Shenandoah Woods housing area is managed through the use of an existing retention basin, referred to as East Pond, with a 425-foot long drainage swale that directs runoff into the retention basin, and several other storm drains that discharge into the basin (Dewberry & Davis 2005a, Dewberry & Davis 2005b). The retention basin is currently dammed by a 6.5-foot concrete riser and the embankment that supports Patrol Road. The dam outlet consists of a single 30-inch by 52-inch pipe that connects to a municipal stormwater collection system downstream of the basin along Decker Lane (Dewberry & Davis 2005a,



Dewberry & Davis 2005b). Refer to **Figure 4-2** for the location of the stormwater retention basin.

No information was available on stormwater management at the Jacksonville Road housing area.

4.13.3 Surface Water

There are no surface water features located at the Shenandoah Woods or the Jacksonville Road housing areas (USFWS NWI 2006).

4.13.4 Wastewater

The Shenandoah Woods and the Jacksonville Road housing areas do not operate any on-site wastewater treatment facilities. Wastewater generated at the housing areas is conveyed to and treated by BCW&SA, a public utility (BCW&SA 2006, Edmond 2006, Szamborski 2006).

4.14 Natural Resources

4.14.1 Floodplains

The Federal Emergency Management Agency (FEMA) flood maps of the Warminster Township and the Borough of Ivyland indicate that there are no portions of housing areas that would be inundated during a 100-year flood event (**Figure 4-3**) (USDA 2005).

4.14.2 Wetlands and Aquatic Habitats (Special Aquatic Sites)

There are no wetland features or aquatic habitats at the Shenandoah Woods or the Jacksonville Road housing areas (PADEP 2006).

4.14.3 Coastal Zone Areas

The Shenandoah Woods and the Jacksonville Road housing areas are not located in a coastal area; therefore, Coastal Zone Protection Act considerations are not applicable.

4.14.4 Coral Reefs

The Shenandoah Woods and the Jacksonville Road housing areas do not have any coral reef habitat; therefore, coral reef protection issues are not applicable.

4.14.5 Fisheries

There is no Essential Fish Habitat (EFH) designation for the Shenandoah Woods or the Jacksonville Road housing areas due to the absence of on-site surface water features; therefore, the Magnuson-Stevens Fishery Conservation and Management Act is not applicable.



4.14.6 Marine Mammals

The Marine Mammal Protection Act is not applicable for the Shenandoah Woods or the Jacksonville Road housing areas because there is no marine habitat present.

4.14.7 Threatened, Endangered, and Other Sensitive Species

There are no known populations of State or Federally-listed rare, threatened, or endangered plant or animal species residing at the Shenandoah Woods or the Jacksonville Road housing areas (Department of the Navy 2000, USFWS 2006).

4.14.8 Geological Hazards

There are no geological hazards identified at the Shenandoah Woods or the Jacksonville Road housing areas (PADEP 2006).

4.15 Cultural Resources

4.15.1 Historic Resources

According to the NAWC Warminster Environmental Impact Statement, initially there appeared to be several buildings that possessed the required historic or architectural importance necessary to be eligible for listing in the National Register. However, the Pennsylvania Historical and Museum Commission determined that the buildings did not have sufficient integrity required for listing in the National Register (Navy 1998).

4.15.2 Archaeological Resources

The NAWC Warminster Environmental Impact Statement, Phase I Archaeological Survey, indicated that the majority of NAWC Warminster was classified as moderate or moderate to low sensitivity for historic or prehistoric resources but there were several areas classified as high sensitivity of historic resources. The Phase 1B Archaeological investigation for portions of NAWC Warminster was conducted to address the cultural resources issues raised through the Phase I research. The Phase 1B survey concluded that these areas did not possess the potential for significant archeological resources due to the extensive subsurface disturbance (Navy 1998).

4.15.3 Native American Graves

According to site personnel, a final Environmental Impact Statement (EIS), Disposal and Reuse of NAWC Warminster, dated December 1998, concluded that no Native American graves were found at the Shenandoah Woods housing area (Szamborski 2006). No information was available on the Jacksonville Road housing areas.

4.16 Solid Wastes

According to site personnel, the solid waste generated at the Shenandoah Woods housing area is disposed of by J.P. Mascaro and Sons while the Jacksonville Road housing area is disposed



of by Gorski Trash Removal (Borough of Ivyland 2006, Edmond 2006, Szamborski 2006, Warminster Township 2006).

4.17 Universal Wastes

According to site personnel, the Shenandoah Woods and the Jacksonville Road housing areas do not generate universal wastes (Szamborski 2006).

4.18 Medical Wastes

According to site personnel, the Shenandoah Woods and the Jacksonville Road housing areas do not generate medical wastes (Szamborski 2006).

4.19 Hazardous Materials

Shenandoah Woods housing area has a small quantity of hazardous materials associated with the maintenance equipment garage which include fuel and lubricants. Information regarding the disposal of the hazardous materials was unavailable.

4.20 Summary of Environmental Conditions

Environmental conditions at the off-base housing areas of the NAS JRB Willow Grove consist of the following:

- Due to the age of initial building construction (prior to 1974), it is likely that lead paint was used at the housing areas and could still be present
- The presence of the six heating fuel USTs at the Jacksonville Road housing area.

Based on the information reviewed, there are no locations on the property that have established land use restrictions that need to be maintained, including the IRP site, when off-base housing areas of the NAS JRB Willow Grove are transferred to other private and public entities.



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5.0 Certification

I certify that the Environmental Conditions of Property Report for the Off-Base Housing Areas of the Naval Air Station Joint Reserve Base, Willow Grove, Pennsylvania, May 11, 2006 and its enclosures were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information contained within the Environmental Conditions of Property Report for Off-Base Housing Areas of the Naval Air Station Joint Reserve Base, Willow Grove, Pennsylvania, May 11, 2006 and its enclosures is, to the best of my knowledge and belief, true, accurate and complete and accurately reflects the property's condition as of May 11, 2006 based upon my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information.

DAVID DROZD
Name

David Drozd
Signature

5-15-06
Date



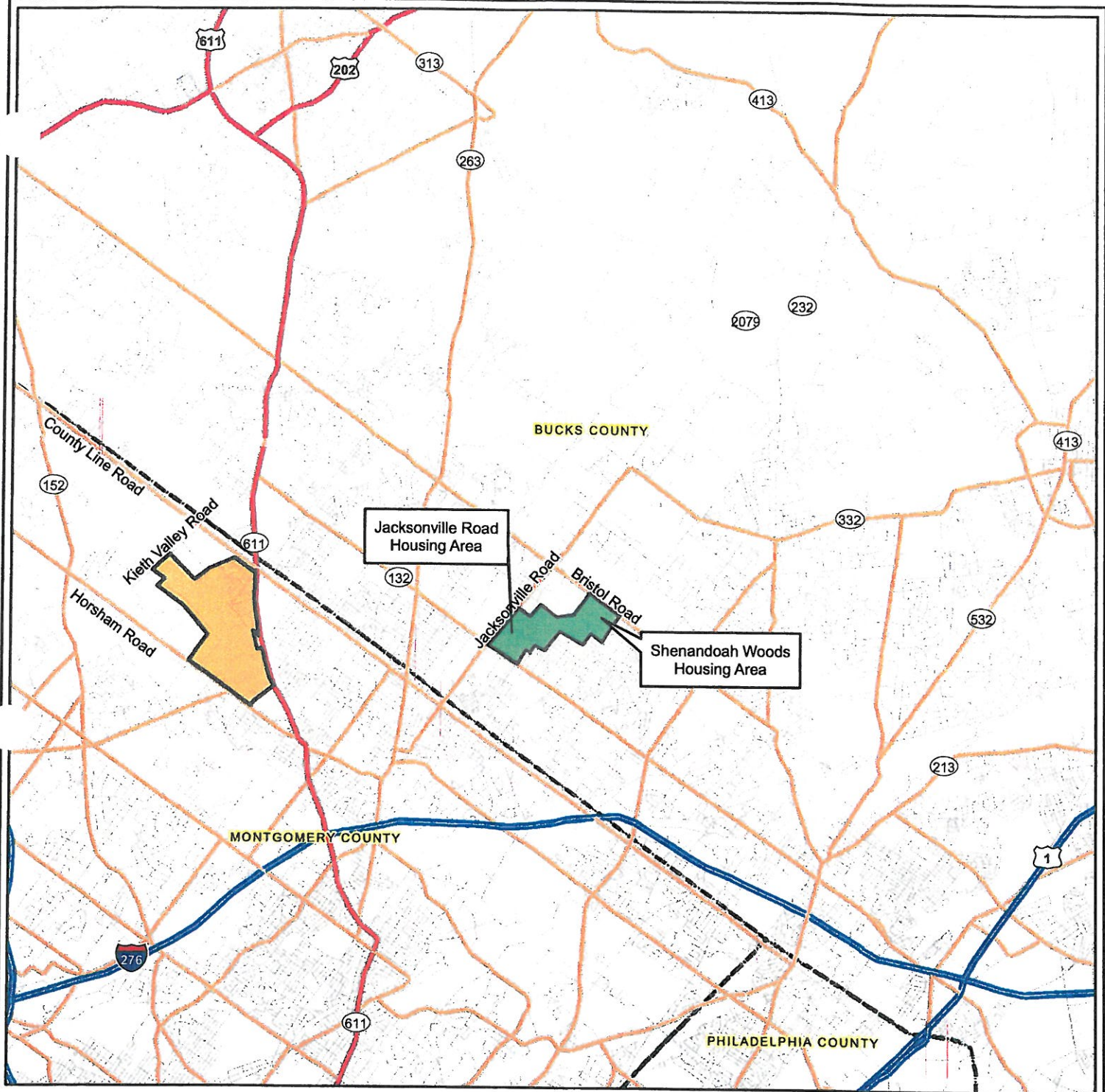
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FIGURES



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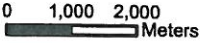
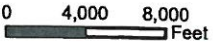
LEGEND

- Former Naval Air Warfare Center Warminster Boundary
- NAS-JRB Willow Grove Boundary
- County Boundary
- Limited Access
- Highway
- Major Road
- Local Road



NOTES & SOURCES
 Coordinate System: NAD 83, UTM Zone 19
 Data Sources: TNUS 2004

Off-Site Housing Areas
 NAS-JRB Willow Grove
 Warminster, PA



SITE LOCATION MAP

FIGURE
 3-1

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 April 6, 2006 DWN: JBB ABF CHKD: EG



ATTACHMENT A

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ATTACHMENT B

List of Contacts



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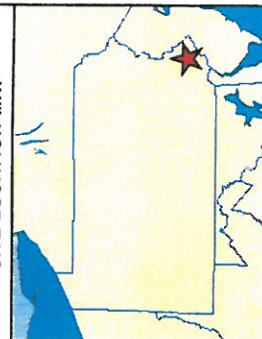



ATTACHMENT B List of Contacts

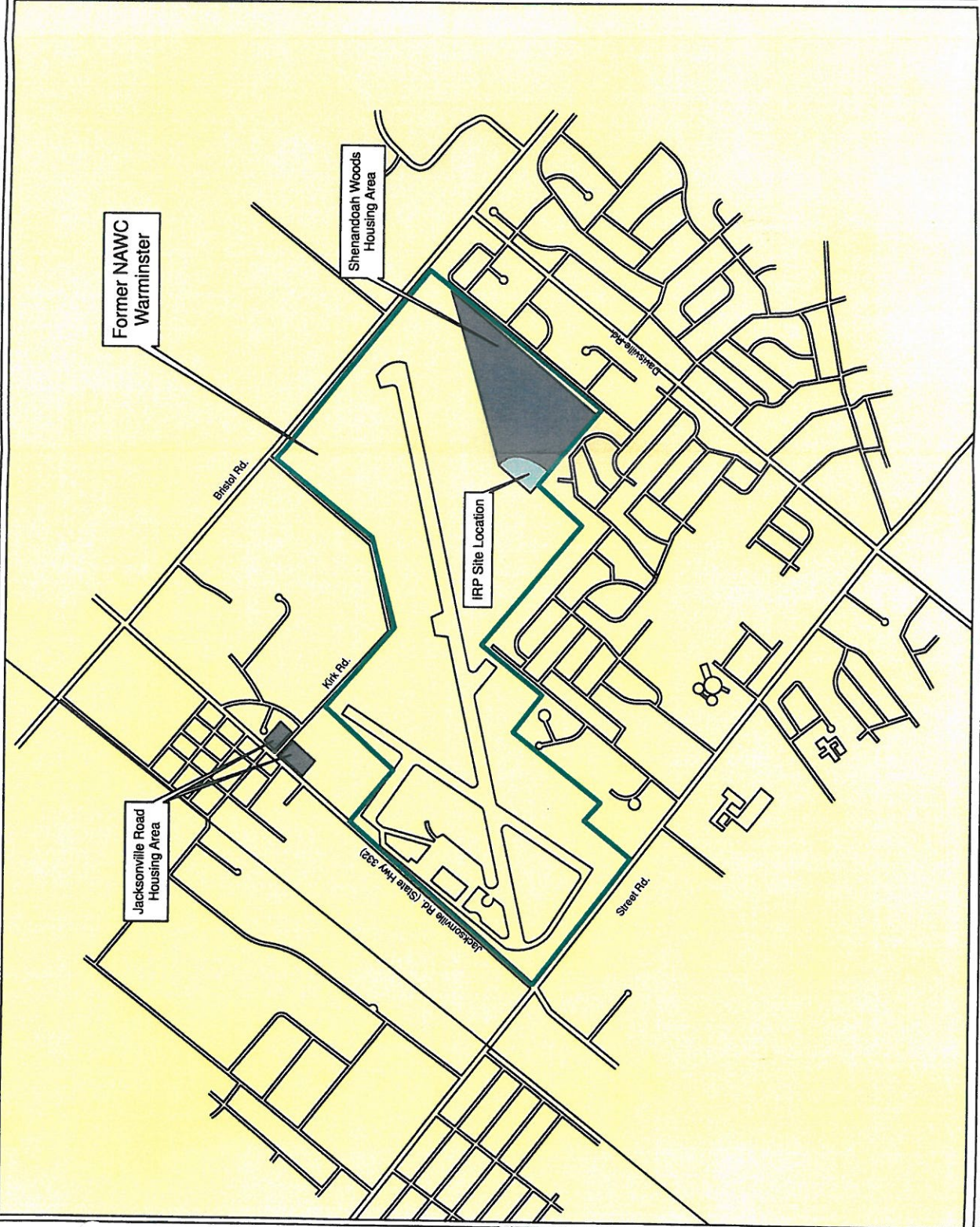
Navy ECP Contacts				
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Garrett, Laura	Willow Grove ECP Project Team Member	Plymouth Meeting, PA	610-828-8100, ext. 129	laura.garrett@amec.com

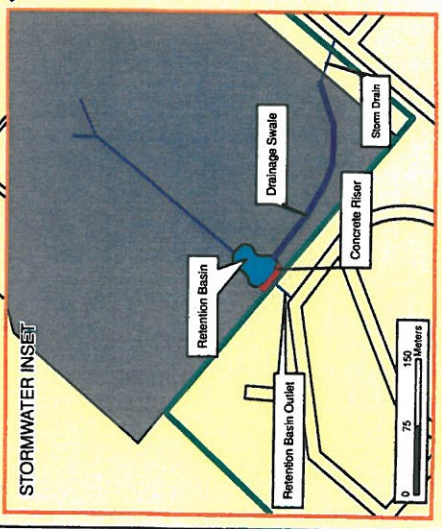
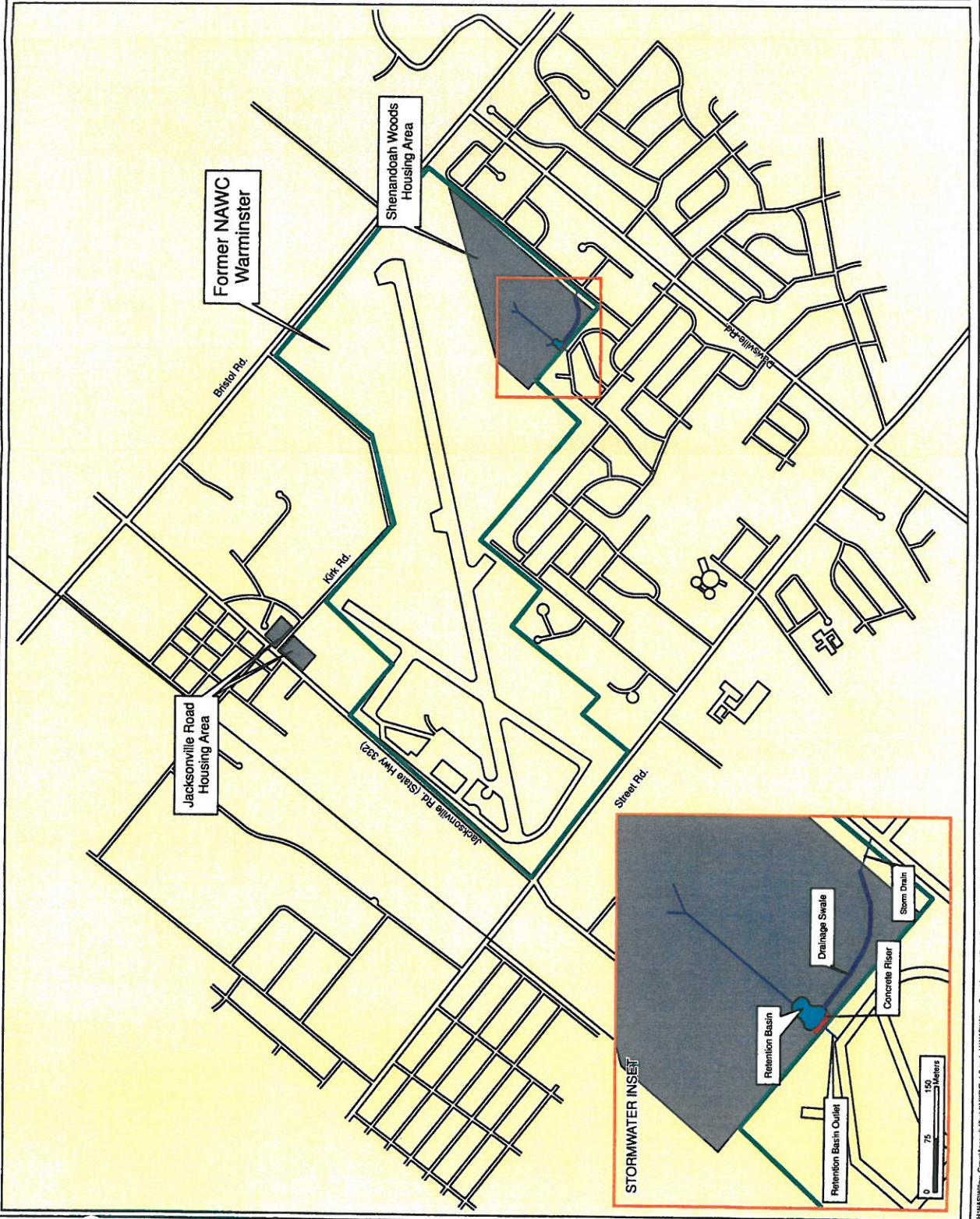


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<p>TITLE</p> <p>IRP SITE LOCATION</p> <p>Off-Site Housing Areas NAS JRB Willow Grove Warminster, PA</p>	<p>LEGEND</p> <ul style="list-style-type: none">  IRP Site Location  NAWC - Former Naval Air Warfare Center Warminster  Housing Areas 	<p>SITE LOCATION MAP</p> 	<p>NOTES & SOURCES</p> <p>Coordinate System: NAD 83, UTM Zone 18 Data Sources: TNUS 2004, Department of the Navy 2000</p>	<p>0 750 1,500 Feet</p> <p>0 200 400 Meters</p>   <p>FIGURE 4-1</p> 
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TITLE	LOCATION OF STORMWATER RETENTION BASIN Off-Site Housing Areas NAS JRB Willow Grove Warminster, PA	LEGEND	SITE LOCATION MAP	NOTES & SOURCES
		<ul style="list-style-type: none"> Storm Drains Drainage Swale Retention Basin Concrete Riser NAWC - Former Naval Air Warfare Center Warminster Housing Areas Inset Area 		<p>Coordinate System: NAD 83, UTM Zone 18 Data Sources: TINUS 2004, Department of the Navy, 2003</p> <p>0 750 1,500 Feet 0 200 400 Meters</p>
				FIGURE 4-2



TITLE

FEMA FLOOD MAP

Off-Site Housing Areas
 NAWC JRB Willow Grove
 Warminster, PA

LEGEND

FEMA C3 Zones
 Area inundated by 100-year flooding, for which no Base Flood Elevations have been determined
 Area inundated by 100-year flooding, for which Base Flood Elevations have been determined
 500-year

NAWC - Former Naval Air Warfare Center Warminster
 Housing Areas

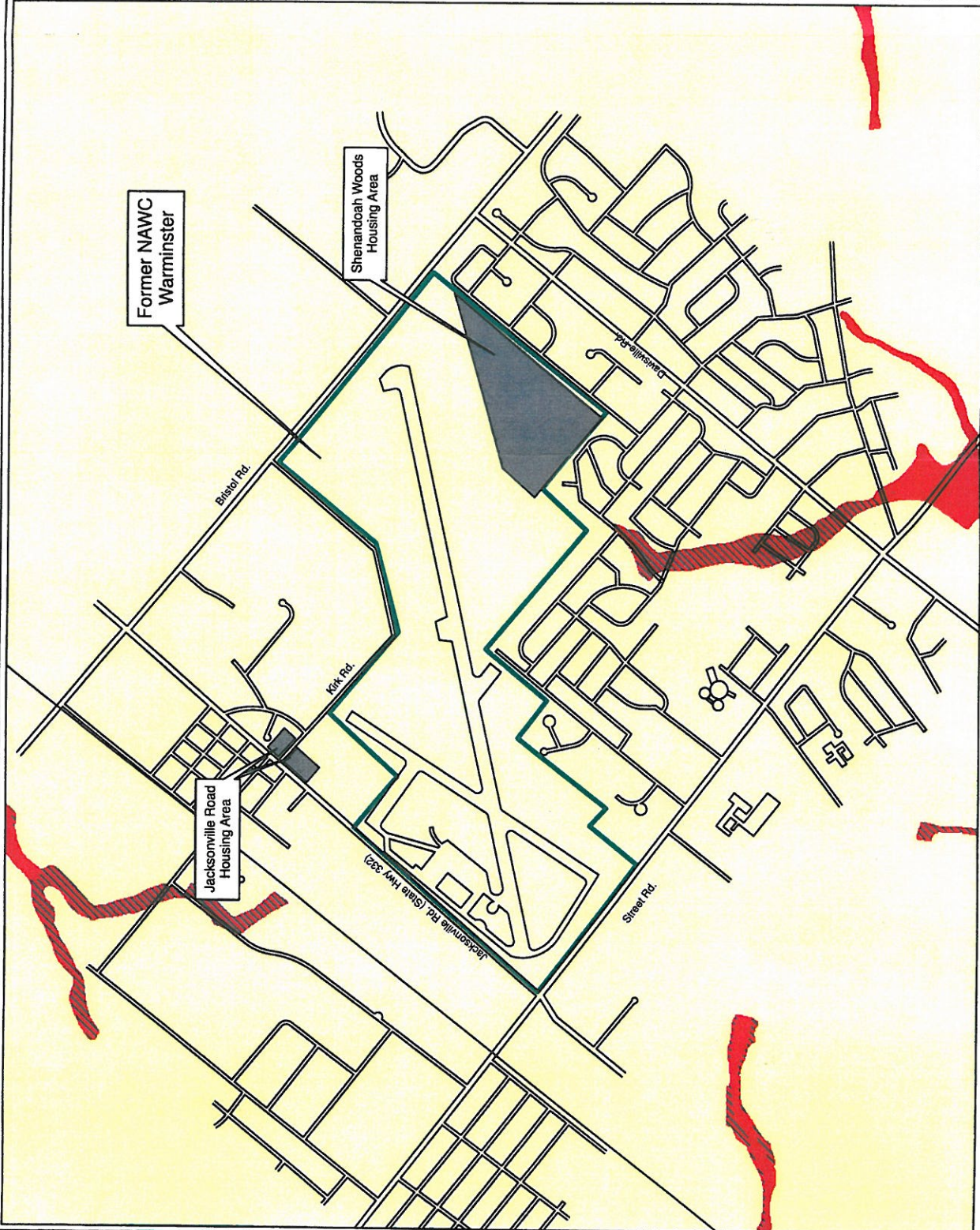


NOTES & SOURCES

Coordinate System: NAD 83, UTM Zone 18
 Data Sources: TINUS 2004, USGS 2005

0 750 1,500 Feet
 0 200 400 Meters

FIGURE 4-3



H:\NAS\Willow_GrowthAppendix\Task\11007\Fig.4-3.mxd H:\NAS\Willow_GrowthAppendix\Task\11007\Fig.4-3.pdf April 11, 2008 DWN: JBB ABT CHC: EG