5. FUTURE CHALLENGES AND INITIATIVES

Sunrise over the Chesapeake Bay.
The Department of Defense has been an active participant in the restoration and cleanup efforts of the Chesapeake Bay long before formal Chesapeake Bay Program directives were signed. Some efforts at Bay installations were initiated as a result of Congressional legislation. Environmental legislation proliferated in the late 1960s and increased Department of Defense roles and responsibilities in preserving and protecting the environment. In the decade prior to signing its first Chesapeake Bay agreement in 1984, the Department of Defense spent more than $180 million for projects in the Chesapeake Bay watershed.

Currently, a Chesapeake Bay Program Coordinator provides guidance, oversees research, and assists with restoration efforts at each installation. To demonstrate the Department of Defense’s continuing commitment to the restoration of the Chesapeake Bay, this chapter highlights initiatives and discusses the challenges associated with storm water management, population increase, encroachment, and riparian forest buffers in the Chesapeake Bay region.

In June 2000, the Chesapeake Bay Program partners adopted *Chesapeake 2000*, a strategic plan and a vision of the future of the Chesapeake Bay; a vision that includes abundant, diverse populations of living resources fed by healthy streams and rivers, sustaining strong local and regional economies, and a unique quality of life. *Chesapeake 2000* refocused the challenges and goals of the Chesapeake Bay Program to improve water quality, restore vital habitat, such as marshes, forests, and underwater grasses and implement sensible harvest levels aimed to keep the Bay’s intricate ecosystem in balance. Likewise, *Chesapeake 2000* recognizes that conditions in the water are inextricably linked to conditions on the land. The agreement asserted that a broad public stewardship must encompass sound land use practices to protect the health of local waterways and the Bay. To meet these newly-focused goals and initiatives, the Department of Defense has continued to lead in efforts to improve each of the commitment areas and has undertaken several initiatives to help military installations in the Chesapeake Bay work towards agency-wide environmental goals.

**STORM WATER MANAGEMENT**

Storm water that flows across impervious surfaces such as roads, paved parking lots, and rooftops can carry potentially harmful contaminants to local streams that lead to the Chesapeake Bay (Figure 31). Urban runoff continues to degrade water quality and is one of the most significant factors contributing to the decline of the Bay’s health. Recognizing the environmental importance of improving the quality and reducing the quantity of storm water runoff, Department of Defense installations actively manage storm water to protect the Bay. At Langley Air Force Base, a program has been implemented to monitor storm water flows.
water runoff and establish best management practices to control and limit the discharges associated with installation industrial activities. These best management practices include educating installation personnel on how to avoid harmful discharges and preventing pollution from entering the Bay by constructing systems to control storm water runoff.

As part of an overall effort to help protect and restore water quality, the Navy has encouraged its facilities to implement storm water management strategies such as low impact development. The Navy is working with the Low Impact Development Center to draft a comprehensive design plan for implementing low impact development practices at all military installations. Low impact development is a comprehensive land planning and engineering design approach focused on maintaining and enhancing the pre-development hydrologic regime of urban and developing watersheds. The plan will provide information on how low impact development can address regulatory requirements and establish resource protection goals for installations. The plan will include examples of practices and procedures to determine which best management practices will be most effective at specific installations.

At the Washington Navy Yard and Naval Medical Center Portsmouth, several low impact development projects such as replacing conventional parking lot asphalt cover with permeable paving stone have successfully demonstrated effective storm water management. These techniques utilized by the Navy have improved the quality and reduced the quantity
of storm water runoff; thus, preventing nutrient- and sediment-laden storm surges from entering the Bay. The Navy Yard Low Impact Development project now serves as a model to train personnel on effective use of these practices for managing storm water runoff. At both Fort Meade and Aberdeen Proving Ground in Maryland, installations that are projected to grow significantly in the next several years, the Army has integrated low impact development and BayScape practices to control storm water and create wildlife habitat. Extensive use of pollution prevention techniques such as substituting green products for hazardous ones, moving operations under cover and onto impervious surfaces for easy cleanup, and using less water and chemical-intensive cleaning methods are being used to help prevent storm water from polluting the Bay.

In addition, the Department of Defense Clean Water Act Services Steering Committee encourages military installations to work with the Environmental Protection Agency and the states to identify potential water quality trading opportunities. Water quality trading would allow one source to meet its regulatory obligations by using pollutant reductions created by another source that has lower pollution control costs. This approach could lead to more efficient and cost-effective implementation of the Clean Water Act requirements, especially water quality trading initiatives that reduce compliance costs and provide greater regulatory flexibility in achieving National Pollutant Discharge Elimination System and water quality standard permit requirements, load reduction allocations associated with total maximum daily loads, non-point source reductions, and storm water runoff controls.

**ENCROACHMENT**

Encroachment is the cumulative impact of pressure placed on military installations, ranges, and surrounding communities resulting from increasing development (Figure 32). As urban growth continues to affect the Chesapeake Bay region, U.S. military forces are pressured to meet the demands of national military readiness with ever decreasing space to train troops. Open spaces including land, airspace, sea, and frequency spectrum are vital to Department of
Defense mission readiness. In order to prepare military forces, adequate training spaces are needed to simulate realistic combat conditions, including live-fire training and weapons testing. Encroachment can restrict units and personnel from conducting activities and increase the cost of training and testing.

The Naval Support Facility Patuxent River in Maryland has taken the initiative to raise awareness about environmental and encroachment issues in the operational community. Recently, the St. Mary’s Board of County Commissioners purchased two parcels of land within the Air Installation Compatibility Use Zone. One parcel of land purchased includes Lexington Manor, an area that housed residents near Naval Support Facility Patuxent River. Located under the flight path of the Navy aircraft landing at Patuxent River, this created a potentially dangerous situation. The purchase of this land will ensure the housing complex is demolished and the remaining families are relocated to safer housing. Ultimately, the land will be brought into compliance with the Air Installation Compatibility Use Zone regulations, creating a safer environment at Naval Support Facility Patuxent River. In addition, 50 acres of the land purchased will remain as open space and eventually be accessible to the public for natural resource awareness. The Army is working with non-governmental organizations through a cooperative agreement to cost-share the purchase of land titles or conservation easements from willing sellers (at fair market value) to minimize incompatible land use adjacent to their installations. This project, known as the Private Lands Initiative, strives to reduce training restrictions, meets Endangered Species Act responsibilities by preventing future species listings, and prevents restrictions on available maneuver space.

**POPULATION GROWTH**

Environmental problems in the Chesapeake Bay are magnified due to the increasing population in the area. Currently, 15 million people live in the Bay's watershed and the population is anticipated to grow to 18 million people by the year 2020. Population growth and demographic changes on and near the Chesapeake Bay have the potential to challenge the Department of Defense’s current activities and the future capabilities of military installations. As the population surrounding Naval Support Facility Patuxent River has increased, so has the sensitivity to supersonic flight, low-level aircraft, and repetitive noise. As a result, Naval Support Facility Patuxent River has created a new video entitled *Aircrew Awareness in the Patuxent River Complex* to address the areas of rapidly expanding population. The video contains vital information for aircrews flying in the Chesapeake Test Range. It familiarizes aircrews with the Patuxent River Complex and how their actions...
contribute to the supportive relationship between Naval Support Facility Patuxent River and the community. The video also encourages aviators to be vigilant in conducting missions so that they have minimal impact on residents. Aviators can minimize their impact by avoiding flight paths near schools, churches, and houses when possible. As part of the training program, a fact sheet was developed for all aviators to keep with their flight books. In addition to the fact sheets these flight books include video highlights, a map of the test range, and a list of commonly used radio frequencies. This video will ensure Naval Support Facility Patuxent River accomplishes its military mission with minimal impact on the surrounding communities.

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**RIPARIAN FOREST BUFFERS**

Riparian forest buffers provide habitat for wildlife and stabilize areas to prevent erosion. Buffers offer numerous benefits to wildlife—providing food, shelter, habitat, and

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**FIGURE 33—RIPARIAN FOREST BUFFER RESTORATION ON BAY INSTALLATIONS HELPS TO RECYCLE NUTRIENTS AND IMPROVE WATER QUALITY.**

Lack of forest buffers

Healthy forest buffers

Streamside areas that lack riparian forest buffers are prone to erosion. When riparian forest buffers are not present, stream water temperature rises, which can be detrimental to aquatic organisms. In the absence of riparian forest buffers, sub-surface nutrients are not taken up or reduced prior to entering the stream with groundwater.

Riparian forest buffers stabilize stream banks by reducing erosion, keeping stream water temperature cool as a result of shading, and provide important habitat for organisms, both on the land and in the stream itself.

Riparian forest buffers also help reduce nutrient inputs into streams. Some sub-surface nutrients are taken up by the roots of the riparian vegetation, reducing the nutrients that enter the stream with groundwater to a small amount.
nesting areas. The vegetative root systems in these areas stabilize soils and moderate stream flow, reducing the potential for sediment erosion. Specifically, forest buffers moderate air and water temperatures and improve water quality by trapping and filtering sediments and nutrients before they enter the Bay (Figure 33). The Department of Defense supports off-site efforts to reduce encroachment on its military installations by promoting buffers along waterways, encouraging conservation easements, and maintaining and restoring wetlands and shorelines. These efforts help sustain the military training environment, protect watersheds, improve water quality, and enhance conservation of natural resources.

In conjunction with the Prince William Conservation Alliance in Virginia, Marine Corps Base Quantico is working to acquire Merrimac Farm. This acquisition will preserve the natural value of the land and prevent future development of this site. Preservation of this farm, which borders the Base, will protect the installation from issues associated with encroachment and save 100 acres of valuable non-tidal wetlands and a major groundwater recharge site from development. In the future, the partners hope this land can be used as a public environmental education center. This project is compatible with Department of Defense conservation efforts and would create a buffer zone around Marine Corps Base Quantico.

Army Compatible Use Buffers is an innovative new program involving diverse partnerships to sustain long-term mission requirements by protecting private land adjacent to Army installations. As encroachment accelerates, these areas become critical to the training and readiness necessary to fight and win the nation’s wars. By utilizing partnerships with conservation organizations, this program helps the Army fulfill its responsibility as a federal agency to comply with all environmental regulations, while at the same time limiting the effects of encroachment, and maximizing the ability of the installations’ lands to support the military mission.

**PARTNERSHIPS**

Much of the Department of Defense's success in restoration in the Chesapeake Bay region has been the result of long standing partnerships with neighboring communities and federal, state, and local agencies (Figure 34). The Department of Defense continues to expand these partnerships in order to share expertise and ensure that the progress toward achieving restoration and protection goals in the Chesapeake Bay is effective and efficient.

One example of an effective partnership is Businesses for the Bay. This organization is a voluntary team of forward-thinking businesses, industries, government facilities, and other organizations within the Chesapeake Bay watershed. The Department of Defense

![Figure 34](image-url)
continues to work with partnering businesses to implement pollution prevention through improving daily operations and reducing contaminants and other debris from entering the Chesapeake Bay. In 2004, Defense Supply Center Richmond was a recipient of an Outstanding Achievement for a Government Facility award. Defense Supply Center Richmond is a storage and office complex that manages various types of hazardous materials, ozone-depleting substances reserve, and petroleum-based products for the Department of Defense. Defense Supply Center Richmond has centered its development on an ISO 14001 compliant Environmental Management System and pollution prevention initiatives that focus on material substitution, process modification, and recycling. These efforts led to the creation of an Environmental Management System partnership with community stakeholders including other Department of Defense military installations, two cities, two counties, two regional planning districts, a deep-water port, and Virginia’s environmental regulatory agency. The partnership has strengthened communication between different groups and has provided pollution prevention assistance to other members. Defense Supply Center Richmond was recognized for its leadership and partnership efforts with other government and local entities.

In addition, the Department of Defense is working with the Smithsonian Institution to use a rapid and inexpensive testing method in Chesapeake Bay water quality studies. The method will assist in determining the health of the Bay’s tributaries which can become polluted from point and non-point sources. Traditional methods that rely on fish and bottom-dwelling organisms are expensive and time consuming. This new method will rely on the presence and distribution of aquatic plants instead of fish to determine the health of streams.

Through another partnership, the Department of Defense was able to protect valuable nesting areas. At Bloodsworth Island, an uninhabited 5,000 acre marsh located in the middle of the Chesapeake Bay, hundreds of blue herons make the island their home each spring and summer. Over the years, encroaching salt water and other conditions have reduced habitat, including the loblolly pines, a favorite tree for nesting. As an active bombing range, naval warfare exercises have always been restricted to outside the blue herons’ main colony. In
1983, the Navy along with the U.S. Fish and Wildlife Service, Maryland Department of Natural Resources, and other environmental organizations built 26 nesting platforms on the island. In 2002, 49 new platforms with 4 nesting sites each were built and 26 existing platforms were rebuilt and repaired. This was a collaborative effort with participants from Naval Support Facility Patuxent River, Washington Navy Yard, and U.S. Fish and Wildlife Service who were successful in building new nests for the blue herons.

One important component of the Department of Defense's multi-faceted Chesapeake Bay Program involves researching and restoring submerged aquatic vegetation, a group of true, flowering plants adapted to living and reproducing underwater. Known locally as bay grass, submerged aquatic vegetation (SAV) intercepts and filters nutrients before they reach and impact fragile estuary ecosystems. The publication entitled, *SAV Restoration Handbook: A Guide for Restoring SAV on DoD Installations*, was the collaborative effort of years of Department of Defense involvement with submerged aquatic vegetation and of the valuable partnerships with the greater scientific community. The combined efforts ensure that natural resource management is integrated with military readiness activities and the Department of Defense is committed to its restoration and enhancement of the unique assets of the Bay. These partnerships, along with the willingness of the U.S. Congress to support the Chesapeake Bay programs and initiatives, contribute to the continued restoration and protection of the Chesapeake Bay.

CONCLUSIONS

The Department of Defense continues to demonstrate its commitment to the restoration and protection of the Chesapeake Bay. This commitment fits well within the framework of the military's focus on sustainability. Without a strong focus on preserving the quality of the environment and the availability of resources, the Department of Defense's mission to defend the nation's values and way of life becomes more difficult over time. The accomplishments highlighted in this report represent only a fraction of the Department of Defense's efforts in the Bay. These efforts will continue to grow as partnerships expand and broaden between federal, state, and local agencies, organizations, and businesses and efforts emerge to collectively restore and protect Bay habitats while encouraging greater environmental awareness about the issues impacting the Chesapeake Bay.
“Businesses that implement environmental policies and practices that go ‘above and beyond compliance’ are the environmental leaders that set a new standard for other businesses to study and adopt. Businesses for the Bay members know that improved environmental performance adds value to their company, shareholders, employees and the community—saving money while saving the Bay.”

Mary Lynn Wilhere

Businesses for the Bay, Coordinator
Alliance for the Chesapeake Bay

Businesses for the Bay (B4B) is a voluntary pollution prevention program of the Chesapeake Bay Program with more than 700 member facilities and partners. Ms. Wilhere manages this program for the Alliance for the Chesapeake Bay.

Ms. Wilhere works with businesses, trade groups and associations, non-government organizations, and government agencies to find solutions to environmental challenges. Ms. Wilhere provides technical assistance and recommendations for cost savings, pollution prevention, adoption of innovative technology, and assistance to reduce a facility’s toxic and nutrient loads to the Chesapeake Bay watershed.

Degrees
- BSBA, Georgetown University
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