DELAWARE WATER GAP NATIONAL RECREATION AREA

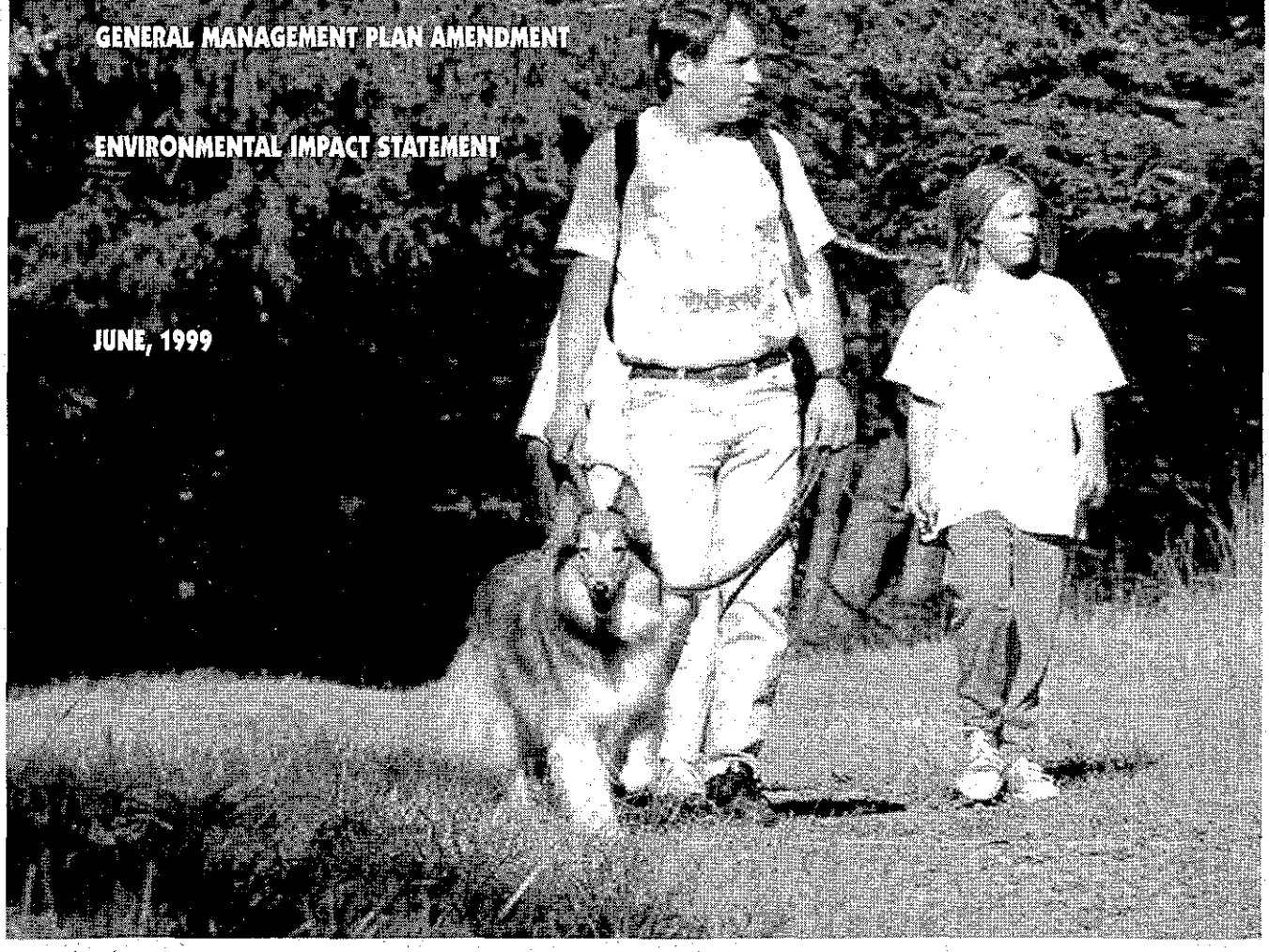
DRAFT

TRAILS PLAN

GENERAL MANAGEMENT PLAN AMENDMENT

ENVIRONMENTAL IMPACT STATEMENT

JUNE, 1999



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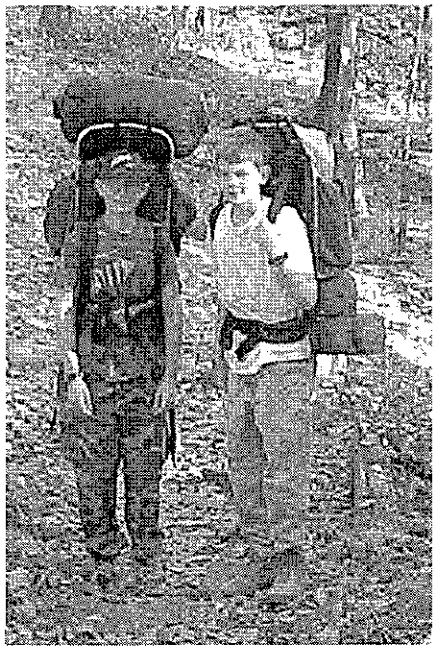
DELAWARE WATER GAP NATIONAL RECREATION AREA



Environmental Impact Statement

This Draft Trails Plan/General Management Plan Amendment/Environmental Impact Statement presents a proposal and two alternatives for the designation of a park-wide trails system at Delaware Water Gap National Recreation Area. This document also describes the environment that will be affected, and the environmental consequences of implementing this action. The alternatives under consideration, in addition to the proposal, include the no-action alternative and one designation option.

Alternative A describes the current trails system without a change in designation or management and constitutes the no-action alternative. Alternative B, the park's preferred plan, proposes the designation of a system based on four networks. This alternative would increase the number of trails in the park, provide more mileage for various uses, and improve visitor facilities and interpretive experiences. Linkages between trails inside the park and activities outside the boundaries would be encouraged. Alternative C proposes a series of smaller independent networks clustered around significant park resources that would also increase the number of trails and mileage, but provide for fewer linkages between or beyond each network. Both action alternatives (B,C) would include the development of a coordinated trail signage system and improvements to access and visitor facilities.

The public review period begins on July 9, 1999 and will last for 45 days after the publication of a Notice of Availability in the Federal Register. Public meetings will be held in early August, 1999. A final draft will be released for a 30-day public review period following the incorporation of agency and citizen comments on this draft document.

Comments on this draft document should be addressed to:

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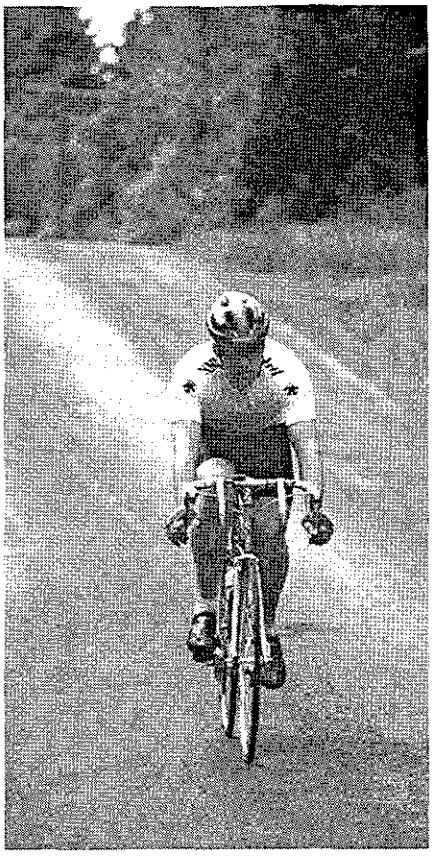
For further information regarding this document, please contact the Superintendent at (570) 588-2418.

SUMMARY



The Delaware Water Gap National Recreation Area (DWGNRA) is the largest natural area in the National Park System between Virginia and Maine and is among the ten most visited in the entire system. Much of this visitation is from nearby, rapidly expanding New York, northern New Jersey and Philadelphia metropolitan areas, and is growing at a steady rate. Although the park encompasses 67,000 acres of woodlands, farms, mountains, creeks, and the Delaware River, it does not have a designated trail system. Prior to the creation of DWGNRA, small communities with extensive road networks dotted the landscape. Local residents developed paths leading to important natural and cultural features that were expanded as part of the growing resort and recreation industry. These old roads and informal paths now serve as trails in the park.

The park's 1987 General Management Plan (GMP) outlined a potential system for trail development that has influenced the location of current trails in the park. Although the GMP continues to be used as a general guide for trail management, it is no longer adequate to address the policy and operational issues now facing park managers. Recent concerns about potential impacts on habitat areas for rare, threatened and endangered species, user conflicts and dissatisfaction with the limited number of trails and facilities prompted park management to recognize the need for a comprehensive trails plan that would address the long-term needs of visitors while protecting resources.

This Draft General Management Plan Amendment (GMPA) presents and analyzes three alternatives for the designation of a trail system at DWGNRA. It responds to the park's mission and goals established for the new trail system. The Draft Environmental Impact Statement (EIS) has been prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) of 1969, as amended, which requires the evaluation of potential impacts resulting from federal actions. It includes a description of the environment affected by the proposed activities and the environmental consequences of implementing any of the alternatives.

Alternative A (the no-action alternative) describes the current situation and assumes the continuation of current management practices for trails. It provides a baseline for comparison with the other alternatives, as required by the National Environmental Policy Act regulations. Alternative A retains the management guidance of the 1987 General Management Plan. The park would continue to operate without a coordinated

trail system and would remain as it currently exists: 31 present park trails, the Appalachian National Scenic Trail and a maze of old road traces and informal trails that are not connected. All new development would be considered on an individual basis and either supported by the cooperation of a user group or if specific funding were available for construction. Park staff would continue to direct visitors to trails associated with specific park attractions. Resources already impacted from overuse would continue to experience degradation.

No change in the park's enabling legislation or boundary would be sought.

Alternative B, the park's preferred plan, would double the amount of present park trail miles and provide greater opportunities for biking, cross-country skiing, and equestrian activities. Trails would be organized into four individual networks: the Appalachian, Country Road, Gap View and River Valley. Visitor experience and natural features organize each of these networks with connections to each network and other trail opportunities outside the park. Comfort facilities, signage and interpretation would be expanded as formalized trailheads were developed.

No change in the park's enabling legislation or boundary would be sought.

Alternative C also emphasizes networks and different visitor experiences, but is organized in small distinctive geographic areas that emphasize a specific use or highlight park attractions. Some larger networks such as the Appalachian and River Valley are included, as well as trails that lead to a particular destination point. There would be limited opportunities for linkages between networks and with trails outside the park. Comfort facilities, signage and interpretation would also be expanded as formalized trailheads were developed.

No change in the park's enabling legislation or boundary would be sought.

As part of the trails evaluation process, proposed improvements to present trails or new construction that would potentially impact known sensitive resources were eliminated. When site-specific decisions are made that require additional analysis of impacts, more detailed assessments of impacts will be prepared in a separate environmental document as a part of the implementation planning.

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Alternative C: Independent Networks
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CHAPTER 1: PURPOSE AND NEED FOR ACTION

PURPOSE AND STRUCTURE OF THIS REPORT

This document serves three purposes. It is a Draft Trails Plan describing existing and proposed trails and facilities at Delaware Water Gap National Recreation Area (DWGNRA); a Draft General Management Plan Amendment (GMPA); and a Draft Environmental Impact Statement (EIS) that assesses the probable impacts of the proposed plan and alternatives to it.

A General Management Plan (GMP) is prepared and periodically updated for each unit of the National Park System (NPS) in order to help NPS, in consultation with the public, decide what resource conditions and visitor experiences a park should provide, and why. A GMP sets direction for resource protection and visitor use in consultation with the public, and NPS adopts its findings and uses them to guide the management of a park for 10 to 15 years. In short, it tells park managers what they should be doing and why. This GMPA will replace the section of the 1987 GMP that deals with trails.

Because there may be many different approaches to park use, management and development, the process for developing GMP amendments investigates a range of alternatives that may allow a park to achieve its goals. To help the public and NPS understand what would happen if an alternative were adopted, the impacts of each alternative on the natural and cultural environment are described and compared. These descriptions are contained in the EIS, which is prepared to satisfy the requirements of the National Environmental Policy Act of 1969, as amended. After a full range of alternatives has been described the NPS, in consultation with the public, chooses the alternative to be implemented.

This plan is divided into five chapters:

CHAPTER 1: THE PURPOSE AND NEED FOR ACTION—describes why the GMPA has been prepared, the park's purpose, mission and goals, and the issues and related planning concerns that have influenced the plan.

CHAPTER 2: ALTERNATIVE—describes the three alternatives that are being considered and their philosophy, development, costs, priorities, and management.

CHAPTER 3: AFFECTED ENVIRONMENT —describes the natural, cultural and socioeconomic environment potentially affected by implementing the alternatives.

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES—describes the potential impacts that would result from implementing each of the alternatives. This section describes the methodologies used to assess impacts, identifies a series of resource and other impacts to enable comparison of the consequences of each alternative, and indicates mitigation measures the park would employ for each potential impact.

CHAPTER 5: CONSULTATION AND COORDINATION—describes public involvement and agency coordination during the planning process and identifies the principal parties who have prepared, as well as, those who will receive this document.

The Appendices includes additional information including an identification of related technical studies undertaken in coordination with the GMPA process.

The alternatives describe an optimal trail system in the park and provide a foundation for future decision making. Typically, site-specific details and recommendations are not included since the GMP is intended to provide a foundation for more detailed management decisions. Therefore, the EIS presents an overview of potential impacts that may result if an alternative is adopted. When site-specific decisions are made that require additional analysis of impacts, more detailed assessments of impacts will be prepared in a separate environmental document as a part of the implementation planning.

Implementing a trail system will take many years and requires increases in staff, funding and volunteers. The rate and order of implementation of specific actions in any of the alternatives will depend upon the availability of funding and management priorities in future years. Prioritizing improvements and development will be necessary to ensure that park management goals are met.

PARK ORIGINS AND LEGISLATIVE HISTORY

For thousands of years, the beauty and tranquillity of the Upper Delaware River Valley have captivated people. American Indians located settlements close to its shores, while explorers and frontiersmen traversed its waters on their search for opportunities in the untamed New World. In the early nineteenth century, Americans' interest in the area for hunting, fishing and visual enjoyment of the natural scene prompted the beginning of the resort industry. By the 1890s, hotels and boarding houses sprang up all over the area now called the "Poconos" and flourished until the Depression.

Floods along the Delaware River in the 1950s prompted the United States Army Corps of Engineers (USACE) to propose a dam for flood control, water supply and power generation. This dam would create a reservoir extending from Tocks Island 37 miles upstream to Port Jervis, New York. As part of the proposed Tocks Island Dam, a new national recreation area would be created and managed by the National Park Service. On September 1, 1965, Congress authorized by Public Law 89-158 the creation of the Delaware Water Gap National Recreation Area. The park was established to provide "for public outdoor recreation use and enjoyment of the proposed Tocks Island Reservoir and lands adjacent thereto...and for the preservation of the scenic, scientific, and historic features contributing to public enjoyment of such lands and water."

In the late 1960s, as part of the planning and public participation process, local residents and environmentalists began raising concerns about the effects the reservoir would have on the valley. During this time, the USACE began acquiring lands surrounding the Delaware River within the proposed dam area. By the early 1970s, the reservoir project was halted indefinitely for ecological and economic concerns. In 1978, all federal lands within the boundary were transferred from the USACE to the National Park Service. Also, the segment of the Delaware river contained within DWGNRA boundaries was designated as the Middle Delaware Scenic and Recreational River, a component of the Wild and Scenic River System, by the Parks and Recreation Act of 1978 (P.L. 95-625, 16 U.S.C. 1274) (U.S. Congress, 1978). By 1992, the Tocks Island Dam project was de-authorized.

PARK SIGNIFICANCE

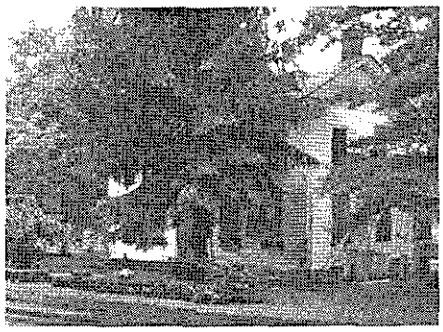
Significance statements capture what attributes make the park resources and values important enough to warrant national park designation. The significance statements for DWGNRA are:

Significant Natural Area

The park is the largest natural area in the National Park System between Virginia and Maine and one of the largest protected natural areas in the metropolitan corridor extending from Washington, D.C. to Boston, Massachusetts.

Access to Visitors

The park is among the ten most visited in the entire National Park System. Much of this visitation is from the nearby, rapidly expanding New York, northern New Jersey and Philadelphia metropolitan areas, and is growing at a steady rate.



Recreational Resources

The Delaware River, which winds for 40 miles through the park, is the park's focal point. Its exceptional quality waters provide some of the best canoeing, rafting, tubing and fishing to be found in the East. Other recreational opportunities are also found in abundance, including:

- Technical climbing on escarpments;
- Hunting and fishing on land, ponds and streams;
- Swimming in lakes and the Delaware River;
- Camping on both shore and the river's several islands;
- Hiking on many miles of trails, including a significant section of the Appalachian National Scenic Trail;
- Biking, horseback riding and snow mobiling on many miles of appropriately designated trails; and
- Birdwatching, wildlife photography and nature study

Natural Resources

The Kittatinny Ridge parallels the river to the east, and the escarpment of the Pocono Plateau bounds it on the west. The ridges and river valley contain streams, waterfalls, numerous geologic features, and a diversity of plants and wildlife, including black bears, bald eagles, river otters, and other species not typically associated with areas so close to cities.

Cultural Resources

The park has a remarkable variety of cultural resources. Archeological investigations continue to uncover an extraordinary number of American Indian villages, camps and other sites. Artifacts found in the area indicate continuous human occupation from about 8,500 BC to the present. There are historical vestiges of the French and Indian War and the frontier life of early America. There are examples of the distinctive architecture of the Delaware Valley, ranging from Dutch to Victorian and in a variety of construction materials. Several historic villages capture the sights and activities of America's past.

Water Quality

The waters of the Delaware River are of exceptional quality, and provide drinking water to ten percent of the nation's population. The stretches of the river through Upper Delaware National Scenic & Recreational River and DWGNRA— a section 125 miles long—are classified as "special protection waters" which have "exceptionally high scenic, recreational and ecological values." Under the regulations applicable to this category, "no measurable change in existing water quality [is permitted] except towards natural conditions."

PARK PURPOSE

NPS has summarized the park's authorizing legislation in the following purpose statements. Purpose statements capture the reasons for which a park was set aside as part of the National Park System and provide the most fundamental criteria against which the appropriateness of all plan recommendations, operational decisions and actions are tested. The purposes of DWGNRA are:

Recreational Use and Enjoyment

Provide for public outdoor recreation use and enjoyment, assuring that such use and enjoyment has a minimal impact on the park's natural and cultural resources.

Park Resource Protection

Preserve the natural, cultural and scenic resources contributing to public enjoyment of parklands and waters.

River Resource Protection

Protect and enhance the values which caused the river to be included in the national wild and scenic river system.

Education

Foster preservation and educational activities that support natural and cultural resource protection.

Research and Conservation

Protect park resources through research and appropriate resource conservation and restoration practices.

PARK MISSION GOALS

Mission goals are the most general of three kinds of goals NPS uses to implement the Government Performance and Results Act. Park mission goals, although based on the NPS's servicewide mission goals, are specific to the park and reflect the park's purpose and significance. Mission goals are expressed in terms of desired resource conditions and appropriate visitor experiences. These include:

Provide for public outdoor recreation use and enjoyment, assuring that such use and enjoyment has a minimal impact on the park's natural and cultural resources.

Preserve the natural resources contributing to public enjoyment of park lands and waters and promoting biological diversity.

Preserve the cultural resources contributing to public enjoyment of park lands and waters.

Preserve the scenic resources contributing to the public enjoyment of park lands and waters.

Manage the park in an efficient, cost-effective manner in order to attain the goals specified above.

PARK MISSION STATEMENT

The park mission statement sums up our understanding of why DWGNRA was created and why it matters to Americans:

The mission of the National Park Service in Delaware Water Gap NRA is to provide outdoor recreation opportunities while conserving the natural, cultural and scenic resources of the recreation area. In so doing, the park will work cooperatively with surrounding communities and the public to achieve the conservation goals of the Delaware River region.

TRAILS SYSTEM GOALS

Because this GMPA focuses only on trails and related visitor use and facilities, goals for the trails system articulate in very specific terms the ideals we will strive to attain. The alternatives in this document investigate different ways that park managers may achieve these goals. The six trail system goals for DWGNRA are as follows:

Promote visitor safety and ensure the provision of high quality recreation experiences

Trails, facilities and services affect visitor safety and the quality of the recreational experience, whether provided by NPS or one of its cooperating organizations. Convenient park trails and facilities that do not harm or infringe upon park resources, and services and interpretive opportunities that are available when visitors need them are important to enjoyment of the park. Also important is provision of a diversity of trails and facilities that provides a range of uses for various levels of expertise and interest of park visitors.

Promote a system configuration that will minimize resource impacts

Understanding both the impacts that individual trails and multiple networks have on the natural, cultural and scenic features is critical for future preservation of park resources. Provision of a system that balances the number of trails and their various uses with protecting significant park resources is important.

Protect park resources through a planned program of trail construction & maintenance

Investing appropriate time, funds, staff and volunteers will be essential for the long-term success of a new trail system. Developing standards, setting priorities and coordinating management activities will ensure that resource impacts are minimal and funds are used in a cost-effective manner.

Recognize and minimize potential conflicts among user groups

People using the park's trail system have different needs and expectations. Often uses are seen as competing rather than cooperative. Good trail design and an educated user will increase satisfaction in trail experiences.

Encourage cooperative partnerships with volunteer organizations, adjacent landowners, municipalities and other government agencies

DWGNRA and a number of non-profit entities, public bodies, civic groups and private sector interests have common goals for enhanced recreation and interpretation. Existing partnerships for trail development and maintenance have aided all partners in achieving their goals. Enhancing such partnerships and developing new ones will be fundamental to the success of a new trail system, and to bringing the associated benefits to the public. Like all national park areas, DWGNRA struggles to find human and fiscal resources to meet the increasing needs for protection of resources and to fulfill the expectations of its visitors. Partnerships that benefit all parties will address the problems of insufficient means and increasing demands.

Provide educational opportunities that offer visitors new perspectives on natural and cultural resources

Visitors have better experiences in a park when they understand the importance of its story and resources. Information, orientation, interpretation and education are park activities that help visitors discover the most significant meanings to them and that help them make connections between the tangible resources of the park and the intangible values and meaning that the resources represent.

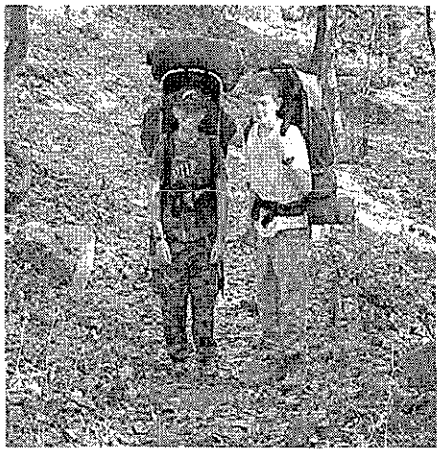
HISTORY OF PARK TRAILS

Trails have always been an important part of the Delaware Water Gap NRA. American Indians established footpaths as transportation routes through the river valley. European settlers capitalized on the existing transportation network already established by the American Indians, widening the footpaths into roads for horseback travel. The most famous and heavily used was the Minsi Path, which extended from Stroudsburg through Milford in the area of modern Route 209. This path aided European settlers and as settlements continued to grow, so did the transportation network.

The land area now comprised by the park was fairly extensively developed prior to its designation as a National Recreation Area. The properties now encompassed by the park formerly contained a diverse range of development, including private residences, commercial recreational facilities, vacation homes and hunting cabins. The land acquisition for the Tocks Island project included many roads and old road traces as part of the new park. Many of the former residents relocated to nearby communities and continue to use the park. Local knowledge and traditional use has led to the development of numerous informal trails by which former residents continue to access favorite sites. These are the basis for the existing collection of trails in the park.

PURPOSE AND NEED FOR DESIGNATION OF A TRAILS SYSTEM

The DWGNRA does not have a designated trail system. The park's 1987 GMP identified the need for a system that will "offer visitors new perspectives on natural and cultural resources, provide opportunities to get off the main traffic arteries and out of developed areas and help disperse visitor use and expand variety of



activities available." The GMP also proposed a potential configuration for this system. For a variety of reasons, this GMP trail system was not fully implemented. The park instead chose to develop trails on an individual basis in conjunction with local trail organizations.

The trail system currently described in the GMP is no longer adequate to address the trails policy and operational issues now facing DWGNRA. Recent concerns about potential impacts on habitat areas for rare, threatened and endangered species, user conflicts and dissatisfaction with the limited number of trails and facilities, prompted park management to recognize the need for a comprehensive trails plan that would address the long-term needs of visitors and balance resource protection.

The purpose of this plan is to propose three designation options for an integrated system of trails with appropriate visitor support facilities. Trails in this new designated system would receive staff, funds and volunteers for their improvement and development. These trails would be named and recognized by park management and cooperative partners as places to direct visitors. Trails would be located in the most appropriate places with adequate surfaces, engineering and drainage to promote resource protection and safety. Accurate information about their location and use would be provided by the park, its partners, and in publications.

ISSUES RELATED TO MISSION GOALS

The public, state and federal agencies, and park staff have raised many issues about the current state of trails and the process for future development. These concerns are summarized in the following issues:

Issues Related to Mission Goal 1: Resource Preservation

- *Overused trails are leading to resource degradation*

Existing trails cannot handle the quantity and intensity of visitor use. At DWGNRA, there has been a four-fold increase in visitation over approximately 20 years. In

1976, visitation was approximately 1.2 million recreational visits per year. In 1998, that number had increased to over 5 million recreational visits per year. Some of the most popular recreational sites have 1,000 or more visitors per day on summer weekends.

Users bypass crowded or wet areas and venture beyond the edges of established trails causing erosion and vegetation disturbance. Present park trails have had little or no engineering such as drainage structures, proper grading or improved surfaces. The levels of use on some of these trails causes rapid deterioration of the surface, with resulting problems such as muddy surface, ponded water and erosion. When visitors encounter ponded water on a trail, they will bypass it and create a side trail around the obstacle. This results in soil compaction, loss of adjacent vegetation and additional erosion problems.

• *Existing trails may be impacting resources and sensitive areas*

Many present park trails were established informally. This park provides critical habitat for rare, threatened and endangered (RTE) species of wildlife and vegetation. Hundreds of known archeological sites are scattered throughout the park.

Little or no work has been undertaken on lands adjacent to present park trails to identify the presence of sensitive resources such as wetlands, streams and floodplains, RTE species, rare plants, cultural landscape issues, and archeological resources. The park is mandated by laws and executive orders to protect these resources, but has not analyzed the intensity and impact of various uses on trails, some of which may be located in these sensitive areas.

Issues Related to Mission Goal 2: Visitor Use and Experience

• *Public demand for trails has increased dramatically over the last few years*

Over the last five years, there has been a dramatic increase in trail development throughout the country. Close proximity to large populations and the demand for high quality, low impact recreational opportunities has increased pressure on communities and parks to provide for more trails accommodating a variety of uses. Competing uses for the same trail areas has caused conflict and dissatisfaction among users.

New Jersey recreation areas at Worthington State Forest, Stokes State Forest, High Point State Park and the Appalachian National Scenic Trail experienced unparalleled demands for more trail uses and facilities. The 1994 New Jersey Open Space and Outdoor Recreation Plan identified walking for pleasure and biking as the second and fifth most popular outdoor recreational activities in the state. Current and projected deficits in facilities for these popular activities were noted for both Sussex and Warren Counties.

In Pennsylvania, the 1991-1997 State Recreation Plan lists hiking, jogging and bicycling as three of the top five recreation uses in the Monroe, Pike and Northampton County areas. As part of an opinion survey for that plan, 50% of respondents reported that they do not participate in recreation activities because facilities are too crowded. Forty two percent of respondents favored an increase in bike paths (second highest response), and 32% favored an increase in hiking trails. Respondents participated yearly in the fol-

lowing activities: jogging 57%, hiking 42%, bicycling 36%, snow skiing 14% and horseback riding 8%.

• *Access and orientation to present park trails is difficult*

The park is intersected by more than fifty local, county and interstate routes, making orientation difficult for visitors. Lack of signage and official park trail maps lead to confusion over locations and appropriate uses. Visitors are repeatedly sent to the same trail areas, causing overuse and resource degradation. The park has a trail brochure for visitors but it is not the result of a coordinated effort to create a trails system. Some of the trails on the brochure are designated and marked in the field but others are nothing more than a line on a map or a road trace.

• *Facilities needed for trail users are inadequate*

There are inadequate parking and restroom facilities at some of the most crowded trail areas. People park vehicles on grass and in wooded areas not intended for this use.

Issues Related to Mission Goal 3: Operation and Cooperative Partnerships

• *The best trail system configuration is unknown*

There are potentially hundreds of miles of trails within the park boundary. Park management doesn't know which trails present the best opportunities for including in a larger system and where staff, time and funds should be dedicated.

RELATIONSHIP TO OTHER PLANS, PROJECTS AND PARTNERSHIPS

The 1987 General Management Plan

The 1987 General Management Plan is the current guiding document for the park. It establishes the management philosophy and identifies means to address issues and achieve management objectives.

The existing trail system, as described under the no-action alternative, is based upon the direction established in the 1987 GMP.

1997 Government Performance and Results Act Strategic Park Management Plan

In 1997, NPS developed a system wide plan to meet the requirements of the Government Performance and Results Act of 1993, and each unit of the National Park System developed its own Strategic Park Management Plan. As part of that process, DWGNRA developed a new significance statement, purpose statements, mission statement, mission goals, and long term goals to guide the park. The action alternatives, developed in this General Management Plan Amendment, are based upon the statements and goals outlined in the Strategic Park Management Plan.

Trail Partners

Partnerships will be the key to developing a successful trail system. The park works with committed groups and individuals who volunteer countless hours in improving the condition and quality of trails for a diversity of users. The following organizations have a Memorandum of Understanding or cooperative agreement with the park for trail maintenance or management:

TRAIL PARTNERS

Appalachian National Scenic Trail

Considered one of the premier long-distance hiking trails in the country, the Appalachian National Scenic Trail (AT) is an important component of the proposed system at DWGNRA. The AT is a 2,100-mile footpath that extends from Mount Katahdin in Maine to Springer Mountain in Georgia and traverses the hills, valleys and ridgelines of the Appalachian Mountain system. In 1937, through the efforts of private citizens and government agencies, the AT pathway was completed and designated a national scenic trail with the passage of the National Trails Systems Act in 1968. Supported by a dedicated trail community, the AT attracts the interest of hikers, volunteers, landowners, local officials, federal and state agency personnel and the citizens of towns through which it passes.

Approximately 30 miles of the AT are found within DWGNRA beginning in Pennsylvania at Tott's Gap and extending to Stokes State Forest in New Jersey. Its proximity to New York, Philadelphia and Interstate 80 make this one of the most heavily used sections of the AT.

Maintenance and management of the AT is accomplished through a unique partnership arrangement. By law, overall responsibility for administration of the AT rests with the Secretary of the Interior, and is carried out by the NPS through its Appalachian Trail Park Office (ATPO). The ATPO provides overall administration, coordination, and oversight of the AT as directed by Congress, with emphasis on ensuring Trail-wide consistency of management operations, development and maintenance standards, and conformance with applicable laws, regulations, and policies as defined in the Comprehensive Plan for the AT.

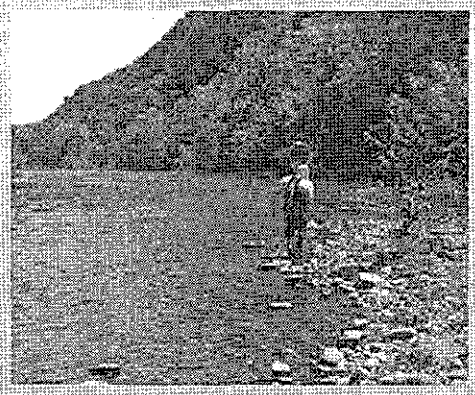
The heart of the AT rests in its clubs and the Appalachian Trail Conference (ATC). ATC is a nonprofit educational organization representing the citizen interest in the Appalachian Trail and dedicated to the preservation, maintenance, and enjoyment of the Appalachian Trailway. Since 1925, the ATC and its member clubs have conceived, built, and maintained the AT in cooperation with the federal and state agencies. In 1984, the NPS and the ATC signed a landmark *Delegation Agreement under which the NPS delegated certain management responsibilities to the ATC for NPS-*acquired lands outside National Park boundaries.

At DWGNRA, responsibility for the day-to-day management, maintenance and monitoring of the AT and associated facilities within the park boundaries was delegated to the ATC. Using its member organizations, the ATC carries out its responsibilities through the efforts of the Wilmington Trail Club in Pennsylvania and the New York-New Jersey Trail Conference in New Jersey. Park staff provides critical services for fire suppression, visitor-use management, law enforcement, emergency medical services and search and rescue operations on all park and adjacent ATPO-acquired lands with the AT corridor.

TRAIL PARTNERS continued

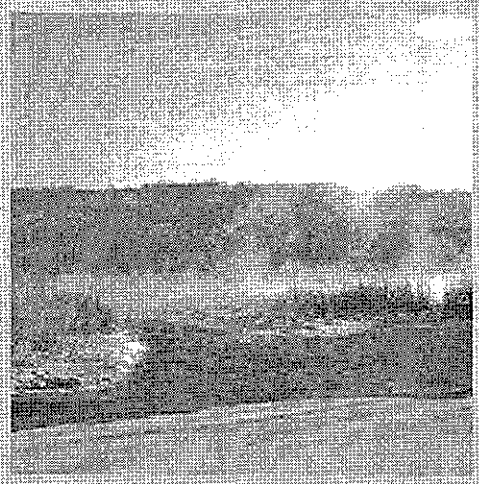
New York-New Jersey Trail Conference

The New York-New Jersey Trail Conference (NY-NJTC) is a volunteer non-profit organization and federation of 85 hiking and outdoor groups and 10,000 individual members. They have delegated responsibility for the AT in the NJ section of the park. Under a 1996 Memorandum of Understanding between the park and NY-NJTC, NY-NJTC agreed to maintain specific hiking trails in the park other than the AT. These trails include: Pioneer, Coppermine, Thunder Mountain, Rattlesnake Swamp, Orchard, and Buttermilk Falls.



Appalachian Mountain Club

Founded in 1876, the Appalachian Mountain Club (AMC) is the country's oldest conservation and recreation organization. AMC has a long history with the DWGNRA spanning several decades. In 1988, the park initiated a cooperative agreement with AMC to collect and analyze pertinent data regarding the park's existing and potential hiking trail resources and appropriate hiking trail planning, design and management recommendations. Their work is the foundation for this plan. AMC maintains the Mohican Outdoor Center in NJ and the American Youth Hostel, Hornbecks Creek, Karamac, Toms Creek and Van Campens Glen trails.



Kittatinny Mountain Bike Association

In 1997, the Kittatinny Mountain Bike Association (KIMBA) signed a cooperative agreement with DWGNRA for the purpose of restoring and maintaining certain park trails. Under this agreement, KIMBA agreed to: rehabilitate and maintain the Blue Mountain Lake trail in NJ; authorize volunteer bike patrols by KIMBA at certain times of the year on that trail; develop public information brochures, maps, and other documents pertaining to bike trail use; and provide clinics at the Blue Mountain Lake bike trailhead on bicycle safety, maintenance and trail etiquette.

Delaware Water Gap Equestrian Advisory Committee

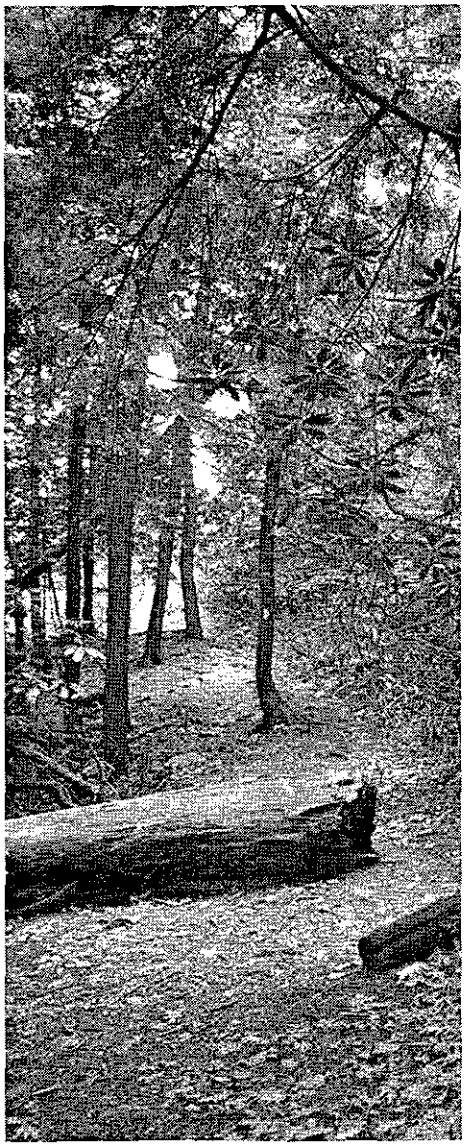
Dedicated to the planning, development and maintenance of horse trails in the park, the Delaware Water Gap Equestrian Advisory Committee signed a Memorandum of Understanding to assist the park with equestrian-related efforts. They maintain the Conashaugh View Trail and the Upper Ridge Road Trail.

CHAPTER 2: ALTERNATIVES

INTRODUCTION

Chapter Two presents the philosophy and management rationale for the alternatives to be considered for the DWGNRA GMPA. Alternatives were developed during a process of public consultation that included workshops to review issues, resources, initial concepts and draft alternatives. Information was distributed to workshop participants and other interested individuals for comments and suggestions.

This chapter includes the following sections:



Trail Evaluations—summarizes the research and analysis by NPS staff on present park and proposed trails for inclusion in a new park wide system.

Trail Descriptions and Summary Chart—provides a summary description for each present park and proposed trail including mileage, usage, surface, access, facilities, improvements and maintenance by alternative.

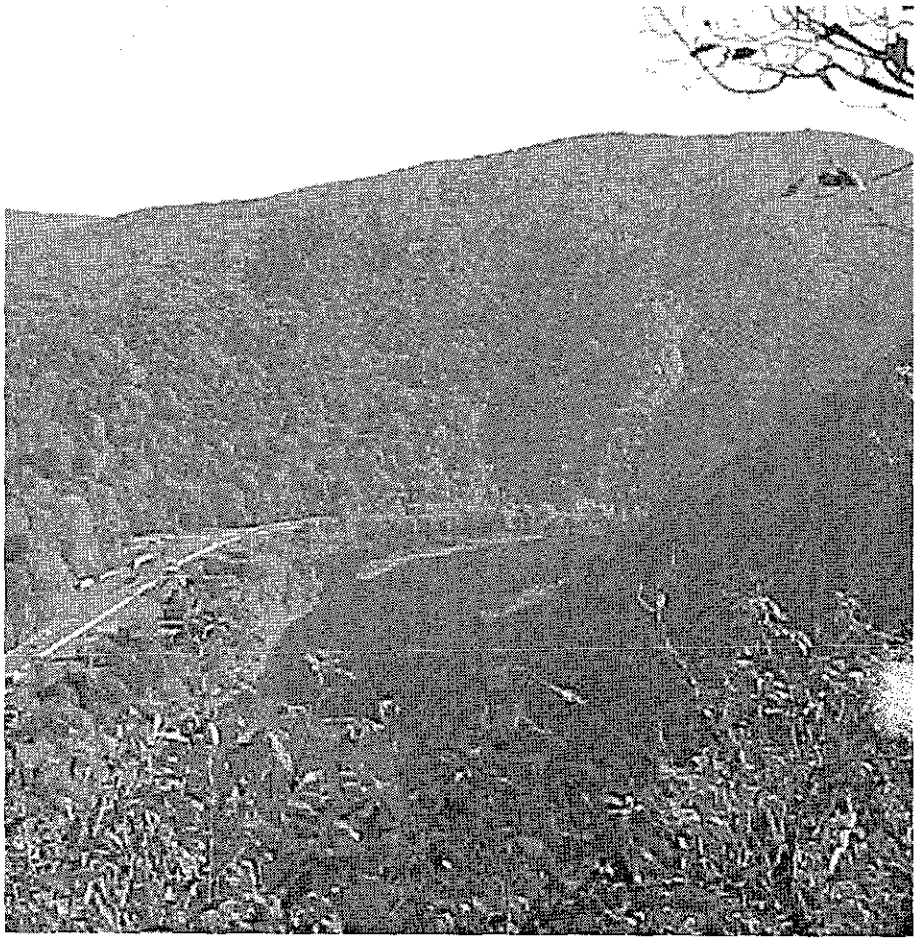
Management Strategies—explains how management prescriptions will guide park trail management in the future.

Alternatives—provides descriptive information for the no-action and the two action alternatives, including maps.

A trailheads summary chart providing a description of parking areas and restroom facilities is located in Appendix B on page 83-84.

TRAILS EVALUATION AND SELECTION

There are many recreational opportunities and countless combinations of trails to be considered in planning a new trail system for the park. In order to gain a better understanding of the current conditions of present park trails and potential new areas for expansion, the planning team collected, evaluated and mapped the best available trail information.



INFORMATION GATHERING

Site information was gained through extensive field visits and detailed study of documents including municipal, topographic and geologic maps, history books, and local and regional development plans. Field information was gathered from first hand observations while hiking and driving the suggested trails and existing road traces. Data recorded on-site and from the documents included locations of present and proposed trails, existing and potential uses, the condition of the trail surfaces, necessary improvements, sensitive, threatened or endangered flora and fauna, significant cultural and historic sites, and opportunities for connections, views and interpretation.

Interviews were conducted with rangers, natural and cultural resource specialists, maintenance, preservation and design specialists and park managers. Additional meetings were held with the various county planning departments, organizations that currently have agreements with the park, and representatives from the New Jersey Department of Environmental Protection, Division of Parks and Forestry. Five public meetings were held to gather data and comments from the general public and the many interests they represent.

All information received both verbally and in writing was recorded graphically on park maps. An extensive and detailed map was produced as a result of the comments and field work. This map shows potential and present park trails and uses, trailheads, parking, and interpretation opportunities. These maps were produced using a Geographic Information System (GIS) that allows information to be separated and evaluated by resource category.

TRAILS EVALUATION

Criteria for trails and systems were developed as a result of public comments on what should be part of a good system, and in response to the trail system goals and the park mission. Using information gathered from the field and presented on maps, each present park trail, old road, and potential new trail was discussed and evaluated by a team of staff representing all park disciplines.

As part of the evaluation process, three types of trails were identified and are defined below. These terms are referenced throughout this document and include:

Present Park Trail— These trails are existing paths, named and recognized by park management and cooperative partners as places to direct visitors. Information about their location and use is provided by the park, its partners, and in publications. Maintenance and improvements on these trails is conducted by either park staff or a partner organization. A list of 32 present park trails is provided on page 16.

Informal Trail—These informal paths, also referred to as social trails, are remnants of former roads and routes established by users over the years. These trails are not recognized by the park or cooperating partners as places to send visitors and their locations are not publicized. But, many locals and visitors familiar with the park continue to use them as trails.

Proposed Trail—These trails are recommended for inclusion in a new designated system for the park. Some present park trails have been renamed, relocated or removed to protect resources, improve the trail surface, or enhance the experience. Other proposed trails may include improved and renamed informal trails. There may also be a combination of present park trails with new construction to provide for different recreational uses and minimize resource damage. Changes to individual trails are included in the Trail Description section on page 26. A list of these proposed trails for Alternative B can be found on page 20. Proposed trails for Alternative C are included on pages 23-24.

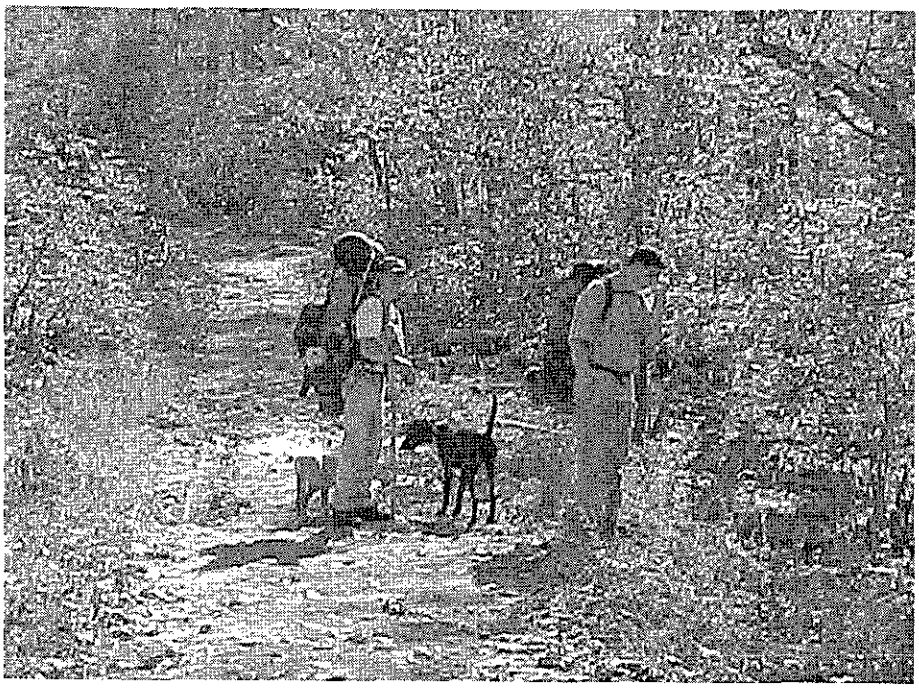
The evaluation criteria applied to the trails were:

- **Trail can provide for more than one use;**
- ***Trail can be linked with others to form a loop;***
- **Trail is a premier location for a specific use;**
- **Trail avoids sensitive areas such as rare, threatened or endangered habitats or archeological sites;**
- ***Trail connects or leads to natural, scenic, cultural or historical resources;***
- **Trail provides an opportunity for education and resource interpretation;**
- **Trail provides users with a sense of the park;**
- **Trail requires low maintenance;**
- **Trail or adjacent facilities requires no new construction;**
- **Trail has existing facilities along or nearby;**
- **Trail can be maintained by a cooperative group.**

In addition to these evaluation criteria, other planning considerations included the visions and future development efforts of all neighboring jurisdictions; the use of existing trails and road traces where possible; and the need to accommodate parking and trailheads. Design guidelines for development also were considered. These include:

- Hiking trails should have a minimum 3-foot tread width of compacted bare soil. The vertical clearance should be 8 feet minimum.
- The tread width for equestrians is 5 feet minimum with 8 feet preferred when both equestrians and hikers share a trail. The surface can be compacted bare soil or gravel. The vertical clearance for equestrians is 10 feet minimum.
- Trails designed for cross-country skiing should have a minimum tread width of 4 feet with a vertical clearance of 7 feet above the average snow level.
- Snowmobile trails require an 8-foot tread width with 2-foot shoulders clear of branches and debris.
- Trails designed for multiple uses such as hiking and biking should be constructed of compacted gravel and have an 8-foot minimum tread width. These trails require 2-foot shoulders clear of branches and debris adjacent to the tread. The vertical clearance should be a minimum of 8 feet.

Using a more refined trail map developed at the conclusion of the evaluation stage,



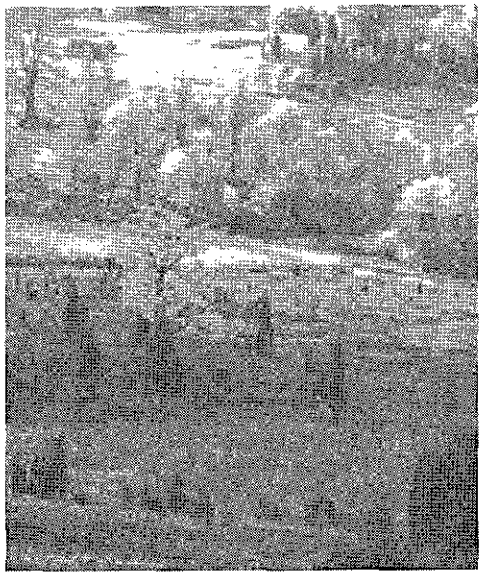
alternatives were created during a two-day working session by NPS staff and presented to the public at two meetings. Three alternatives were organized by offering a variety of experiences unique to the DWGNRA, and responding to the park's goals and public suggestions.

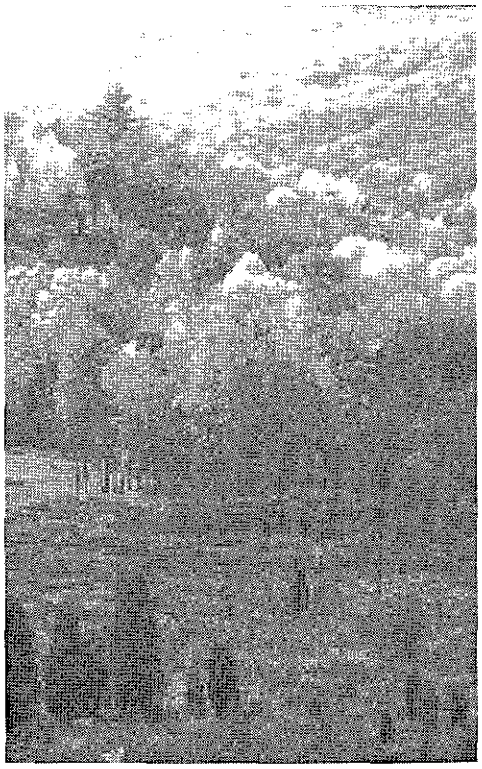
MANAGEMENT PRESCRIPTIONS

Various approaches to trail use, management and development are possible. Some of these approaches may represent competing demands for the same resource base. To address these conflicts, NPS general management plans establish management prescriptions, which provide the policy foundation for making specific decisions about resources and visitor use.

The park's 1987 GMP does not contain management prescriptions because they are a new concept now mandated under the *Director's Order 2* for planning. Management prescriptions describe the specific resource conditions and visitor experience that are to be achieved and maintained over time. Based on these characteristics, each management prescription identifies the kinds and levels of visitor use, management activities, and development that are appropriate for maintaining those desired conditions. Management prescriptions help managers of a park decide which implementing actions are appropriate. A range of actions is possible as a result of the adoption of a management prescription, and the purpose of the prescription is to ensure that an action is appropriate to protect resources and provide for visitor use and interpretation.

OVERVIEW OF ALTERNATIVES





ALTERNATIVE A: CONTINUATION OF CURRENT MANAGEMENT

This alternative describes the current situation and assumes the continuation of current management practices for trails. It provides a baseline for comparison with the other alternatives, as required by the National Environmental Policy Act regulations. Alternative A retains the management guidance of the 1987 General Management Plan. The park would *continue to operate without a coordinated trail system and would remain* as it currently exists: some recognized park trails, the Appalachian National Scenic Trail and a maze of old road traces and informal trails that are not connected. All new development would be considered on an individual basis and either supported by the cooperation of a user group,or if specific funding were available for construction. Park staff would continue to direct visitors to trails associated with specific park attractions. Resources already impacted from overuse would continue to experience degradation.

ALTERNATIVE B: MULTIPLE LINKING NETWORKS

This alternative, the park's preferred plan, would double the amount of present park trail miles and provide greater opportunities for hiking, biking, cross-country skiing, and equestrian activities. Trails would be organized into four individual networks: the Appalachian, Country Road, Gap View and River Valley. Visitor experience and natural features determine each of these networks with connections to each other and various trail opportunities outside the park. *Comfort facilities, signage and interpretation would* be expanded as formalized trailheads were developed.

ALTERNATIVE C: INDEPENDENT NETWORKS

This alternative also emphasizes networks and different visitor experiences, but is organized in small distinctive geographic areas that emphasize a specific use and interesting park attractions. Some larger networks such as the Appalachian and River Valley are included, as well as trails that lead to a *particular destination point. Comfort facilities, signage and interpretation* would also be expanded as formalized trailheads were developed.

ALTERNATIVE A: CONTINUATION OF CURRENT MANAGEMENT PRACTICES

Delaware Water Gap NRA currently does not have a designated system of trails. Historically, there has been a collection of trails and old roads that are used by visitors and locals for various recreation activities. A list of 32 trails that comprise the present park collection is provided here. Detailed descriptions for each trail begin on page 26 and are summarized in Appendix A on page 81.

PRESENT PARK TRAILS

American Youth Hostel
Appalachian National Scenic
Arrow Island
Blue Blaze
Blue Mountain Lake
Buttermilk Falls
Childs Park
Conashaugh View
Coppermine
Cutoff Road
Dingmans Creek
Donkeys Corner
Hamilton Ridge
Hidden Lake
Hornbecks Creek
Kaiser
Karamac
Lower Hamilton
Military Road
Orchard
Pennsylvania Environmental Education Center (PEEC)
Pioneer
Railway Avenue
Rattlesnake Swamp
Raymondskill Creek
Red Dot
Slateford Loop
Snowmobile
Thunder Mountain
Toms Creek
Upper Ridge Road
Van Campens Glen

RESOURCE PRESERVATION

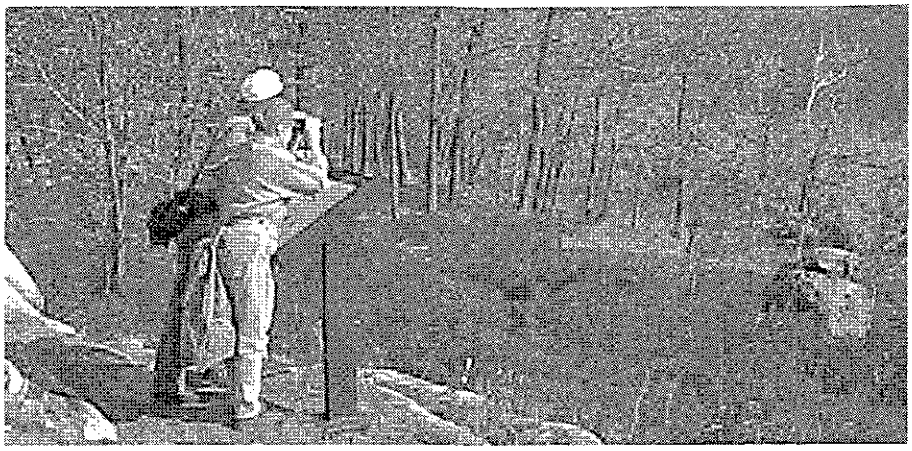
Trails would remain in their current locations. Any existing impacts to resources would continue. Erosion, vegetation loss

and habitat disturbance would occur due to overuse and crowding. Informal trails would continue to develop because of limited choices and unacceptable conditions caused by lack of appropriate design and maintenance.

VISITOR USE AND FACILITIES

There are currently 32 existing park trails totaling approximately 112 miles. The predominant trail activity would continue to be hiking, with few limitations by area in the park. The Appalachian National Scenic Trail would continue to be a major destination for both day use and long distance hiking. Bicycling would be restricted to the seven mile designated trail at Blue Mountain Lake and 12 miles of equestrian activities would remain at the Conashaugh View Trail and Upper Ridge Road Trail. American Youth Hostel, Blue Mountain Lake, and Slateford Loop would be available for 19 miles of cross-country ski trails and snowmobiling would continue on the existing eight-mile Snowmobile Trail in Pennsylvania. Visitors would continue to be dissatisfied with the limited amount of miles available for biking, equestrian use, and snowmobiling.

Existing trails and related facilities would be retained in their current locations and conditions. New trails would be added on an individual basis when either a user group made a commitment of funds for development and volunteers for maintenance or if specific funding were available for construction. Specific references



in the current GMP to proposed new trails would guide development. Facilities for parking and restrooms would be limited to the 23 existing lots in conjunction with developed areas. Lack of parking and restroom facilities at overcrowded areas would continue to promote degradation of adjacent vegetation and unsafe conditions along roads.

VISITOR EXPERIENCE

Visitors would continue to rely on published guide books and information distributed by interpretive rangers at visitor centers for specific locations of trails. Trails would provide opportunities to experience the park's most significant resources such as hemlock ravines, the Delaware River and the water gap and would focus on one particular resource at a time. Signs, trail information, and interpretive waysides exhibits would be minimal, installed on an individual basis.

OPERATIONS, PARTNERSHIPS AND COOPERATIVE ACTIONS

Under the current management strategy, the park would continue to operate without a designated trail system. Trails and trail-related facilities would be managed, maintained and developed using current management practices in accordance with the current GMP, the Superintendent's Compendium and through special regulations and agreements with public agencies and groups outside the park. Various park divisions would continue to assume responsibilities for law enforcement, maintenance and interpretation with limited internal coordination.

Existing partnerships would be maintained with the Appalachian Trail Park Office, the Appalachian Trail Conference, the Appalachian Mountain Club, the Delaware Water Gap Equestrian Advisory Committee, the Kittatinny Mountain Bike Association, the New Jersey State Parks, the NY-NJ Trail Conference and the Wilmington Hiking Club. Partners would be encouraged to sponsor the development and maintenance of present park and proposed trails.

ALTERNATIVE A: CONTINUATION OF CURRENT MANAGEMENT PRACTICES

MISSION GOAL	CURRENT MANAGEMENT DIRECTION	ACTIONS TAKEN
Preserve the natural, cultural and scenic resources contributing to the public enjoyment of park lands and waters.	Soil erosion and vegetation loss occur due to overuse and crowding on trails. Lack of trail design leads to encroachment on sensitive habitats and sites.	• Erect steps, boardwalks and other structures to channel use. • Increase maintenance by park staff and volunteers • Conduct resource monitoring on limited amount of trails.
Provide for public outdoor recreation use and enjoyment, assuring that such use and enjoyment has a minimal impact on the park's natural and cultural resources.	Current use and mileage is maintained on established trails. Trail information is provided at existing visitor centers. Directional and interpretive signage is inaccurate and difficult to understand. Parking areas are difficult to find and insufficient for volume of users. Limited number of restroom facilities do not correspond to trail locations.	• Continue to allow hiking anywhere in the park. • Restrict biking to the Blue Mountain Lakes Trail and park roads. • Restrict horse use to the Conashaugh View and Upper Ridge Road Equestrian trails. • Restrict snowmobile use to the designated Snowmobile Trail. • Distribute current trail brochure at visitor centers • Retain current trail location information in cooperator's books and maps • Keep existing directional and interpretive signs. • Replace signs and waysides when broken or worn. • Keep existing parking areas unimproved. • Keep toilets and comfort stations at existing facilities.
Manage the park in an efficient, cost effective manner in order to attain the goals specified above.	Continue to develop trails according to user group interest. Minimal staff will be dedicated to trails. Manage trails according to current GMP policies and special regulations. Responsibilities for law enforcement, maintenance and interpretation will continue with limited coordination.	• Allow new groups to develop trails for a variety of uses. • Provide minimal maintenance on existing trails. • Continue existing maintenance agreements with established partners. • Provide minimal patrolling on trails. • Continue competing for funds and with higher park priorities.

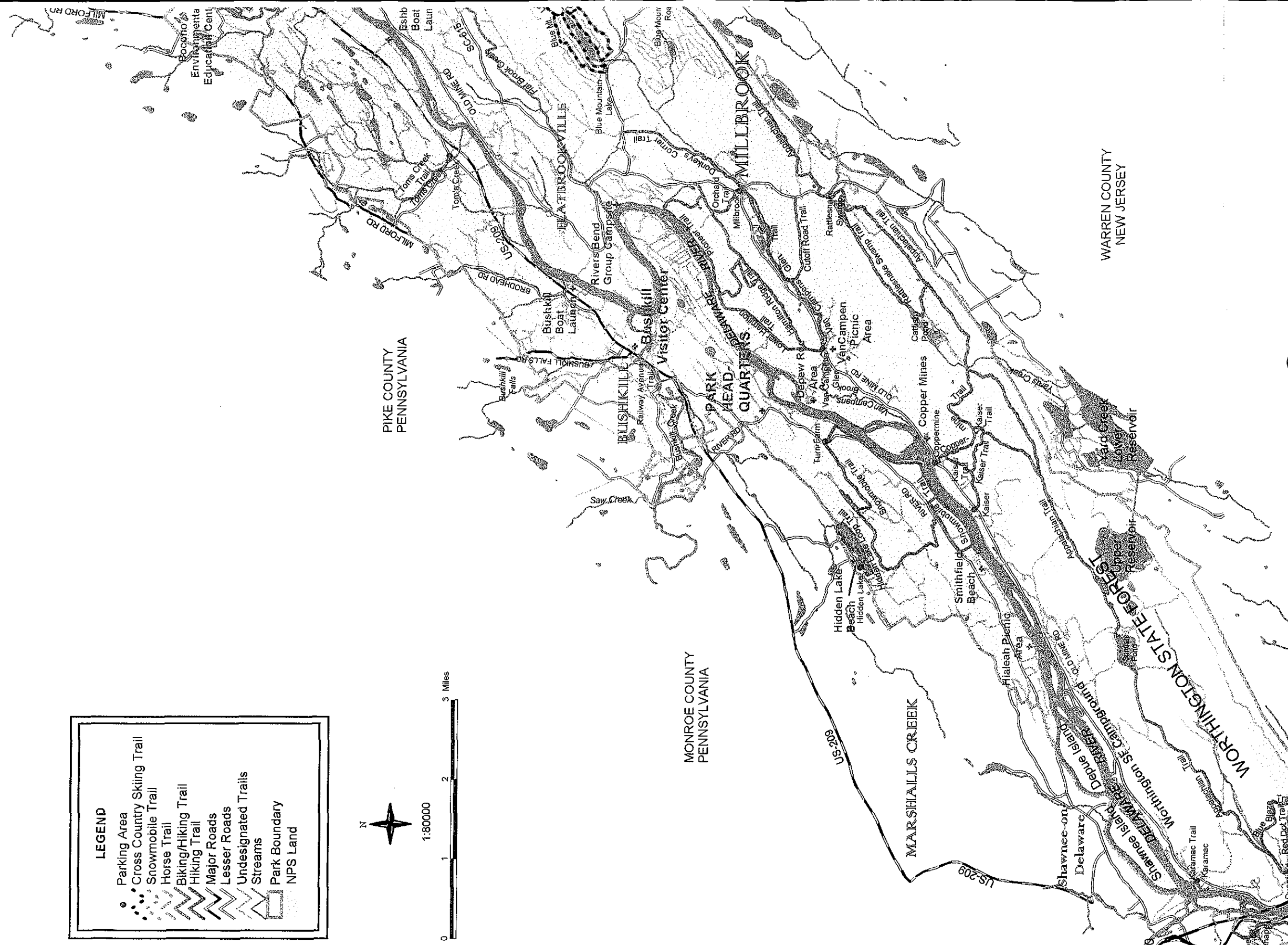
DRAFT TRAILS PLAN

for

Delaware Water Gap National Recreation Area

Alternative A
Continuation of Current Management Practices
(No Action)

(Southern Section)



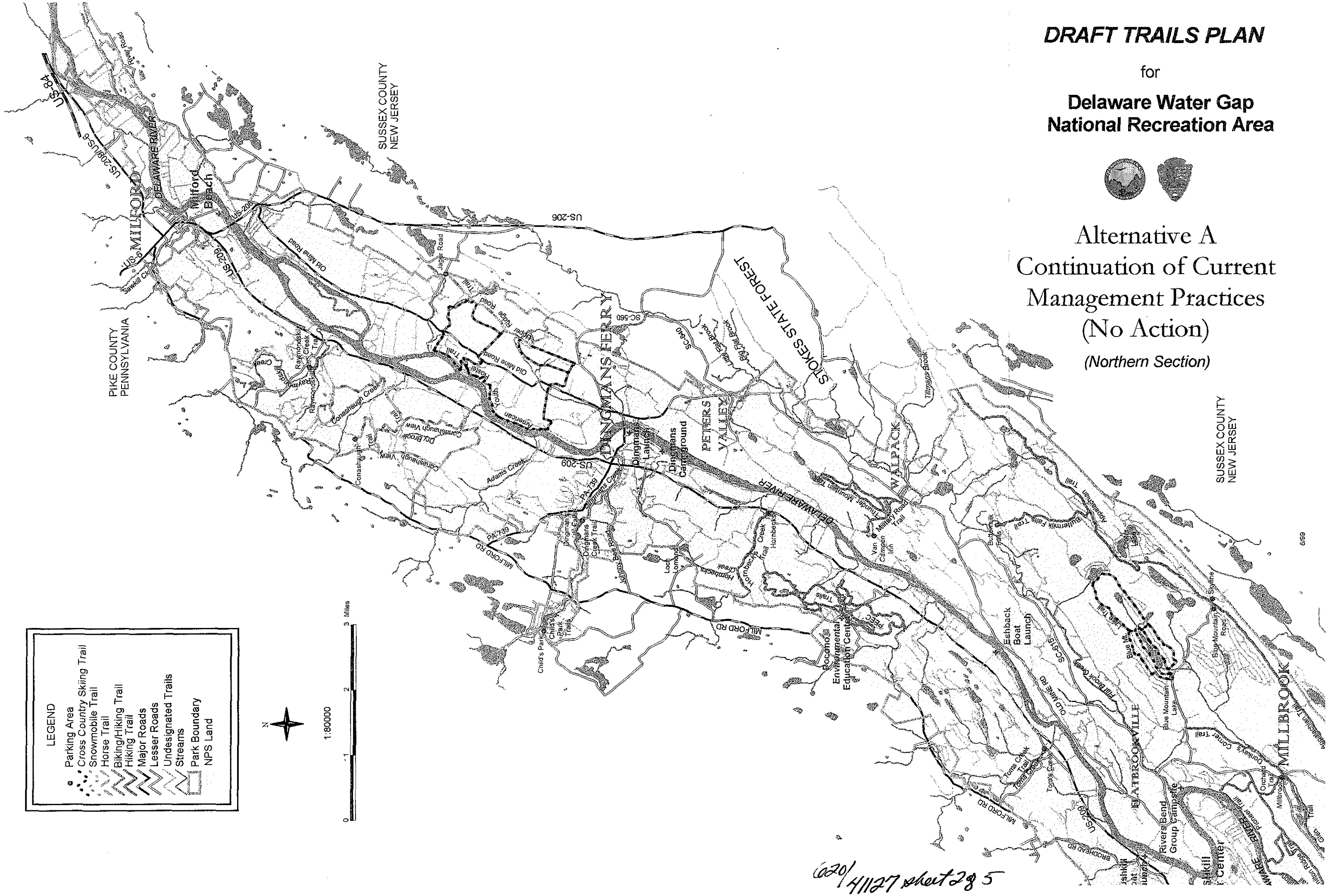
DRAFT TRAILS PLAN

for

Delaware Water Gap National Recreation Area

Alternative A
Continuation of Current Management Practices
(No Action)

(Northern Section)



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ALTERNATIVE B: MULTIPLE LINKING NETWORKS

DWGNRA is defined by its distinctive landscape and features: a river valley with wooded mountain ridges, agricultural fields, streams, creeks and ravines, and historic villages and buildings. These features and the opportunities they provide for a high quality visitor experience are the organizing foundation for this alternative. Under this alternative, the park would designate a trail system organized into four networks: the Appalachian, Country Road, Gap View and River Valley. Each network would contain a series of trails that enhance a particular visitor experience and provide for specific uses.

RESOURCE PRESERVATION

Trail improvement and development would focus on disturbed areas, old road traces and existing routes. Sections of trail requiring new construction would be limited and focus on improving safety and environmental quality. Present park trails would be improved to provide proper drainage and appropriate surfaces to limit encroachment on adjacent vegetation and soil compaction and erosion. Present park trails impacting on sensitive habitats, cultural landscapes or archeological sites would be relocated. Informal trails affecting important natural and cultural resources would be eliminated.

VISITOR USE AND FACILITIES

Opportunities to explore the park in a variety of ways would be increased. This system would comprise 54 trails totaling approximately 224 miles. Thirty-five miles of the total would require new construction. Hiking would continue to be a designated use of all trails. Many new multi-use trails throughout the park would be developed, increasing mileage for biking to 98 miles, horse use to 19 miles and cross country skiing to 93 miles. The existing snowmobile trail would be relocated to the Eshback area and increased to 10 miles. Sixty-two trailheads would be formalized, incorporating existing parking areas and comfort facilities. New signage, interpretive kiosks, fencing, and appropriate toilets would be installed.

VISITOR EXPERIENCE

Each network and its collection of trails would focus on a specific visitor experience and provide access to significant park resources. These networks are defined below, with detailed descriptions for each trail beginning on page 26 and summarized in Appendix A on page 81.

Appalachian Trail Network

These hiking trails provide an isolated, remote, wooded experience for the majority of the network.

Present Park Trails

Appalachian National Scenic
Blue Blaze
Buttermilk Falls
Coppermine
Kaiser
Rattlesnake Swamp
Red Dot

Proposed Trails

Crater Lake Loop
Long Pine Pond Loop

Country Road Trail Network

These trails provide a country road experience passing through agricultural landscapes, historic districts and cultural sites such as historic towns, bridges, and cemeteries. Opportunities for multiple uses along a spine, with spurs for individual uses are promoted. Use is directed and connected to Stokes State Forest and High Point State Park.

Present Park Trails

Blue Mountain Lake
Buttermilk Falls
Military Road
Orchard
Pioneer
Van Campens Glen

Proposed Trails

Country Road
Coventry Pond
Farmers Trace
Hamilton Ridge
Mountain Road
Peters Valley
Pool Colony
Rivers Bend
Silver Spray Falls
Van Campens to Rattlesnake Connector
Walpack Environmental Education Center
Walpack Ridge
Woods Road

Gap View Network

This network focuses on the unique scenic view of the water gap, the Delaware River and cultural sites associated with the former resort and railroad industries. This network would focus on present park trails and facilities for intensive day-use hiking on the majority of its trails.

Present Park Trails

Appalachian National Scenic
Arrow Island
Blue Blaze
Karamac
Slateford Loop
Red Dot

Proposed Trails

Gap to Slateford
Karamac Railroad
Kittatinny House Historic

River Valley Network

Many opportunities to explore waterfalls, the Delaware River, creeks, ravines, ridges and wooded areas are provided by these trails. An extensive multiple use system is the foundation for this network that links most of the major facilities together and provides connections to other existing and planned trails outside the park boundary.

Present Park Trails

Childs Park
Conashaugh View
Dingmans Creek
Hidden Lake Loop
Hornbecks Creek
PEEC
Railway Avenue
Raymondskill Creek
Toms Creek

Proposed Trails

Adams Creek
Adams Creek to Conashaugh Link
Bride and Groom
Cliff Park
Dingmans to Hornbecks
Eshback
Hornbecks-PEEC
McDade Recreational
McDade to Stucki Pond
Mill Creek
Sproul Road
Theune

OPERATIONS, PARTNERSHIPS AND COOPERATIVE ACTIONS

A new office would be created in the park to manage the trails system and coordinate the efforts of resource protection, law enforcement, maintenance and interpretation. Appropriate levels of staffing and funds would be requested. Law enforcement and patrolling would be increased to improve safety and reduce user conflicts.

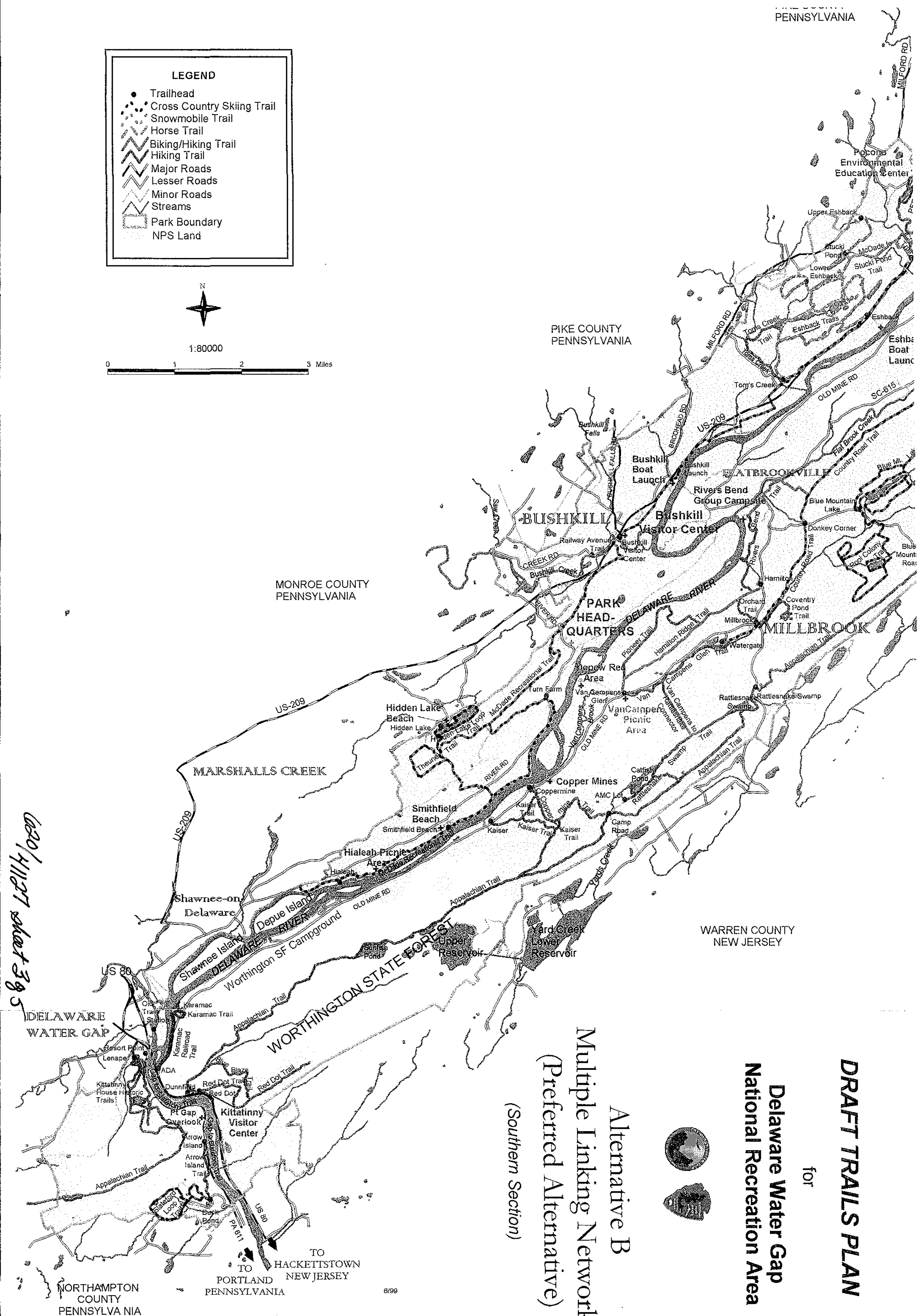
The missions of both the park and also the cooperating organizations would be enhanced and supported through establishment of the trail system. Existing partnerships would be maintained and expanded with the Appalachian Trail Park Office, the Appalachian Trail Conference, the Appalachian Mountain Club, the Delaware Water Gap Equestrian Advisory Committee, the Kittatinny Mountain Bike Association, the New Jersey State Parks, the NY-NJ Trail Conference and the Wilmington Hiking Club. New partners would be encouraged to sponsor the development and maintenance of present park and proposed trails. Partners' roles in education, patrolling, compliance, and resource education would be expanded. A volunteer trail patrol program would be initiated, similar to the Ridge Runner program on the Appalachian Trail. This cadre of volunteers would patrol park trails to: inform and educate visitors in best practices for trail use; monitor resource damage and trail safety conditions; provide first aid or other visitor assistance; and report violators to park rangers.

ALTERNATIVE B: MULTIPLE LINKING NETWORKS

MISSION GOAL	MANAGEMENT PERSCRIPTIONS	EXAMPLES OF APPROPRIATE ACTIONS
Preserve the natural, cultural and scenic resources contributing to the public enjoyment of park lands and waters.	Pedestrian, horse and bicycle traffic is managed to minimize resource damage and/or loss.	• Work with partners to increase education, safety, patrolling and enforcement. • Increase ranger presence for resource protection. • Emphasize visitor's contributions to resource protection in orientation and information materials. • Use construction methods for new and proposed trails that can sustain the designated visitor use.
	Encroachment on sensitive habitats and sites is minimized.	• Establish monitoring program. • Establish programs to protect sensitive resources. • Existing trails that encourage encroachment are relocated. • Close undesignated trails. • Restore disturbed areas. • New trails avoid sensitive areas. • Increase partner participation in monitoring & education. • Survey and document trail damage to adjacent resources.
Provide for public outdoor recreation use and enjoyment, assuring that such use and enjoyment has a minimal impact on the park's natural and cultural resources.	Appropriate numbers of trails and facilities consistent with visitor use are available and accessible.	• Increase mileage for hiking biking, equestrian activities, cross country skiing and snowmobiling. • Develop formal trailheads with parking, maps, kiosks, and signage. • Install more portable toilets or comfort stations where appropriate. *continued*

ALTERNATIVE B: MULTIPLE LINKING NETWORKS continued

MISSION GOAL	MANAGEMENT PERSCRIPTIONS	EXAMPLES OF APPROPRIATE ACTIONS
Provide for public outdoor recreation use and enjoyment, assuring that such use and enjoyment has a minimal impact on the park's natural and cultural resources continued	Park visitors are able to easily locate trails.	• Develop a coordinated trail signage and interpretive system. • Install new signs, wayside exhibits and informational kiosks (as necessary) at all trailheads. • Work with partners to develop and distribute accurate information about trail opportunities and restrictions.
	Information about the park's new trail opportunities is accurate and available through a variety of media.	• Increase information about trails on park website. • Create an improved system of publications with assistance from existing partners. • Plan and implement workshops and other hands-on activities in conjunction with various user groups.
Manage the park in an efficient, cost effective manner in order to attain the goals specified above.	Staff and funds are sufficient for support of a new trail system	• Create office in park to manage trail system. • Approve and fund increases in staff for design, construction, compliance, maintenance and enforcement • Establish seasonal maintenance crews. • Work with partners to increase financial participation and new sources of funding.
	Existing trail partnerships are maintained and strengthened to expand NPS's ability to protect resources and deliver high quality recreational experiences.	• Work with volunteer groups to expand and extend their services to the park. • Expand the ways volunteers can assist with trail maintenance, safety programs, education and conflict resolution.
	Opportunities to link trails adjacent to the park with the new system are encouraged and supported by NPS.	• Collaborate with local communities and organizations to plan and develop linkages. • Work with new partners to strategize trail funding opportunities.



DRAFT TRAILS PLAN

for

Delaware Water Gap National Recreation Area

Alternative B
Multiple Linking Networks
(Preferred Alternative)

(Southern Section)

620/H1127 sheet 3 of 5

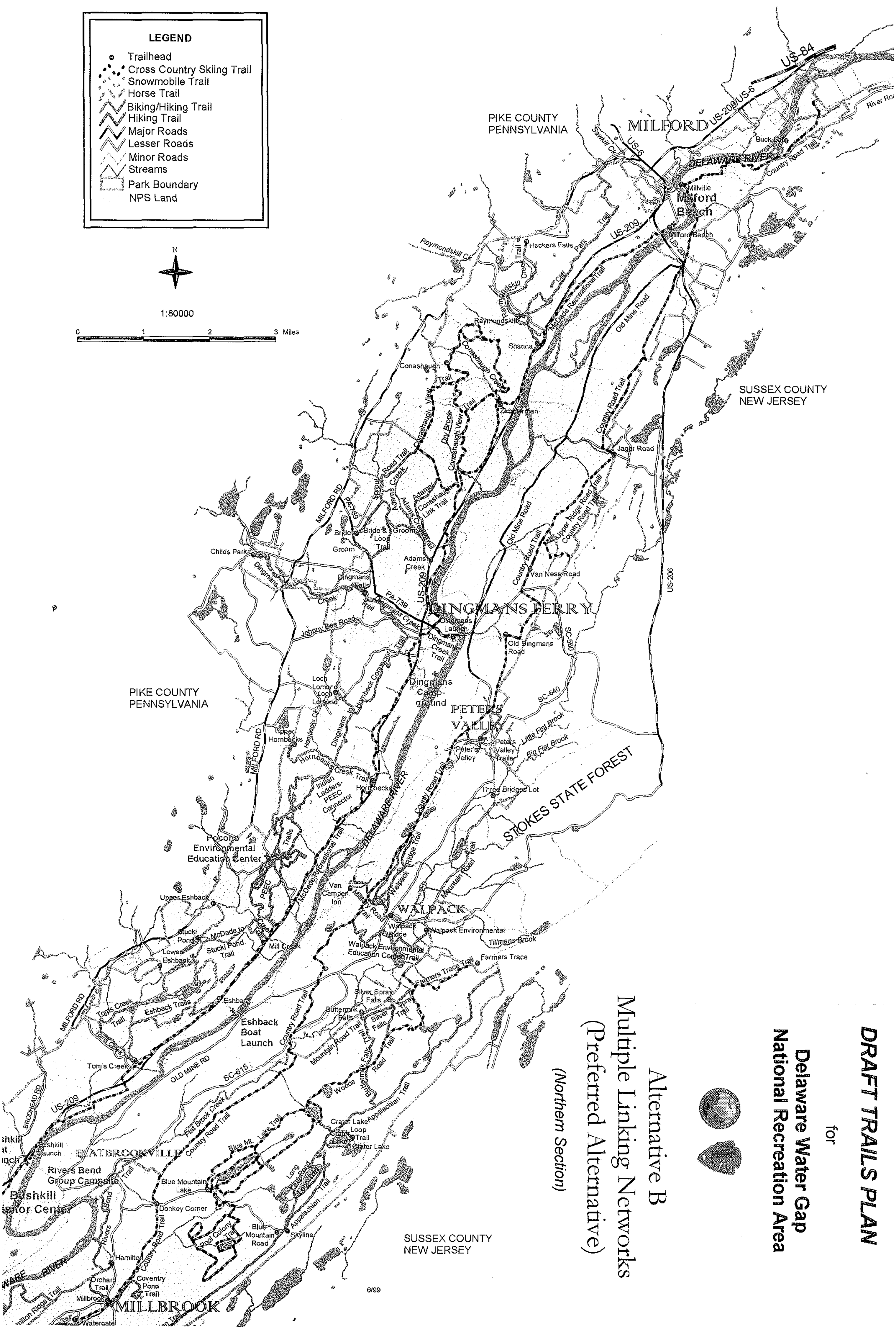
DRAFT TRAILS PLAN

for

Delaware Water Gap National Recreation Area

Alternative B
Multiple Linking Networks
(Preferred Alternative)

(Northern Section)



ALTERNATIVE C: INDEPENDENT NETWORKS

This alternative also emphasizes networks and different visitor experiences, but is organized in 14 small distinctive geographic areas that emphasize a specific use and park attractions. Some larger networks such as the Appalachian and River Valley are included, as well as trails that lead to a particular destination point. Comfort facilities, signage and interpretation would also be expanded as formalized trailheads were developed. Detailed descriptions for each trail begin on page 26 and are summarized in Appendix A on page 81.

RESOURCE PRESERVATION

Trail improvement and development would focus on disturbed areas, old road traces and existing routes. Sections of trail requiring new construction would be limited and focus on improving safety and environmental quality. Present park trails would be improved to provide proper drainage and appropriate surfaces to limit encroachment on adjacent vegetation and soil compaction and erosion. Present park trails impacting on sensitive habitats, cultural landscapes or archeological sites would be relocated. Informal trails affecting important natural and cultural resources would be eliminated.

VISITOR USE AND FACILITIES

Opportunities to explore the park in a variety of ways would be increased. This system would comprise 43 trails totaling approximately 178 miles. Twenty-six miles of the total would require new construction. Hiking would continue to be allowed on all trails. Some new multi-use trails throughout the park would be developed, increasing mileage for biking to 62 miles, horse use to 12 miles and cross country skiing to 65 miles. The existing snowmobile trail would be relocated to the Eshback area and increased to 10 miles. Fifty-three trailheads would be formalized, incorporating existing parking areas and comfort facilities. New signage, interpretive kiosks, fencing, and appropriate toilets would be installed.

VISITOR EXPERIENCE

Each network and its collection of trails would focus on a specific visitor experience and provide access to significant park resources:

Adams Creek Network

A scenic hiking network that highlights the Adams Creek Falls, a hemlock gorge and former agricultural fields.

Proposed Trails

Adams Creek
Bride and Groom Loop

Appalachian Trail Network

These hiking trails provide an isolated, remote, wooded experience for the majority of the network.

Present Park Trails

Appalachian National Scenic
Blue Blaze
Buttermilk Falls
Coppermine
Kaiser
Rattlesnake Swamp
Red Dot

Proposed Trails

Crater Lake Loop
Long Pine Pond Loop

Blue Mountain Lakes Network

This network connects two former housing developments and provides for easy hiking and biking in a wooded, peaceful area in New Jersey.

Present Park Trail

Blue Mountain Lake

Proposed Trail

Pool Colony

Buttermilk/Silver Spray Falls Network

A premier attraction, this network provides for a valley to ridge experience enhanced by waterfalls and scenic overlooks in New Jersey.

Present Park Trail

Buttermilk Falls

Proposed Trail

Silver Spray Falls

Conashaugh Horse Network

Through a series of loop trails, this scenic network is located in a wooded creek drainage in Pennsylvania.

Present Park Trail

Conashaugh View

Coppermine/Kaiser Network

This established network provides for a river to ridge experience and connects two popular trails with remnants of historic copper mines in New Jersey.

Present Park Trails

Appalachian National Scenic
Coppermine
Kaiser

Dingmans Creek Network

This network provides opportunities for a scenic experience along a wooded creek and waterfalls and connects the visitor center, picnic area, and parking lot in Pennsylvania.

Present Park Trails

Childs Park
Dingmans Creek

Gap View Network

This network focuses on the unique scenic view of the water gap, the Delaware River and cultural sites associated with the former resort and railroad industries. This network would focus on developed trails and facilities for intensive day-use hiking on the majority of its trails.

Present Park Trails
Appalachian National Scenic
Arrow Island
Slateford Loop
Red Dot
Blue Blaze
Karamac
Proposed Trails
Gap to Slateford
Karamac Railroad
Kittatinny House Historic

Pennsylvania Environmental Education Center (PEEC)
An established and heavily used system of trails that provides a scenic experience in wooded area with diversity of plants and creeks in Pennsylvania.

Present Park Trails
Confidence
Fossil
Scenic Gorge
Sunrise
Tumbling Waters
Two Ponds

Raymondskill Network
This popular network provides for scenic overlooks and views including linkages with upper & lower Raymondskill Falls, Hackers Falls, Cliff Park, and Milford Knob in Pennsylvania.

Present Park Trails
Raymondskill Creek

Proposed Trail
Cliff Park

River Valley Trail Network
This multi-use network provides for a variety of experiences including river views, agricultural fields, woods and open space and would primarily link facilities, not resources in Pennsylvania.

Proposed Trail
Hidden Lake Loop
McDade Recreational
Theune

Van Campen/Millbrook Network
This network would connect a scenic stream and ravine with historic Millbrook Village, Watergate Picnic Area and the Hamilton Ridge Trail in New Jersey.

Present Park Trails
Orchard
Pioneer
Van Campens Glen

Proposed Trails
Coventry Pond
Hamilton Ridge
Rivers Bend

Walpack Network
Through a series of short trails, this network connects the historic Military Trail, Van Campens Inn, Walpack Village, Walpack Environmental Education Center and Tillman's Ravine. A connection to Stokes State Forest is possible.

Present Park Trails
Military Road

Proposed Trail
Walpack Environmental Education Center
Walpack Ridge

Toms Creek/Eshback Network
Using old road traces, this network gives the greatest opportunities for multiple use and provides for a valley to ridge experience with scenic creek and ponds in Pennsylvania.

Present Park Trail
Toms Creek

Proposed Trail
Eshback

Individual Trails Included in Alternative C
Present Park Trails
Hornbecks Creek
Railway Avenue
Upper Ridge Road

Proposed Trail
Peters Valley

OPERATIONS, PARTNERSHIPS AND COOPERATIVE ACTIONS

Appropriate levels of staffing and funds would be requested to create a new office in the park to manage the trails system, coordinating the efforts of resource protection, law enforcement, maintenance and interpretation. Law enforcement and patrolling would be increased to improve safety and reduce user conflicts.

The missions of both the park and the cooperating organizations would be enhanced and supported through establishment of the trail system. Existing partnerships would be maintained and expanded with the Appalachian Trail Park Office, the Appalachian Trail Conference, the Appalachian Mountain Club, the Delaware Water Gap Equestrian Advisory Committee, the Kittatinny Mountain Bike Association, the New Jersey State Parks, the NY-NJ Trail Conference and the Wilmington Hiking Club. New partners would be encouraged to sponsor the development and maintenance of present and proposed trails. Partners' roles in education, patrolling, compliance and resource education would be expanded. A volunteer trail patrol program would be initiated, similar to the Ridge Runner program on the Appalachian Trail. This cadre of volunteers would patrol park trails to: inform and educate visitors in best practices for trail use; monitor resource damage and trail safety conditions; provide first aid or other visitor assistance; and report violators to park rangers.

ALTERNATIVE C: INDEPENDENT NETWORKS

MISSION GOAL	MANAGEMENT PRESCRIPTIONS	EXAMPLES OF APPROPRIATE ACTIONS
Preserve the natural, cultural and scenic resources contributing to the public enjoyment of park lands and waters.	Pedestrian, horse and bicycle traffic is managed to prevent resource damage and/or loss.	• Work with partners to increase education, safety, patrolling and enforcement. • Increase ranger presence for resource protection.
	Encroachment on sensitive habitats and sites is eliminated.	• Establish monitoring program. • Establish programs to protect sensitive resources.
	Undesignated trails are closed and/or disturbed areas restored.	• Increase partner participation in monitoring & education. • Survey and document trail damage to adjacent resources.
Provide for public outdoor recreation use and enjoyment, assuring that such use and enjoyment has a minimal impact on the park's natural and cultural resources.	Appropriate numbers of trails and facilities consistent with visitor use are available and accessible.	• Increase mileage for hiking biking, equestrian activities, cross country skiing and snowmobiling. • Develop formal trailheads with maps, kiosks, and signage. • Install more portable toilets or comfort stations where appropriate.
	Park visitors are able to easily locate trails.	• Develop a coordinated trail signage and interpretive system. • Install new signs, wayside exhibits and informational kiosks at all trailheads.
Manage the park in an efficient, cost effective manner in order to attain the goals specified above.	Staff and funds are sufficient for support of a new trail system	• Create office in park to manage trail system. • Approve and fund increases in staff for design, construction, compliance, maintenance and enforcement • Establish seasonal maintenance crews. • Work with partners to increase financial participation and new sources of funding.
	Information about the park's new trail opportunities is accurate and available through a variety of media.	• Increase information about trails on park website. • Create an improved system of publications with assistance from existing partners. • Plan and implement workshops and other hands-on activities in conjunction with various user groups.
	Existing trail partnerships are maintained and strengthened to expand NPS's ability to protect resources and deliver high quality recreational experiences.	• Work with volunteer groups to expand and extend their services to the park. • Expand the ways volunteers can assist with trail maintenance, safety programs, education and conflict resolution.

TRAIL DESCRIPTIONS

These summaries generally describe, by alternative, the mileage, location, surface and attractions associated with each individual trail. Parking, restroom facilities, new construction and potential improvements to the trail surface have also been included. As part of designing potential new networks for Alternatives B&C, some trail names and locations have been changed. These changes were necessary to either minimize resource damage or provide for a better recreational experience.

Adams Creek Trail

Pike County, Pennsylvania

ALTERNATIVE A: Not included

ALTERNATIVE B: River Valley Network

Description: A 1.0 mile trail which rises quickly above Adams Creek and then follows the rock walls of the old homestead road to the base of the lower Adams Creek Falls. The trail has three major stream crossings, travels into a hemlock gorge, and ends deep in the Adams Creek drainage. In the gorge, the trail ends at the base of some steep rock outcrops. Backtracking approximately one-third mile provides a connection to the Bride & Groom Loop Trail for an extended hiking experience.

Access & Facilities: Parking at Adams Creek Trailhead off Route 209.

Improvements & Maintenance: This proposed trail is an old woods road currently hiked by park users. It has a width of 3-15 feet in places and would require minimal improvements to its natural surface.

ALTERNATIVE C: Adams Creek Network

Description: Same as Alternative B

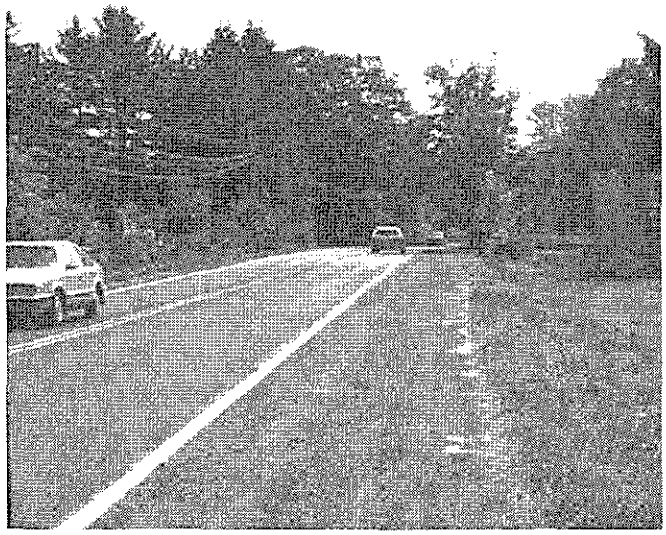
Adams Creek to Conashaugh Link

Pike County, Pennsylvania

ALTERNATIVE A: Not included

ALTERNATIVE B: River Valley Network

Description: This link trail is approximately a 1.3 mile hike, which traverses a small feeder creek connecting the scenic Adams



Creek hemlock ravine to the Conashaugh View hiking and equestrian trail. Visitors will enjoy a scenic hemlock gorge busy with bird life. The trail is steep and may be considered difficult.

Access & Facilities: Parking at Adams Creek Trailhead off of Route 209.

Improvements & Maintenance: This 3-5 feet wide natural surface trail will make use of the alignment of an existing old road trace. Some clearing of brush and surface preparations will be necessary. Approximately 104 feet of new construction will be necessary.

ALTERNATIVE C: Not included

American Youth Hostel Trail

Sussex County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: Approximately 7.0 miles of old wood's roads and foot paths lead through wooded environments, including a hemlock gorge drainage. About two miles of this hiking and cross country skiing trail parallel the Delaware River.

ACCESS & FACILITIES: Parking is available at the American Youth Hostel.

ALTERNATIVE B: Not included

ALTERNATIVE C: Not Included

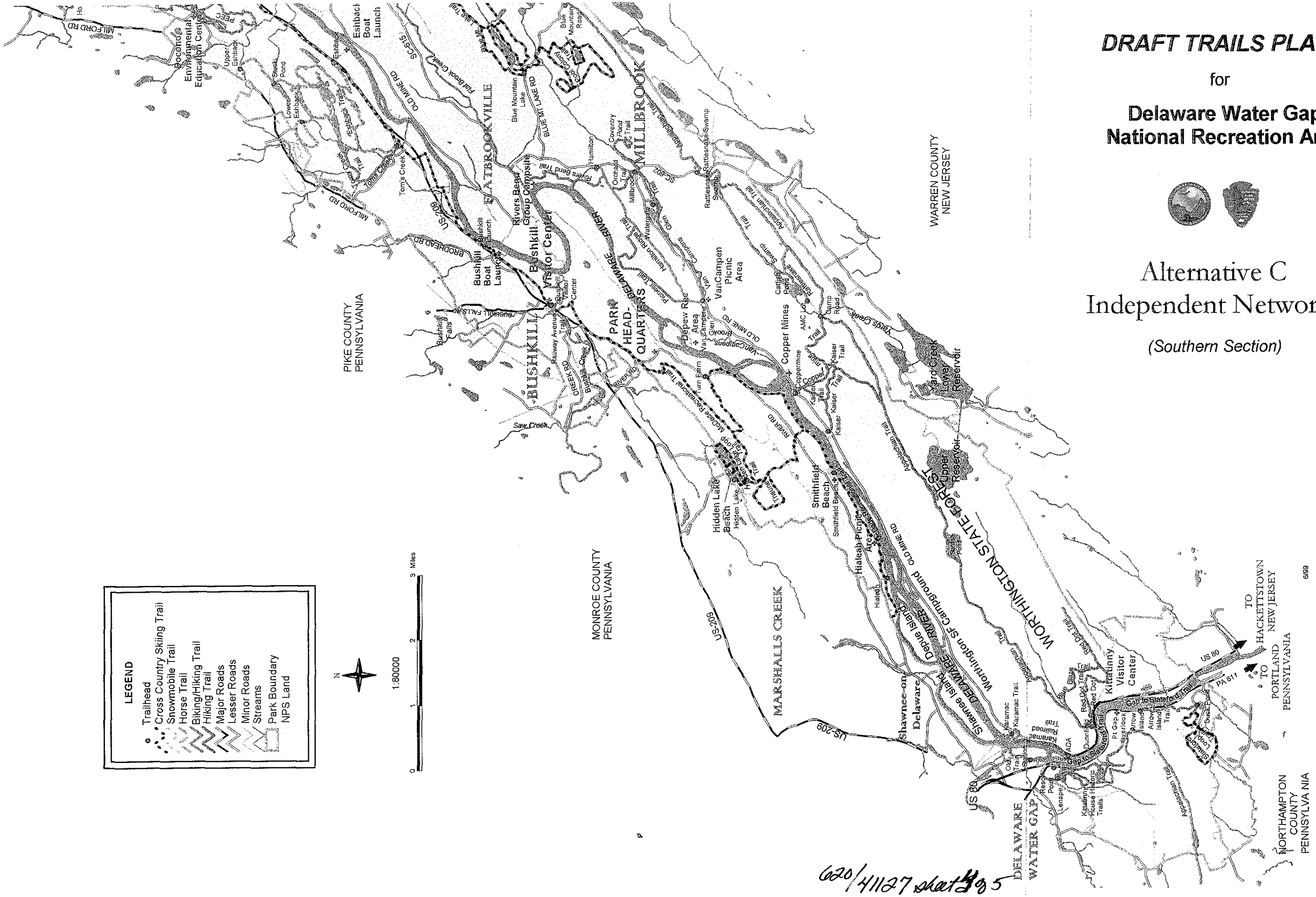
DRAFT TRAILS PLAN

for

Delaware Water Gap National Recreation Area

Alternative C
Independent Networks

(Southern Section)



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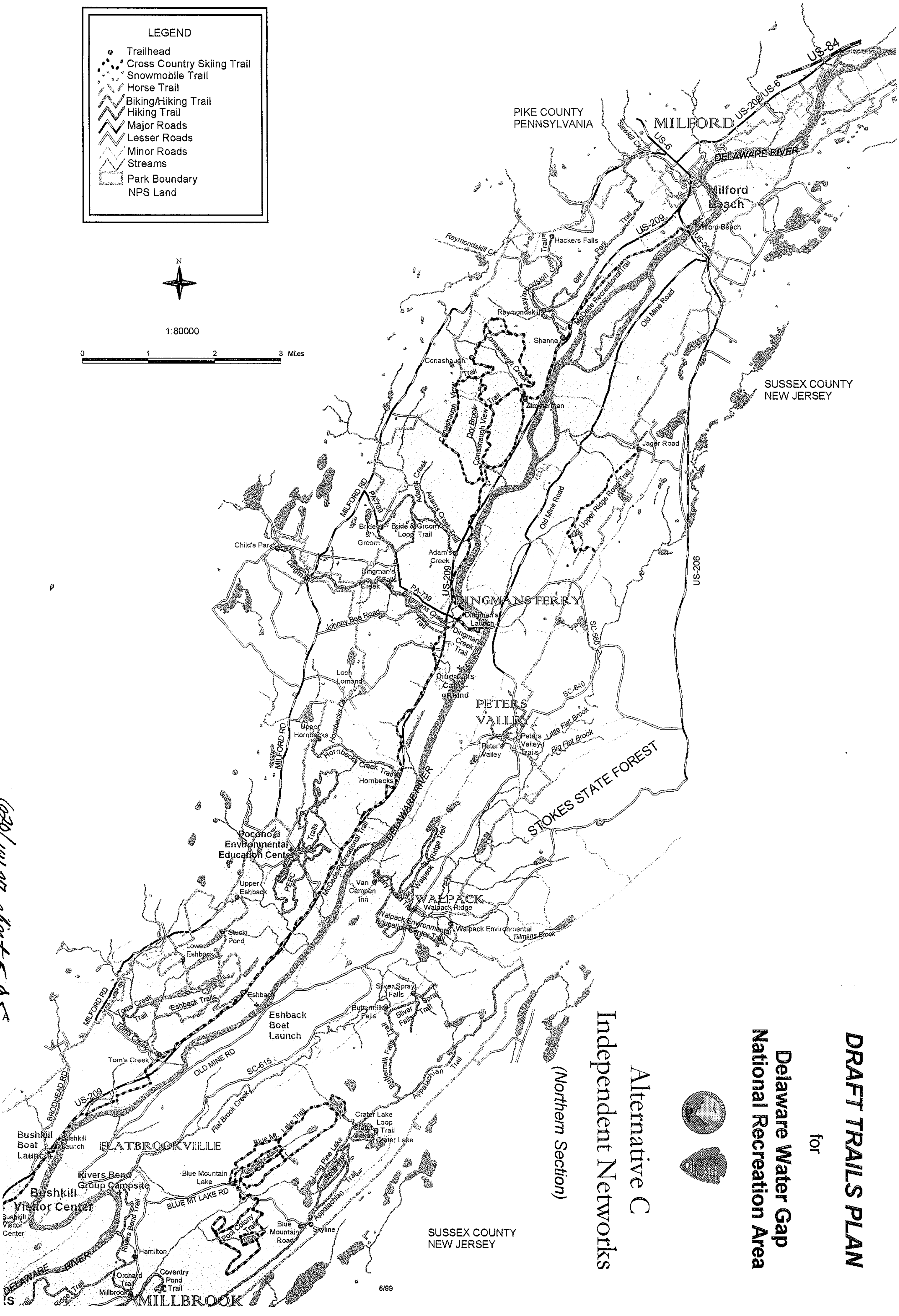
DRAFT TRAILS PLAN

for

Delaware Water Gap National Recreation Area

Alternative C
Independent Networks

(Northern Section)



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Appalachian National Scenic Trail

Northampton and Monroe Counties, Pennsylvania; Warren and Sussex Counties, New Jersey

ALTERNATIVE A: Present Park Trail

Description: The 27.3 mile National Scenic Trail is dedicated to through hikers who are travelling from Georgia to Maine, or for those who wish to experience smaller portions of the trail. The segment of the trail which runs through the park is considered to be moderate hiking.

Access & Facilities: Parking at Red Dot, Kaiser, Camp Road, Lake Lenape, Rattlesnake Swamp, Skyline, and Blue Mt. Road Trailheads. Parking and restrooms available at Dunnfield, Coppermine, and Buttermilk Falls Trailheads.

Improvements & Maintenance: The AT is managed through cooperative agreements and Memorandas of Understanding with the Appalachian NST Park Office and the Appalachian Trail Conference. The Wilmington Trail Club is responsible for maintaining the PA portion of the AT and the NY-NJ Trail Conference, the NJ section.

ALTERNATIVE B: Appalachian Trail Network/Gap View

Description: Same as Alternative A

ALTERNATIVE C: Appalachian Trail Network/Gap View

Description: Same as Alternative A

Arrow Island Trail

Northampton County, Pennsylvania

ALTERNATIVE A: Present Park Trail

Description: This 1.1 mile natural surface hiking trail starts at the Arrow Island Overlook parking lot and follows the Minsi slope approximately one mile to the Duck Pond Trailhead with a connection to Slateford Loop Trail. The trail abounds in geologic formations along with scenic vistas of the Gap. From the parking lot, the hiker will experience moderate to steep conditions to the Slateford Loop where the trail levels out to become a less strenuous hike.

Access & Facilities: Parking at Arrow Island Overlook and Duck Pond Trailheads.

Improvements & Maintenance: Currently maintained by park staff.

ALTERNATIVE B: Gap View Network

Description: 1.1 mile hiking trail that will link Slateford Farm Loop with Gap to Slateford Trail

Access & Facilities: Same as Alternative A

ALTERNATIVE C: Gap View Network

Description: Same as Alternative B

Blue Blaze

Warren County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: A very popular hiking trail which branches off the Appalachian Trail from the Dunnfield Creek drainage and ascends, with steep and rugged sections, up the backside of Mt. Tammany to a wonderful viewpoint overlooking the water gap. The trail then joins with another popular trail, the Red Dot, providing an opportunity for an alternate route down the mountain. This is a heavily used loop hike blazed with blue dots and is approximately 1.5 miles in length.

Access & Facilities: Parking available at Red Dot Trailhead. Parking and restrooms available at Dunnfield Trailhead.

Improvements & Maintenance: Park staff maintain section within boundary and assist Worthington State Forest with improvements when necessary.

ALTERNATIVE B: Appalachian Trail Network/Gap View Network

Description: Same as Alternative A

ALTERNATIVE C: Appalachian Trail Network/Gap View Network

Description: Same as Alternative A

Blue Mountain Lake Trail

Sussex County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: A network of roadways, remnants of a former housing development, provide several miles of decomposing asphalt and dirt roadways in a densely wooded area surrounding Blue Mountain Lake and Hemlock Pond. Approximately 7.4 miles of these trails

are designated and well- marked for hiking, mountain biking and cross-country skiing activities. During periods of snow cover this area provides some of the best cross-country skiing in the state.

Access & Facilities: Parking at Blue Mountain Lake Trailhead

Improvements & Maintenance: Site maintained under cooperative agreement with Kittitany Mountain Bike Association.

ALTERNATIVE B: Country Road Network

Description: Existing trail but would be linked to Pool Colony and Crater Lake Loop.

Access & Facilities: Same as Alternative A

Improvements & Maintenance: Existing trail would be resurfaced with crushed gravel.

ALTERNATIVE C: Blue Mountain Lake Network

Description: Same as Alternative B

Bride and Groom Loop

Pike County, Pennsylvania

ALTERNATIVE A: Not Included

ALTERNATIVE B: River Valley Network

Description: On this 2.8 mile hiking trail which follows the old country roads of the Bride & Groom Resort and the County Line Road, visitors will travel through hemlock groves and former farm fields where cattle once grazed. The Sproul Road and Adams Creek Trails offer extensions to this hike.

Access & Facilities: Parking at Bride & Groom Trailhead

Improvements & Maintenance: Clearing, surface improvements and approximately .5 miles of new construction will be necessary to complete loop along Route 739.

ALTERNATIVE C: Adams Creek Network

Description: Same as Alternative B without connection to Sproul Road Trail.

Buttermilk Falls Trail

Sussex County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: A wonderful opportunity for an intimate visit to a multi-tiered waterfall environment on a trail providing boardwalks and steps adjacent to the falls. Above the falls the trail continues another 1.5 miles up the Kittatinny Ridge, crossing Woods Road Trail, and on to the Appalachian Trail. Best visited following a period of rain fall. As an intersecting trail with the Appalachian Trail, this trail is marked with blue blazes.

Access & Facilities: Parking at the Buttermilk Falls Trailhead.

Improvements & Maintenance: Currently maintained by the NY-NJ Trail Conference.

ALTERNATIVE B: Appalachian Trail Network

Description: Same as Alternative A

Access & Facilities: Restroom facilities will be added to expanded trailhead.

ALTERNATIVE C: Appalachian Trail Network/Buttermilk Falls

Description: Same as Alternative B

Childs Park Trail

Pike County, Pennsylvania

ALTERNATIVE A: Present Park Trail

Description: This hiking trail is a 1.4 mile loop which follows both sides of Dingmans Creek as it steeply drops through Fulmer, Factory, and Deer Leap Falls. Four bridges cross the creek connecting each side of the trail, allowing visitors to shorten their hike through the deep gorge. The trail surface is a combination of natural shale and constructed walkways.

Access & Facilities: Parking and restrooms at the Childs Park Trailhead.

Improvements & Maintenance: Maintained by park staff.

ALTERNATIVE B: River Valley Network

Description: Existing trail would be connected to other segments along the Dingmans Creek to form new Dingmans Creek Trail.

Access & Facilities: same Alternative A

ALTERNATIVE C: Dingmans Creek Network

Description: Same as Alternative B

Cliff Park Trail

Pike County, Pennsylvania

ALTERNATIVE A: Not Included

ALTERNATIVE B: River Valley Network

Description: A 4.5-mile hiking trail located predominantly on a privately owned road trace. This trail connects the Raymondskill Falls area with the Milford Knob overlook. A short distance from the road are the Pitman Cliffs, where visitors may enjoy spectacular views of the Delaware River Valley.

Access & Facilities: Parking and restrooms available at Raymondskill Trailhead.

ALTERNATIVE C: Raymondskill Network

Description: Same as Alternative B

Conashaugh View Trail

Pike County, Pennsylvania

ALTERNATIVE A: Present Park Trail

Description: An existing 6.2 mile hiking and horse trail on gravel surface. This trail welcomes equestrian users and hikers who would like to experience a moderate to easy ride or hike. The trail extends from the historic Zimmermann Farm area through a stand of hardwood trees. Portions of the trail run along a mountain bluff providing scenic vistas. A section of the trail is on Longmeadow Road. Hikers and riders are advised caution when on this portion of the trail.

Access & Facilities: Parking at Conashaugh View Trailhead.

Improvements & Maintenance: Maintained under Memorandum of Understanding with Delaware Water Gap Equestrian Advisory Committee.

ALTERNATIVE B: River Valley Network

Description: A 7.0 mile hiking, horse and cross-country skiing trail on gravel surface.

Access & Facilities: Same as Alternative A

Improvements & Maintenance: A 0.7 mile old road trace section would be added to form an additional loop. Cross- country skiing would be added as a use and the section open to vehicular traffic on Conashaugh Road would be closed.

ALTERNATIVE C: Conashaugh Horse Network

Description: Same as Alternative B

Coppermine Trail

Warren County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: This popular 2.0 mile trail, with red blazes, leads up a very steep hemlock ravine from the historic Pahaquarry Copper Mines to the Appalachian Trail atop the Kittatinny Ridge, with ready access to the Appalachian Mountain Club facility at Camp Mohican. Two short spurs, one within the historic mining site and another further up the ridge connect to the Kaiser Trail, which leads up the ridge just to the south.

Access & Facilities: Parking and restrooms available at Coppermine Trailhead. Parking at Camp Road Trailhead.

Improvements & Maintenance: Maintained by the NY-NJ Trail Conference.

ALTERNATIVE B: Appalachian Trail Network

Description: Same as Alternative A

ALTERNATIVE C: Appalachian Trail Network/Coppermine-Kaiser Network

Description: Same as Alternative A

Country Road Trail

Warren and Sussex Counties, New Jersey

ALTERNATIVE A: Not Included

ALTERNATIVE B: Country Road Network

Description: A system of road traces linking numerous natural and historic village sites from Watergate Recreation Site to the northern boundary of the park. This 24.6 mile through route offers great potential to hikers and bicyclists.

Access & Facilities: Parking and restrooms available at Watergate, Millbrook, Blue Mountain Lake, and Van Campens Glen Trailheads. Parking at Donkey Corner, Walpack Ridge, Old Dingmans Road, Van Ness Road, Jager Road, Millville, Farmers Trace, Hamilton, Peters Valley, Silver Spray Falls, Van Campens Inn, Walpack Environmental and the Buck Lot Trailheads.

Improvements & Maintenance: Former road traces would be upgraded to new gravel surface and approximately 6.7 miles of new construction would be necessary.

ALTERNATIVE C: Not Included

Coventry Pond Trail

Warren County, New Jersey

ALTERNATIVE A: Not included

ALTERNATIVE B: Country Road Network

Description: An abandoned county roadway leading from just above the former mill site at Millbrook Village in a gentle climb to a small woodland pond. This is a short hike of approximately one mile roundtrip to a quiet and somewhat secluded wooded area.

Access & Facilities: Parking and restrooms available at Millbrook trailhead.

Improvements & Maintenance: Old road trace would need clearing and surface work. One culvert would be replaced.

ALTERNATIVE C: VanCampens/Millbrook Network

Description: Same as Alternative B

Crater Lake Loop

Sussex County, New Jersey

ALTERNATIVE A: Not included

ALTERNATIVE B: Appalachian Trail Network

Description: A 1.3 mile trail leading from the Crater Lake Parking Lot, at the terminus of Skyline Drive, circling around Crater Lake, with a spur to Hemlock Pond. At the north side of Crater Lake the trail route is shared with the Appalachian Trail.

Access & Facilities: Parking available at Crater Lake Trailhead.

Improvements & Maintenance: Section of trail around Hemlock Pond is maintained by the NY-NJ Trail Conference.

ALTERNATIVE C: Appalachian Trail Network

Description: Same as Alternative B

Cutoff Road Trail

Warren County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: This former county roadway, connects the upper segment of the Millbrook-Blairstown Road (602) on the north-west side of the Kittatinny Ridge west down the Kittatinny Ridge, across the Van Campen Brook, to Old Mine Road at the Upper Glen Parking Area. The hardtop surface of this former roadway, particularly at its lower section above the brook has deteriorated. This roadway, approximately 1.2 miles in length is gated at both ends and is only traveled by motor vehicles for administrative purposes. The lower section of the roadway is impassable to motor vehicles.

ALTERNATIVE B: Not included

ALTERNATIVE C: Not included

Dingmans Creek Trail

Pike County, Pennsylvania

ALTERNATIVE A: Present Park Trail

Description: A 1-mile raised boardwalk hiking trail along the Dingmans Creek.

Access & Facilities: Parking and restrooms available at the Dingmans Falls Trailhead.

ALTERNATIVE B: River Valley Network

Description: This 5.3 mile trail extends from the Dingmans Launch to the McDade Trail and continues west along the Dingmans Creek drainage to the Childs Park picnic area. A moderately strenuous natural surfaced trail with a segment constructed of raised boardwalks. The trail passes through the Dingmans Falls developed area, which includes one mile of trail with raised boardwalks passing through hemlock groves and mountain laurel barrens, and going past Silver Thread Falls and Dingmans Falls. The trail steeply rises on steps above the falls then follows the gentle rise of the creek to Childs Park.

Access & Facilities: Parking and restrooms available at Childs Park, Dingmans Falls and Dingmans Launch Trailheads.

Improvements & Maintenance: 1.25 miles of new construction will be necessary.

ALTERNATIVE C: Dingmans Creek Network

Description: Same as Alternative B

Dingmans to Hornbecks

Pike County, Pennsylvania

ALTERNATIVE A: Not included

ALTERNATIVE B: River Valley Network

Description: A 3.8 mile natural surface hiking trail that connects the Hornbecks Creek Trail to the Dingmans Creek Trail. The hike is along the Cactus Ridge where numerous vistas of the farmland and river valley below are offered. The hike should be considered easy to moderate.

Access & Facilities: Parking available at the Loch Lomond Trailhead. Access to the trail can be attained at Indian Ladders, Dingmans Falls or Dingmans Launch trailheads.

Improvements & Maintenance: New construction for 0.5-mile ravine (south) section. Remaining portion of trail is a road trace that will require surface upgrading.

ALTERNATIVE C: Not included

Donkeys Corner Trail

Sussex and Warren Counties, New Jersey

ALTERNATIVE A: Present Park Trail

Description: This 1.8 mile "old country road" leads north ward out of Millbrook Village, initially paralleling the Van Campen Brook, to Blue Mountain Lake Road. The trail is through a wooded area and has a fairly gentle slope along its length.

ALTERNATIVE B: Country Road Network

Description: Same as Alternative A except now is part of Country Road Trail.

ALTERNATIVE C: Not included

Eshback Trail

Pike County, Pennsylvania

ALTERNATIVE A: Not included

ALTERNATIVE B: River Valley Network

Description: A network of 9.7 miles of loop trails which rapidly rise out of the valley floor onto the ridge tops and saddles following old logging roads through hardwood forests past wetlands and shale outcroppings. This system of inter-looping trails will accommodate hiking, biking and snowmobile use. This trail will provide connections to Toms Creek, Mill Creek and the McDade Trail.

Access & Facilities: Tom's Creek, Eshback, Lower Eshback, Upper Eshback, and Stucki Trailheads.

Improvements & Maintenance: Recommended improvements include drainage structures, regrading and surfacing with compacted gravel. One mile of new construction will also be necessary.

ALTERNATIVE C: Eshback/Toms Creek Network

Description: Same as Alternative B except without connections to PEEC and McDade Trails.

Farmers Trace Trail

Sussex County, New Jersey

ALTERNATIVE A: Not included

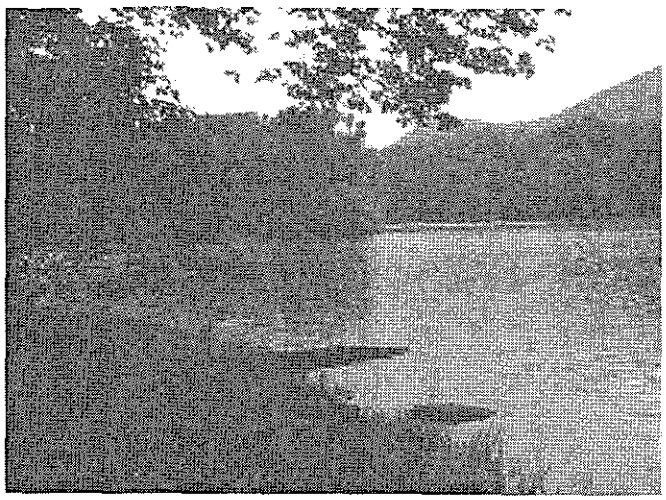
ALTERNATIVE B: Country Road Network

Description: This 1.4 mile natural surface trail, along the base of the Kittatinny Ridge near Walpack, offers a quiet sylvan experience for hiking, bicycling and equestrian activity.

Access & Facilities: Parking available at Silver Spray Falls and Farmers Trace Trailheads.

Improvements & Maintenance: Old road trace would be resurfaced with crushed gravel.

ALTERNATIVE C: Not included



Gap to Slateford Trail

Monroe and Northampton Counties, Pennsylvania

ALTERNATIVE A: Not included

ALTERNATIVE B: *Gap View Network*

Description: This 3.5-mile hiking/biking trail extends from approximately the Delaware Water Gap Train Station to the park boundary. The trail extends over a converted rail bed to offer the hiker or biker an easy tour of the scenic Delaware Water Gap. The trail can be accessed from numerous points along Rt. 611 south of Delaware Water Gap. It is envisioned that this trail would continue to Portland, PA (and beyond) to the south and into Monroe County to the north. There are opportunities to connect to county and state wide regional trail systems.

Access & Facilities: Parking at Point of Gap with potential at Old Train station.

Improvements and Maintenance: Development of this trail is predicated on abandonment of railroad use.

ALTERNATIVE C: *Gap View Network*

Description: Same as Alternative B

Hamilton Ridge Trail

Warren County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: This former township road travels approximately 2.8 miles along the forested top of Hamilton Ridge between Old Mine Road above Millbrook Village and the Van Campen Brook near the entrance to the Depew Recreation Area. Overall the route traverses relatively level terrain with portions of the trail surfaced with decomposing asphalt. This trail is ideal for hiking and could be an excellent opportunity to accommodate persons confined to a wheelchair. The trail offers hiking connections to the Orchard Trail, Van Campens Glen Trail and Pioneer Trail.

Access & Facilities: Parking available at Hamilton Trailhead. Access to the Hamilton Ridge Trail can be made from the Van Campens Glen and Hamilton Trailheads.

Improvements & Maintenance: Add crushed gravel to existing surface.

ALTERNATIVE B: Country Road Network

Description: Same as Alternative A except with biking as an additional use.

ALTERNATIVE C: Van Campens/Millbrook Network

Description: Same as Alternative B

Hidden Lake Loop Trail

Monroe County, Pennsylvania

ALTERNATIVE A: Present Park Trail

Description: A 1.9 mile dirt and gravel loop trail around the edge of a stocked trout lake. The trail is fairly level and passes the Hidden Lake picnic area and the Hidden Lake Lodge. This trail will accommodate hiking, cross-country skiing and has grades which could be prepared to be well suited for those individuals who are mobility impaired and/or wheelchair bound.

Access & Facilities: Parking and restrooms at Hidden Lake Trailhead

ALTERNATIVE B: River Valley Network

Description: Same as Alternative A

Improvements & Maintenance: Crushed gravel would be added to the existing surface. A 0.3 mile section would be added to the present location to connect with the Theune Trail.

ALTERNATIVE C: *River Valley Network*

Description: same Alternative B

Hornbecks Creek Trail

Pike County, Pennsylvania

ALTERNATIVE A: Present Park Trail

Description: A 2.0 mile hiking trail which follows the old Glenside Rod & Gun Club road along Hornbecks Creek to the base of the lower Indian Ladders then rises steeply along the shale cliffs. The trail rises with the creek into a narrow hemlock grove, past the upper Indian Ladders Falls, and ends at the old Emery Homestead on Emery Road.

Access & Facilities: Parking at Hornbecks Trailheads.

ALTERNATIVE B: River Valley Network

Description: Same as Alternative A

Access & Facilities: Parking at Hornbecks and Upper Hornbecks Trailheads

ALTERNATIVE C: Independent Trail

Description: Same as Alternative B

Hornbecks-PEEC Connector

Pike County, Pennsylvania

ALTERNATIVE A: Not included

ALTERNATIVE B: River Valley Network

Description: An existing 0.5 mile logging road that connects the PEEC trails with the Hornbecks Creek trail. This is considered a steep hiking trail.

Access & Facilities: Parking at Hornbecks and Upper Hornbecks Trailheads.

Improvements & Maintenance: Existing old road trace would require surface improvements.

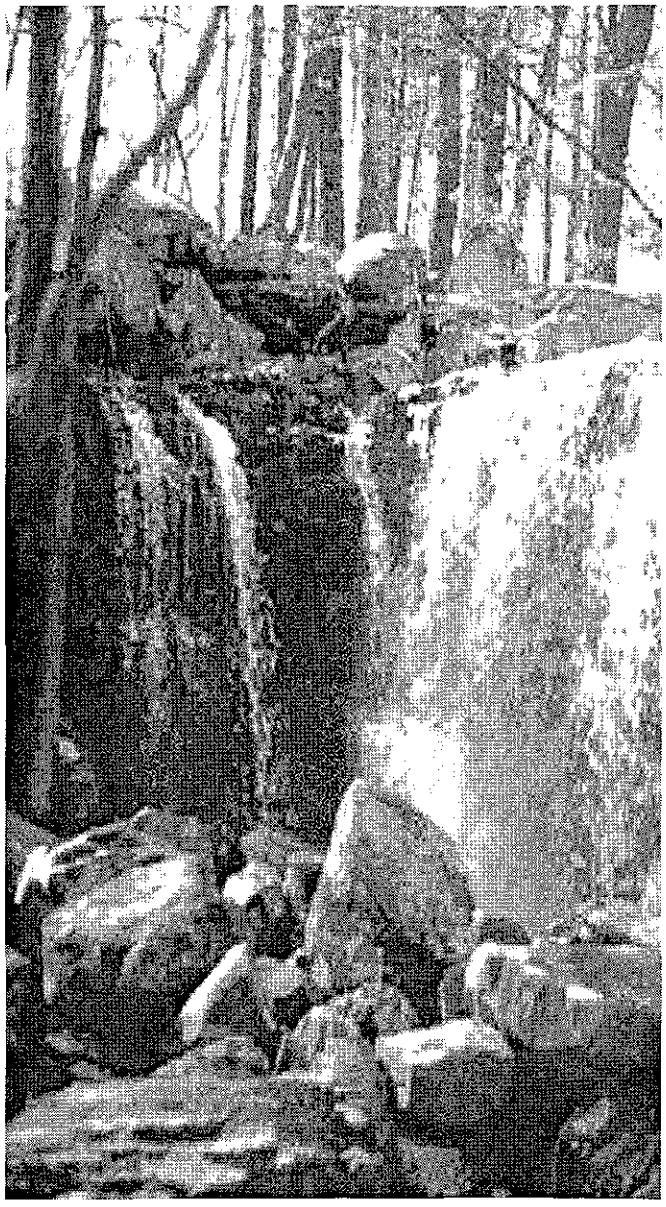
ALTERNATIVE C: Not included

Kaiser Trail

Warren County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: This 2.0 mile trail, part of a former woods road over the Kittatinny Ridge, provides access to two spurs connecting to the Coppermine Trail and eventually leads up to the



Appalachian Trail. It provides a convenient access to Raccoon Ridge, an exposed ridge top and a favorite raptor observation point through the autumn months.

Access & Facilities: Parking and restrooms at Coppermine and Kaiser Trailheads.

ALTERNATIVE B: Appalachian Trail Network

Description: Same as Alternative A

ALTERNATIVE C: Coppermine/Kaiser Network

Description: Same as Alternative A

Karamac Railroad Trail

Warren County, New Jersey

ALTERNATIVE A: Not included

ALTERNATIVE B: Gap View Network

Description: This one mile level hiking trail parallels the *Delaware River from just north of the I-80 Bridge upriver to the* remnant stone piers of the former New York, Susquehanna and Western Railroad Bridge, which extended across the river to Pennsylvania. The trail provides for an easy and short hike and would be suitable for wheelchair use. Majority lies in Worthington State Forest and would require their cooperation.

Access & Facilities: Parking at Karamac Trailhead and ADA lot.

Improvements & Maintenance: New trail would require improvements and surfacing with crushed gravel.

ALTERNATIVE C: Gap View Network

Description: Same as Alternative B

Karamac Trail

Warren County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: From the Karamac Trailhead, this short trail of approximately 0.5 mile, permits access to both the Delaware River at the former New York, Susquehanna and Western Railroad Bridge abutment, and to the site of the former Karamac Hotel.

Access & Facilities: Parking at Karamac Trailhead.

Improvements & Maintenance: Needs surface improvements and is maintained by the Appalachian Mountain Club.

ALTERNATIVE B: Gap View Network

Description: An additional 0.5 mile section is added to become a 1.0 mile loop trail and would provide a connection to the Karamac Railroad Trail.

ALTERNATIVE C: Gap View Network

Description: Same as Alternative B

Kittatinny House Historic Trail

Monroe County, Pennsylvania

ALTERNATIVE A: Not included

ALTERNATIVE B: Gap View Network

Description: A 3.9-mile series of natural surface hiking trails that traverse an historic area at the site of the Kittatinny House which is listed on the National Register of Historic Places. The trail climbs a moderate grade and connects the Delaware Water Gap trailhead by way of Caledonia Creek up to the Appalachian Trail.

Access & Facilities: Lenape Trailhead has parking and bathrooms. *Resort Trailhead has parking.*

Improvements & Maintenance: Clearing and surface improvements will be necessary.

ALTERNATIVE C: Gap View Network

Description: Same as Alternative B

Long Pine Pond Loop Trail

Sussex County, New Jersey

ALTERNATIVE A: Not included

ALTERNATIVE B: Appalachian Trail Network

Description: This 2.2 mile hiking trail will loop around Long Pine Pond. The trail provides a connection to the Appalachian Trail.

Access & Facilities: Parking at Blue Mountain Road and Skyline Drive Trailheads.

Improvements & Maintenance: New construction for 0.7 miles of trail. Remaining portion is located on former road trace and require surface improvements.

ALTERNATIVE C: Appalachian Trail Network

Description: Same as Alternative B

Lower Hamilton Trail

Warren County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: This 1.4 mile hiking trail traverses the south western flank of the Hamilton Ridge. It can be accessed from the nearby Van Campens Glen Trailhead.

Access and facilities: Parking and restrooms at Van Campens Glen

ALTERNATIVE B: Country Road Network

Description: Same as Alternative A except name is eliminated and included as part of the Pioneer Trail.

ALTERNATIVE C: Van Campens/Millbrook Network

Description: Same as Alternative B

McDade Recreational Trail

Monroe and Pike Counties, Pennsylvania

ALTERNATIVE A: Not included

ALTERNATIVE B: River Valley Network

Description: A 32 mile crushed gravel trail for biking, hiking, and cross country skiing which parallels U.S. Highway 209 and River Road. The trail will provide a continuous connection between the northern end of the park at Milford Beach and the southern boundary of the park. This trail will provide a major biking, hiking and skiing route the entire length of the park. It passes through historic farmlands, apple orchards, pine plantations, and shale quarries. The trail connects most existing facilities and frequently visited trails on the Pennsylvania side of the Delaware River.

Access & Facilities: Parking and restrooms at Hialeah, Smithfield, Turn Farm, Bushkill Visitor Center, Bushkill, Toms Creek, Eshback, Mill Creek, Hornbecks, Adams Creek, Zimmerman, and Shanna Trailheads.

Improvements & Maintenance: Sections of old road traces will be surfaced with crushed gravel along with 11 miles of new construction.

ALTERNATIVE C: River Valley Network

Description: Same as Alternative B

McDade Trail to Stucki Pond

Pike County, Pennsylvania

ALTERNATIVE A: Not included

ALTERNATIVE B: River Valley Network

Description: This is a 1.3 mile old road trace which rises steeply from the Broadhead Farmlands to the hard wood and cactus lined ridge connecting the McDade Recreational Trail with the Stucki Pond area. It will accommodate bikers and hikers.

Access & Facilities: Parking at Stucki Pond Trailhead

Improvements & Maintenance: Surfacing with crushed gravel would be required.

ALTERNATIVE C: Not included

Mill Creek Trail

Pike County, Pennsylvania

ALTERNATIVE A: Not included

ALTERNATIVE B: River Valley Network

Description: This trail is a 0.5 mile hiking trail following an old road trace adjacent to mill Creek. At its terminus to the south, the hiker can connect to the McDade to Stucki Pond Trail or to the north, across the creek, to the PEEC Trail System.

Access & Facilities: Mill Creek Trailhead

Improvements & Maintenance: Surface improvements to the trail and a bridge over Mill Creek will be necessary.

ALTERNATIVE C: Not included

Military Road Trail

Sussex County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: A 1.1 mile natural hiking trail over the Walpack Ridge connecting the Van Campen Inn at the base of the ridge across the flats from the Delaware River, to the village of Walpack. This trail has great interpretive opportunities.

Access & Facilities: Parking at Van Campen Inn Trailhead.

ALTERNATIVE B: Country Road Network

Description: Same as Alternative A

ALTERNATIVE C: Walpack Network

Description: Same as Alternative A

Mountain Road Trail

Sussex County, New Jersey

ALTERNATIVE A: Not included

ALTERNATIVE B: Country Road Network

Description: These 5.9 miles of roadways through the Walpack Valley provide hiking, biking and equestrian opportunities along Mountain Road north to Stokes State Forest.

Access & Facilities: Access to this trail can be obtained from the Buttermilk Falls, Silver Spray and Farmers Trace Trailheads. Parking available at Silver Spray Falls and Walpack Environmental Education Center Trailheads.

Improvements & Maintenance: Adding crushed gravel to the surface will be necessary.

ALTERNATIVE C: Not included

Orchard Trail

Warren County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: From Millbrook Village, this short hiking trail with a gentle climb winds approximately 0.25 mile up to the Hamilton Ridge Trail. The trail passes along an old spring site among remnants of a former orchard where an old farmstead once existed.

Access & Facilities: Parking and restrooms are available at Millbrook Trailhead. Parking available at Hamilton Trailhead.

Improvements & Maintenance: Maintained by the NY-NJ Trail Conference.

ALTERNATIVE B: Country Road Network

Description: Same as Alternative A

ALTERNATIVE C: VanCampens/Millbrook Network

Description: Same as alternative A

PEEC Trail

Pike County, Pennsylvania

ALTERNATIVE A: Present Park Trail

Description: An 8.9 mile hiking trail system comprises the Sunrise, Confidence, Two Ponds, Fossil, Scenic Gorge and Tumbling Waters trails which take visitors past upland ponds, through pine plantations, past majestic waterfalls, and through natural wetlands. The trails offer vistas of the Delaware Valley and provide excellent interpretive and education opportunities.

Access & Facilities: PEEC lot

Improvements & Maintenance: Maintained by PEEC staff

ALTERNATIVE B: River Valley Network

Description: Same as Alternative A

ALTERNATIVE C: PEEC Network

Description: Same as Alternative A

Peters Valley Trail

Sussex County, New Jersey

ALTERNATIVE A: Not included

ALTERNATIVE B: *Country Road Network*

Description: A 1.5 mile hiking trail on old road traces that provides a safe pathway around the village and keeps people off the roads. This trail system can be accessed from the Peters Valley Trailhead and provides connections to the Country Road Trail.

Access & Facilities: Parking at Peters Valley Trailhead.

Improvements & Maintenance: Surface improvements to road traces and 150 feet of new construction would be necessary.

ALTERNATIVE C: Independent Trail

Description: Same as Alternative B

Pioneer Trail

Warren County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: This 2.9 mile hiking trail traverses the southwestern flank of the Hamilton Ridge. It can be accessed at the north from near the midpoint of the Hamilton Ridge Trail or from near the Van Campens Glen Trailhead to the south.

Access & Facilities: Parking and restrooms at Millbrook, Hamilton and Van Campens Glen.

Improvements & Access: Maintained by the NY-NJ Trail Conference.

ALTERNATIVE B: Country Road Network

Description: A 2.0 mile section is deleted and the 1.4 mile Lower Hamilton Trail is added, making the total trail 2.3 miles.

ALTERNATIVE C: Van Campens/Millbrook Network

Description: Same as Alternative B

Pool Colony

Sussex County, New Jersey

ALTERNATIVE A: Not included

ALTERNATIVE B: Country Road Network

Description: A 5.3-mile hiking and cross-country skiing loop trail on existing roadbeds. Provides connection for cross-country skiing into Blue Mountain Lake Trail. This system of trails is comprised of abandoned roadways from a former housing development.

Access & Facilities: Parking available at Blue Mountain Lake trailhead.

Improvements & Maintenance: Surface improvements to the decomposed asphalt surface would be necessary.

ALTERNATIVE C: Blue Mt. Lake Network

Description: Same as Alternative B

Railway Avenue Trail

Pike County, Pennsylvania

ALTERNATIVE A: Present Park Trail

Description: A 0.5 mile hiking trail in Bushkill Village, which is located on an abandoned asphalt road and railroad spur. Due to the tabletop flat topography the trail is ideal for mobility impaired and wheelchair bound users. Dense hardwood tree cover with intermittent expanses of open field and marsh areas surrounds the existing roadbed. The area is favored for birding and frequented in the fall for the abounding colors.

ALTERNATIVE B: River Valley Network

Description: Same as Alternative A

Access & Facilities: Parking needs to be developed.

Improvements & Maintenance: The trail will need little maintenance and few improvements. The blacktop roadway surface is in relatively good condition and the railway spur has a good base of crushed stone with little or no erosion.

ALTERNATIVE C: Independent Trail

Description: Same as Alternative A

Rattlesnake Swamp Trail

Warren County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: This 2.8 mile trail is accessed from the Appalachian Trail just south of Rattlesnake Swamp Trailhead, Camp Road Trailhead, or from the Camp Mohican area. The trail parallels the Appalachian Trail immediately to the east and provides an opportunity for a loop trail with the Appalachian Trail as the eastern leg.

Access & Facilities: Parking available at AMC lot and Rattlesnake Swamp Trailhead.

ALTERNATIVE B: Appalachian Trail Network

Description: A 3.25-mile natural surface hiking trail that extends south to the AMC lot.

Access & Facilities: Parking available at the AMC lot and Rattlesnake Swamp Trailhead.

ALTERNATIVE C: Appalachian Trail Network

Description: Same as Alternative B.

Raymondskill Creek Trail

Pike County, Pennsylvania

ALTERNATIVE A: Present Park Trail

Description: A 0.5 mile natural surface hiking trail system. The trail connects the lower, middle, and upper Raymondskill Falls viewing areas. The steep and narrow trails cut into the fragile shale walls and visitors are encouraged to stay inside the wooden fence rails. The trail switches back upon itself down to the Raymondskill Creek where the old trail bridge once stood.

Access & Facilities: Parking and restrooms are available at Raymondskill Falls Trailhead.

ALTERNATIVE B: River Valley Network

Description: Additionally, a 1.7 mile trail proposed connection would extend beyond the upper falls across Raymondskill Road

along old road trace leading to Hackers Falls, making the trail 2.2 miles. This new trail will eliminate the many social trails that have developed leading to the upper and lower falls.

Access & Facilities: Parking and restrooms are available at Raymondskill and Hackers Falls Trailheads.

Improvements & Maintenance: A new 0.6 mile section will require construction.

ALTERNATIVE C: Raymondskill Network

Description: Same as Alternative B

Red Dot Trail

Warren County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: This steep and rugged 1.5 mile trail, with red dot blazes, leads up Mt. Tammany, eventually joining the Blue Blaze Trail at a spectacular overlook of the Gap area. The trailhead for the Red Dot Trail is at the Department of Transportation Parking Lot off I-80 immediately east of the Dunnfield Parking Lot. This is a very popular route and is usually very busy in pleasant weather. An alternative return route can be made by descending Mt. Tammany into the Dunnfield drainage and to the Dunnfield Lot via the Blue Blaze Trail.

Access & Facilities: Parking available at Red Dot Trailhead. Parking and restrooms available at Dunnfield Trailhead.

ALTERNATIVE B: Appalachian Trail Network/Gap View Network

Description: Same as Alternative A

ALTERNATIVE C: Appalachian Trail Network/Gap View Network

Description: Same as Alternative B

Rivers Bend Trail

Sussex and Warren Counties, New Jersey

ALTERNATIVE A: Not included

ALTERNATIVE B: Country Road Network

Description: This 3.0 mile crushed gravel hiking and biking trail follows along the slopes above the Delaware River. It provides a connection from the River Bend Trail Group Campsite to the Hamilton Ridge Trail and the Country Road Trail. The northern segment of the trail between the Country Road Trail and Rivers Bend Trail Group Camp Site is designated for hiking and biking use. The remaining segment to the south is designated for hiking only.

Access & Facilities: Parking and restrooms at Millbrook. Parking only at Hamilton Trailhead.

Improvements & Maintenance: Surface improvements on old road traces including crushed gravel.

ALTERNATIVE C: Van Campen/Millbrook Network

Description: Same as Alternative B except 1.4 mile biking section is not included.

Silver Spray Falls Trail

Sussex County, New Jersey

ALTERNATIVE A: Not included

ALTERNATIVE B: Country Road Network

Description: This 1.7 mile hiking trail ascends to the wooded Kittatinny Ridge from Mountain Road following a minor drainage up to a small falls. It can be accessed from the Silver Spray Falls Trailhead.

Access & Facilities: Parking at Silver Spray Falls Trailhead

Improvements & Maintenance: Some surface improvements are necessary.

ALTERNATIVE C: Buttermilk Falls/Silver Spray Network

Description: Same as Alternative B

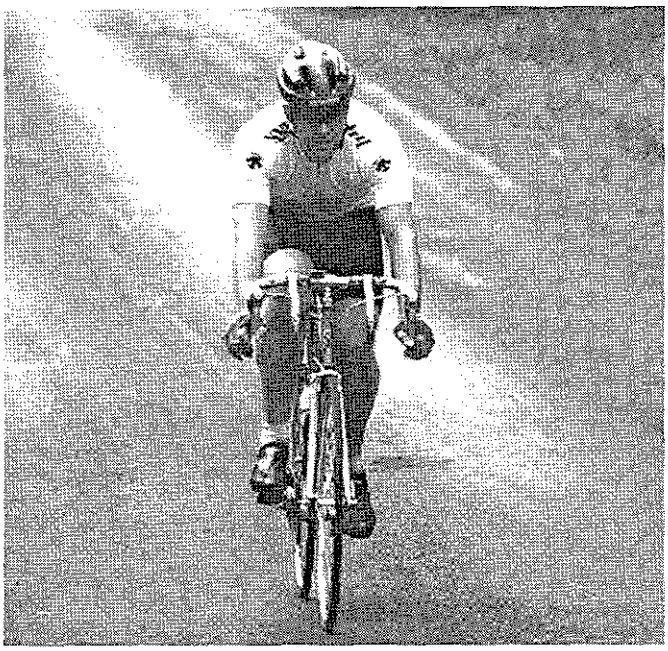
Slateford Loop Trail

Northampton County, Pennsylvania

ALTERNATIVE A: Present Park Trail

Description: Bordered by mixed hardwoods, this 2.5 mile trail traverses the former Slateford farm and Duck Pond. The double looped trail is frequented by various song and marsh birds and abounds in spring wild flowers. The trail is suitable for beginner and advanced cross-country ski enthusiasts.

Access & Facilities: Parking at Duck Pond Trailhead



ALTERNATIVE B: Gap View Network

Description: Same as Alternative B

ALTERNATIVE C: Gap View Network

Description: Same as Alternative B

Snowmobile Trail

Monroe County, Pennsylvania

ALTERNATIVE A: Present Park Trail

Description: The snowmobile trail is an 8.0 mile loop trail which travels from the historic Turn Farm, past Smithfield Beach and Hidden Lake and back to the Turn Farm. It travels through scenic woodlands and old pasture areas and traverses the ridge tops overlooking the Delaware River basin.

Access & Facilities: Parking available at Turn Farm Trailhead.

ALTERNATIVE B: River Valley Network

Description: Snowmobile use is redirected to the Eshback Trail and increased to 10 miles.

Access & Facilities: Parking and restrooms available at Toms Creek, Lower Eshback, Upper Eshback and Stucki Pond Trailheads.

ALTERNATIVE C: Eshback Network

Description: Same as Alternative B

Sproul Road Trail

Pike County, Pennsylvania

ALTERNATIVE A: Not included

ALTERNATIVE B: River Valley Network

Description: A 1.2 mile natural surface hiking trail connecting the shale mines at Conashaugh View with the Bride and Groom Loop trails. Most of the trail originally served as a main road thoroughfare at the turn of the century, and the old roadway is lined with historic rock walls. The trail also passes the farm ponds and fields of the Zimmerman dairy farm and crosses Adams Creek at the restored Sproul electric generating plant.

Access & Facilities: Parking available at Bride and Groom Trailhead.

Improvements & Maintenance: This trail would need surface improvements and bridge reconstruction along the existing old road trace.

ALTERNATIVE C: Not included

Theune Trail

Monroe County, Pennsylvania

ALTERNATIVE A: Not included

Alternative B: River Valley Network

Description: A 3.8 mile crushed gravel hiking, biking, and cross country skiing trail that connects with the McDade Recreational Trail. This picturesque trail traverses the ridge from the Hidden Lake Loop trail down to the Delaware River through open meadows and mature stands of timber. The trail would be considered moderate for bikers and hikers and challenging for cross- country skiing.

Access & Facilities: Parking at Turn Farm and Hidden Lake Trailheads.

Improvements & Maintenance: Gravel surface would be added to old road trace.

ALTERNATIVE C: River Valley Network

Description: Same as Alternative B

Thunder Mountain Trail

Sussex County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: This double loop 2.9 mile hiking trail extends north from the Military Road Trail along a ridge west of the Village of Walpack. The Trail encircles the Walpack Ridge Pond.

Access & Facilities: Parking and restrooms available at Van Campen Inn. Parking available at Walpeck Trailhead.

ALTERNATIVE B: Country Road Network

Description: Name changed to Walpack Ridge Trail.

ALTERNATIVE C: Walpack Network

Description: Same as Alternative B

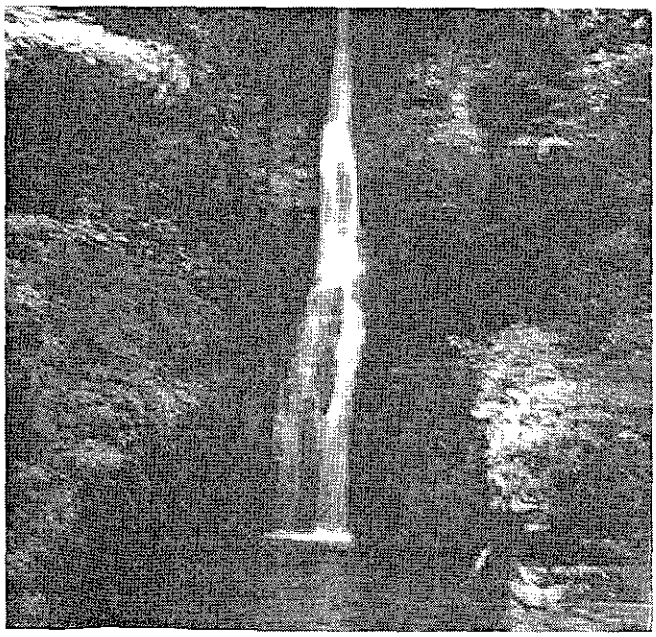
Toms Creek Trail

Pike County, Pennsylvania

ALTERNATIVE A: Present Park Trail

Description: An existing 1.0 mile natural surface hiking trail which extends from the site of the old fishing resort at Toms Creek picnic area and gently follows the creek upstream past jack dams and through a hemlock grove.

Access & Facilities: Parking at Toms Creek Trailhead.



ALTERNATIVE B: River Valley Network

Description: A .7 mile connector is added to the existing trail to form connection from Tom's Creek Trail to Eshbach trails.

Access & Facilities: Parking is available at Toms Creek and Lower Eshback.

Improvements & Maintenance: New section would need surface improvements.

ALTERNATIVE C: Toms Creek/Eshback Network

Description: Same as Alternative B

Upper Ridge Road Trail

Sussex County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: With the trailhead beginning at Jager Road, this former roadway extends from Upper Ridge and Jager Road south along the wooded ridgetop to the "Old Camp Kittatinny" area and onto Van Ness Road to its terminus at the eastern park boundary. This route is approximately 2.5 miles and is blocked to motor vehicles.

Access & Facilities: Parking is available at the Jager Road Trailhead.

Improvements & Maintenance: This trail is maintained by the Delaware Water Gap Equestrian Advisory Committee.

ALTERNATIVE B: Country Road Network

Description: Same as Alternative A but approximately 1.8 miles of the trail would correspond with the Country Road Trail.

ALTERNATIVE C: Independent Trail

Description: Same as Alternative A

VanCampens Glen Trail

Warren County, New Jersey

ALTERNATIVE A: Present Park Trail

Description: This 3.1 mile hiking trail extends from the Van Campen Picnic Area in the south to the Watergate Recreation site and ends at Millbrook. It is a narrow trail that parallels the west side of the Van Campen Brook through a deeply incised hemlock gorge with several small waterfalls and pools. The trail crosses over to the east side of the brook just below a large pool and water

fall. The Van Campens Brook is a very popular trout-fishing stream.

Access & Facilities: Parking and restrooms are available at Van Campens Glen, Millbrook and Watergate Trailheads.

ALTERNATIVE B: Country Road Network

Description: In this alternative, the trail ends at Watergate Recreation Site. A 0.6 mile section from Watergate to Millbrook becomes part of the Country Road Trail.

ALTERNATIVE C: Van Campens/Millbrook Network

Description: Same as Alternative A

VanCampens to Rattlesnake Connector

Warren County, New Jersey

ALTERNATIVE A: Not included

ALTERNATIVE B: Country Road Network

Description: This is a hiking trail that extends approximately 0.9 miles. It connects the Van Campens Glen Trail with the Rattlesnake Swamp Trail by way of a steep drainage off the Kittatinny Ridge.

Access & Facilities: Parking and restrooms are available at Rattlesnake Swamp and Van Campens Glen Trailheads.

Improvements & Maintenance: This trail would need 0.8 mile of new construction.

ALTERNATIVE C: Not included

Walpack Environmental Education Center Trail

Sussex County, New Jersey

ALTERNATIVE A: Not included

ALTERNATIVE B: Country Road Network

Description: A 2.2 mile hiking trail through a wooded area with a small-secluded pond. Students of the nearby Walpack Environmental Education Center frequently use this route which offers natural history interpretation opportunities. This trail links to Country Road Trail and Mountain Road Trail.

Access & Facilities: Parking is available at Walpack Environmental Trailhead.

Improvements & Maintenance: Surface improvements to existing road trace and 468 feet of new construction would be necessary.

ALTERNATIVE C: Walpack Network

Description: Same as Alternative B, but a 0.4 mile segment would be added to create a connection to Military Road and Walpack Ridge Trail.

Walpack Ridge Trail

Sussex County, New Jersey

ALTERNATIVE A: Not included

ALTERNATIVE B: Country Road Network

Description: This 2.7 mile hiking trail , which incorporates the Thunder Mountain Trail, extends north from the Military Road Trail along a ridge west of the Village of Walpack. It offers an approximately 2.0 mile loop with connections to the Country Road Trail.

Access & Facilities: Parking available at Walpack Ridge Trailhead.

ALTERNATIVE C: Walpack Network

Description: Same as Alternative B

Woods Road Trail

Sussex County, New Jersey

ALTERNATIVE A: Not included

ALTERNATIVE B: Country Road Network

Description: This 3.1 mile hiking, biking and cross country ski trail extends along an old road trace that lies about three quarters of the way up the northwest slope of the Kittatinny Ridge. It extends from Hemlock Pond and the Blue Mountain Lake Trail at the south to the Farmers Trace Trail at the north. Buttermilk Falls and Silver Spray Falls Trails can be accessed by way of the Woods Road Trail. This trail offers an important link to the recreational connection between the National Recreation Area and Stokes State Forest.

Access & Facilities: Parking available at Blue Mountain Lake and Farmers Trace Trailheads.

Improvements & Maintenance: Old road trace would be surfaced with crushed gravel.

ALTERNATIVE C: Not included

TRAILS PRIORITY AND PHASING

Implementing a trail system will take many years and requires increases in staff, funding and volunteers. The rate and order of implementation of specific actions in any of the alternatives will depend upon the availability of funding and management priorities in future years. Prioritizing improvements and development will be necessary to ensure that park management goals are met.

ALTERNATIVE A: CONTINUATION OF CURRENT MANAGEMENT PRACTICES

Because this alternative is based on current management, there are no priorities established for future trail development in the park.

ALTERNATIVE B: MULTIPLE LINKING NETWORKS

This alternative would focus on developing and improving the spines, the major trail in each network, followed by connectors that provide important linkages between trails and networks.

Priority I

Based upon present and projected use and available funding, the Joseph M. McDade Recreational Trail (MRT) and associated trailheads should take the highest priority for improvement and new construction. All trails and trailheads connecting to the MRT would follow this development. Establishing the MRT as the highest in priority will help to manage the concentrated use on the PA side of the

park, offering a safe recreational trail experience while guiding use, and helping to protect the park's natural and cultural resources from uncontrolled visitation.

Priority II

The Country Road Trail and associated trailheads in New Jersey would be the next priority for improvement and new construction. This will provide an opportunity for an extended recreational trail experience in a rural setting from Millbrook Village to the northern park boundary. Improvements to the Appalachian National Scenic Trail and associated trailheads, where necessary, would also be a high priority.

Priority III

The remaining connector trails would be developed according to park needs and local support. As construction of connector trails proceeds, the park staff would encourage and support extensions to other projects beyond the DWGNRA boundaries.

ALTERNATIVE C: INDEPENDENT NETWORKS

This alternative would focus on developing and enhancing individual networks.

Priority I

Based on present and projected use and available funding, the Joseph M. McDade Recreational Trail (MRT) and associated trailheads should take the highest priority for improvement and new construction. Establishing the MRT as the highest priority will help to manage the concentrated use on the PA side of the park, offering a safe recreational trail experience while guiding use, helping to protect the park's natural and cultural resources from uncontrolled visitation.

Priority II

Individual networks in New Jersey would be prioritized for improving and developing trails and trailheads, especially those focusing on multiple uses. The remaining networks and individual trails throughout the park would be prioritized according to park needs and local support.

This GMPA provides a guide and approximate locations for trail and trailhead development. Before construction begins, design development, construction drawings and specifications will need to be completed. Additionally, site specific compliance may be required.

CHAPTER 3: AFFECTED ENVIRONMENT

This chapter describes the existing environment of the park and its environs as a basis for comparison of the environmental effects that would be posed by the implementation of any given alternative presented in this general management plan amendment. It provides descriptive information necessary to understand current conditions and issues.

NATURAL RESOURCES

TOPOGRAPHIC FEATURES

Two distinct landforms make up the scene: the Valley and Ridge physiographic province, including the river lowlands or alluvium-filled basins and the low parallel ridges of the valley, and the Appalachian Plateau province, with its enlarged stream valleys and rounded highlands. The elevation of the valley varies from 300 to 400 feet above sea level. The adjacent highlands rise an additional 600 to 1,000 feet.

In the northern two-thirds of the park, the Delaware River flows along the eastern edge of a Devonian shale formation, which is dissected by streams flowing from the Pocono Plateau. Waterfalls are frequent features of these tributary streams. At the time when glacial ice melted, these streams tumbled over the edge of the plateau, but now they have cut their way back into that plateau and have formed picturesque gorges. Shale barrens occur along the rim and face of the Pocono escarpment. The southern third of the area has a more complex geology. At Walpack Bend, the river cuts through the hogback ridge, which is composed of Devonian Buttermilk Falls limestone, and then follows the southeastern edge of the Silurian Bossardsville limestone formation to where it cuts through the Shawangunk formation of the Kittatinny Mountains to form the water gap.

The area was covered by ice during the last (Wisconsin) glaciation. The valley of the Delaware River and tributary streams is characterized by glaciofluvial deposits that comprise an outwash terrace. Kames and kame terraces occur intermittently at the base of the valley walls, and they were formed as the ice front retreated north. Other glacial features include an area of sand dunes along the river south of Dingmans Ferry, drumlins near Bushkill, and kettle holes near Minisink Island. Valley deposits consist of coarse sands, gravels, and silt carried down by the ice and later by meltwaters on the glacial outwash. Weathering of the vertical valley walls north of Bushkill has produced along the lower slopes a mantle of colluvium that partially covers the glacial deposits on the valley floor.

PRIME AND UNIQUE AGRICULTURAL LANDS

Prime farmland, one of several important farmlands defined by the U.S. Department of Agriculture based on map units in the County Soil Surveys, is land that is best suited to growing food, feed, forage, fiber and oilseed crops. It may be cultivated land, pasture, woodland, or other land. Much of the land in the river valley is prime agricultural land.

DWGNRA leases about 3,000 acres of prime agricultural land to farmers under special use permits. Row crops (corn and soybeans) are the crops preferred by farmers, although the permits call for a rotation of small grain once in five years for most fields. Farming is done according to conservation plans that are developed jointly by the Natural Resources Conservation Service, the park and the farmer. In recent years, farmers have declined to cultivate some areas that were previously farmed because it is no longer profitable. Only the most productive land in the valley is now under cultivation.

SOILS

The soils in Pennsylvania vary considerably from those in New Jersey. Soils in Pennsylvania are on shale, and they are unproductive, rocky, and shallow. Soils in New Jersey, except for Kittatinny

Mountain, are on limestone, and they are very productive and deeper, but also very stony. Throughout the area soils are generally loamy, fine grained, and rocky and vary from nearly level to very steep on terraces, in floodplains, and near the river and tributary streams. Steep, stony and shaly areas occur along the river bluffs, and very stony soils and rock outcrops are typical of the Kittatinny Mountains.

Soil surveys are completed and published by the Natural Resources Conservation Service based on municipal (county) boundaries. DWGNRA is within the political boundaries of five counties: Sussex and Warren in New Jersey and Pike, Monroe and Northampton in Pennsylvania. Soil surveys have been completed for each of these counties, although the field work was generally done more than 20 years ago and published surveys are old. Soils descriptions are from several different dates, making the development of a park-wide data layer difficult for GIS analysis of soils impacted by trails.

Table 1 illustrates these differences:

COUNTY	FIELD WORK COMPLETED	SOILS DESCRIPTIONS APPROVED	SOIL SURVEY ISSUE DATE
Warren (NJ)	1973-75	1975	1975
Sussex (NJ)	1950-70	1972	1975
Pike (PA)	1961-64	1966	1969
Monroe (PA)	1966-74	1975	1981
Northampton (PA)	1964-69	1969	1974

Soil Surveys undergoing updates at this time include Pike County (field work complete 1996, soil descriptions were certified in 1997 and we are awaiting the maps) and Sussex and Warren Counties (field work underway 1998).

Limitations to trails development and maintenance generally increase as slope increases, so slope is a very important parameter in characterizing soils in the park. A slope analysis was completed for the entire park using Digital Elevation Models and geographic information systems (GIS).

FLOODPLAINS

The 100-year floodplain of the Delaware River varies from 400 to 3,200 feet in width along the 35-mile stretch of river in the park and includes approximately 2,000 acres. The river has cut through alluvial flats, creating a long, narrow floodway. About two dozen islands are located in this stretch of river, all of them flat, alluvial, and subject to flooding. Studies to delineate the 500-year floodplain have not been completed, so the extent of the 500-year floodplain was determined from flood profiles of areas located on the river, directly above and below the park. Areas along the river prone to flash floods have been identified, and evacuation plans have been prepared for these areas.

Tributary streams that drain the New Jersey ridges flow directly downhill into valley streams, creating a classic lattice-like pattern known as trellis drainage. Streams on the Pennsylvania side form a treelike, or dendritic, drainage pattern.

WATER RESOURCES

Surface Waters

The DWGNRA encompasses approximately 40 miles of the Delaware River, which is the focal point for the national recreation area. Within the park bound-

aries, there are 37 watersheds associated with tributaries to the river. In addition to the river and streams, there are approximately 700 wetlands, lakes and ponds.

Streamflow

The Supreme Court Decree of 1954 requires minimum flow rates for the river gage located near the north end of the park at Montague, New Jersey. The purpose of the minimum flow rate is to prevent saltwater intrusion from moving upriver to the location of water supplies in the Philadelphia-Camden region. New York City diverts water from the headwater tributaries of the Delaware River through a reservoir-aqueduct system for drinking water supply. Under non-drought conditions, releases from these reservoirs maintain the flow at 1,750 cubic foot per second (cfs) at the Montague gage. The average annual streamflow is 5,874 cfs within DWGNRA. The highest percentage of average annual flow occurs in April.

The major tributaries to the river are classified as non-headwater streams, meaning these streams maintain an average annual flow of 5 cfs or greater. The majority of the major tributaries maintain some flow all year long, although portions may become dry during late summer.

Headwater streams in the uppermost reaches of the watersheds have an average annual flow less than 5 cfs and typically become dry for several months during the year.

Water Quality

In 1978, the river reach contained within DWGNRA boundaries was designated as the Middle Delaware Scenic and Recreational River in recognition of its outstandingly remarkable resources. The provisions of the Wild and Scenic Rivers Act require that the Middle Delaware "be administered in such a manner as to protect and enhance the values which caused (it) to be included in the system...". The legislation specifically mentions water quality as one of those values. In 1984, DWGNRA and the Delaware River Basin Commission (DRBC) began a water quality monitoring program. Water quality within the river's upper reaches is extremely high, supporting outstanding natural, fisheries and recreational resources. In 1992, the DRBC adopted revisions to its anti-degradation policy, water quality standards and discharge regulations as part of the long-term cooperative NPS/DRBC Scenic Rivers water quality protection effort. These revisions designated the river as "Special Protection Waters" and protect the existing water quality from measurable change in the Scenic Rivers reaches through a monitoring-based regulatory program.

On the Pennsylvania side of the park, at a minimum, all of the tributaries to the Delaware River are classified by the Pennsylvania Department of Environmental Protection (PADEP) as "High Quality Cold Water Fisheries" (HQCWF). This classification is indicative of very good water quality, suitable to support naturally reproducing populations of native trout, which are sensitive indicators of water quality. Three of these streams have been upgraded to "Exceptional Value" (EV) status, which is the highest water quality classification given. Ten of the streams are designated "Wild Trout Waters", which means these streams are known to support naturally reproducing populations of native trout. Four of the streams, or stream reaches, are designated "Stocked Trout Waters", which means that the water quality is adequate to support stocked trout to provide additional fishing opportunities for sportsmen.

On the New Jersey side of the park, there are 8 streams, or stream reaches, that are designated "Trout Production Waters". There is one section of a tributary that is designated "Trout Maintenance Waters". There are 3 tributary sections and one lake that are designated "Trout Stocked Waters".

Wetlands

A comprehensive inventory of wetlands in the DWGNRA is available as a set of large-scale maps (1:12000) prepared from 1992 National Aerial Photography Program data. The information has not been verified by field studies. The maps show wetlands down to a minimum size of one acre. Wetlands less than one acre in size are not shown.

The inventory maps identify wetlands using a modified Cowardin classification scheme that incorporates categories for culturally-modified wetland types. The additional categories include agricultural wetlands, rights-of-way, sod farms, and disturbed lands that have developed wetland characteristics (e.g., barrens, quarries).

Groundwater

There is little detailed information on groundwater hydrology at DWGNRA; however, groundwater is generally of good quality and quantity. Two recent studies have been conducted concerning groundwater within the park: One monitored wells in Layton, New Jersey near a closed landfill, and the other measured nutrients and chloride in wells along the Route 209/6 corridor at the northern end of the park (Senior, 1993). Pike and Monroe Counties in Pennsylvania have recently completed groundwater supply studies. They indicate that the increased development currently occurring within the area could strain the available groundwater supply. Park wells are monitored monthly for bacterial contamination.

FISH AND WILDLIFE

Wildlife, fish and aquatic resources and habitats are important for their contribution to biological diversity and to recreational opportunities in the park.

Most of the recreational fish species were introduced prior to the establishment of the park. A comprehensive inventory and study of Delaware River fisheries was conducted from 1959 to 1962. Native anadromous species in the Delaware River, most notably American shad and now striped bass, have increased in recent years due to cleanup of the Delaware River in its lower reaches and because the river is unimpounded (free-flowing) on its main stem. Tributaries to the Delaware River provide habitat for brown trout that move into the tributaries during high water periods as well as for native brook trout that reside in the upper reaches of streams. Van Campens Brook provides habitat for three species of reproducing trout: brown, brook and rainbow. Many impoundments in the park provide habitat for warm water species and a warm water fishing experience. The Delaware River, several tributary streams and impoundments are sometimes stocked with trout and other species while other habitats provide high quality fishing without stocking. DWGNRA provides for a varied fishing experience from the opening day experience on a stocked stream to a quiet angling experience on an unstocked stream or winter ice fishing for walleye, and the spring shad run on the Delaware.

The mature forest, old fields and agricultural lands, riparian areas, wetlands and talus slopes and ridges in the park provide a wide variety of habitats for wildlife species. The Delaware River is a significant pathway for migratory birds. Migrating species often depend on bottomlands for wintering, breeding, feeding, resting and staging areas. Checklists for birds, mammals, reptiles and amphibians exist for the park and were prepared by local, knowledgeable field experts. Presence of species was recorded, but specific information on populations and habitat use was not. Important habitats for most wildlife species in the park have not been identified. The park has concentrated efforts on rare species and on those species such as black bear and Canada geese that may have an effect on the visitor experience. Upland game habitat is one example of a habitat type that may be limited in the park. Eastern red cedar, white pine and other woody species are encroaching into old fields as plant succession changes these areas.

VEGETATION

The landscape comprises a mosaic of second/third growth forest, old fields and thickets, and croplands, reflecting several centuries of continuous human occupation. Miles of old farm roads, mostly abandoned, at one time provided access for farming and logging. About 3,000 acres, mainly prime farmland in the valley of the Delaware River, are leased to farmers and maintained in agriculture, to preserve the rural agricultural scene. An additional 1500 acres, mainly old farm fields and home sites in various stages of ecological succession, are now managed to maintain cultural landscapes and enhance scenic diversity. Much of the remaining land is covered in maturing forest, mainly mixed oak communities

which have grown up in areas that were logged at least once. Old fields and shrub thickets provide much "edge" to forested areas.

Despite disturbance associated with human settlement, the recreation area supports over 1300 species of vascular plants and diverse plant communities. Of special significance are those communities that have retained much of their ecological integrity and contribute significantly to the biological diversity of the park. These communities are often home to rare plant and animal species. Examples include waterfall-plungepool communities, found mainly in the deepest ravines carved into the Delaware escarpment; shale cliffs and talus communities, found on the steepest slopes; cobble beaches of the river islands; rocky summit communities, found on the balds on the Kittatinny Ridge; and seeps, fens, and vernal pools, found on the Hogback, along the Delaware River shore, and elsewhere.

NON-NATIVE, "EXOTIC" SPECIES

Most, if not all, of the park's plant communities have been invaded by one or more aggressive, alien species ("exotics"), which can reduce biological diversity and affect ecological processes over the long-term. Controlling exotics may be one of the toughest challenges facing public land managers. Species found within the park include aggressive plants such as tree-of-heaven, multiflora rose, autumn olive, purple loosestrife,

Japanese knotweed, Japanese barberry, and Japanese stiltgrass. Many of these plants are opportunists and invade new areas following disturbance. They are especially noticeable along rights-of-way, along highways and in fields, but also occur in forest gaps and edges. A few species tolerate shade and grow beneath the forest canopy.

THREATENED OR ENDANGERED SPECIES

Under the Endangered Species Act, a species qualifies for threatened protection if it is likely to become endangered. An endangered species is likely to become extinct within the foreseeable future. Critical habitat comprises specific areas that are found to be essential to the conservation of a listed species.

One federally listed species, the bald eagle is known to occur within the DWGNRA. Records exist for two other species, bog turtle and small whorled pogonia, but the current status of each within DWGNRA is undetermined. Suitable habitat is present for two other species, Indiana bat and northeastern bulrush. Each species is described in more detail in the following paragraphs.

- **Bald eagle**
(Haliaeetus leucocephalus)

The bald eagle is federally listed as threatened. The park provides important wintering habitat for bald eagles. The primary components of wintering eagle habitat include: open water where eagles can catch fish, their primary prey; large, open branched trees for perching; sheltered areas for overnight roosting; and freedom from human disturbance. At present, the park supports a resident wintering population of bald eagles estimated at 20 individuals. The resident population is bolstered by individuals from adjacent wintering areas during times of severe cold weather. The highest one-day count recorded was 38 eagles. Important habitat for wintering bald eagles includes portions of the river and associated riparian corridor.

- **Bog turtle** *(Clemmys muhlenbergii)*

The U.S. Fish and Wildlife Service listed the northern population of the bog turtle as threatened in November 1997. The Service elected not to designate critical habitat for this species, because such designation

could potentially increase illegal collection. The Service is currently developing a recovery plan.

The status of the bog turtle in the park is undetermined. A baseline amphibian and reptile inventory completed in 1978, which lists this species as "rare" in the park, documented the species from two sites. Since then, sightings at three additional locations have been reported to the state natural heritage programs. Suitable habitat currently exists at each of these sites and turtle populations may be present at some or all of them. Assessments of the park's wetlands conducted during 1997 and 1998 have identified a total of 44 parcels of potential suitable habitat.

Adjacent to the park, known populations exist in Monroe and Northampton counties in Pennsylvania, and in Sussex and Warren counties in New Jersey. It is possible that suitable habitat within DWGNRA may be colonized at some future date by turtles from one or more of these populations.

- **Small whorled pogonia** *(Isotria medeoloides)*

The small whorled pogonia, an orchid that grows in open, deciduous woods, is listed as threatened. No populations are currently known from within DWGNRA. Two herbarium specimens from 1871 document the species' past occurrence. Baseline rare plant inventories completed in 1982 and 1985 found no populations within the park. Additional surveys were recommended.

Suitable habitat for this species is common within DWGNRA and populations outside of the park are known from nearby Sussex County, NJ. The potential exists that additional fieldwork will document new occurrences within the park.

- **Indiana bat** *(Myotis sodalis)*

Indiana bat is federally listed as endangered. Indiana bat has never been documented in the park, either as a breeding or migratory species. A baseline mammal inventory completed in 1978, which lists this species as "status undetermined" in DWGNRA, did not employ the specialized methods needed to detect Indiana bat. During 1997 and 1998, approximately 20 sites in the Delaware River valley were sampled for the presence/absence of migratory or breeding Indiana bats. No Indiana bats were detected or captured at any of the sites.

Indiana bats are known to hibernate at sites in nearby Morris County, NJ and Luzerne County, PA. It is possible that individuals from these wintering sites are present within DWGNRA anytime from April through September.

- **Northeastern bulrush** *(Scirpus ancistrochaetus)*

The northeastern bulrush, a sedge that grows in ponds and vernal pools, often in forested areas, is listed as endangered. No populations are currently known from within DWGNRA and there are no historical records. However, the presence of suitable habitat and the existence of nearby populations suggest that this species may eventually be found in the park.

AIR QUALITY

The overlooks, scenic vistas, and clear air are some of Delaware Water Gap's most appealing qualities. The area is currently classified as a nonattainment area for photochemical oxidants (in excess of standards) and as an attainment area for other pollutants, according to the Environmental Protection Agency's regional office in Philadelphia.

Under the Clean Air Act, as amended in August 1977, DWGNRA is classified as a class II clean air area. This category allows some deterioration of air quality, but the national ambient air quality standards cannot be exceeded. The park may only be redesignated as a class I clean air area by the states of Pennsylvania and New Jersey. Should such a redesignation occur, following health, environmental, economic, social, and energy studies and public hearings, very limited air quality deterioration would be allowed, and the superintendent would have an affirmative responsibility to protect the area's air quality related values--visibility, plants, animals, and cultural resources.

CULTURAL RESOURCES

The National Park Service is steward to many of America's most important natural and cultural resources and is charged with the preservation of them unimpaired for the enjoyment of present and future generations. The DWGNRA, like many other units in the park system, has cultural resources, the material evidence of past human activities. These resources are finite and nonrenewable and begin to deteriorate almost from the moment of their creation. Conforming to the spirit of the NPS Organic Act of 1916 and various historic preservation laws, park management activities must reflect awareness of the irreplaceable nature of these material resources. Therefore, park cultural resource management involves research, evaluation, documentation, and registering resources in the park, and setting priorities insuring that these resources are preserved, protected, and interpreted to the public.

ARCHEOLOGICAL RESOURCES

The Delaware Water Gap National Recreation Area lies within the Upper Delaware River Basin, a unique drainage containing the physical evidence of a rich natural and cultural past. This area, formed about six million years ago as continental plates separated, contains the remnant of the final Pleistocene glaciation which provided a rich natural environment enticing the earliest North American inhabitants to exploit its resources. Globally changing climates fostered varied eco-niches supporting a wide diversity of plants and animals. These plants and animals supported human occupations spanning a continuous time period from approximately 8,500 B.C. to the present day. Only a handful of such areas occur on the eastern North American seaboard that have not been destroyed by more recent development. This rich history is preserved in both the historical and archeological record of the Delaware Water Gap National Recreation Area.

The DWGNRA contains the premier prehistoric and contact period archeological sites in the Mid-Atlantic states. Their significance is enhanced by the continued integrity of the archeological sites, the amount of information on those sites, and on the region extracted during intensive professional investigation. These sites span the entire range of human occupation of the Upper Delaware Valley (8,500 BC to present). The park also contains the Minisink Historic District Landmark. The district consists of 1,320 acres of land within the northern portion of DWGNRA, along the Delaware River in Pike County, Pennsylvania and Sussex County, New Jersey. This district is the first archeological landmark site in the northeastern United States. The district is composed of seven contributing archeological properties, 12 non-contributing archeological properties, and one contributing standing structure. Cultural resources located within the district boundary, have yielded and have the potential to yield information of national significance on historic contact between Indian and European people in Munsee County, a region stretching from southern New York across northern New Jersey to northeastern Pennsylvania.

Since the Delaware River is not navigable north of Trenton, New Jersey, Euro-American settlement in the Upper Delaware Valley occurred almost a century later than the coastal areas of New York, the Hudson Valley, and the Delaware Bay. Eighteen of over 458 documented archeological sites within the park are contact period sites. These sites contain European-made objects traded inland by other Native American Indians. This evidence offers an opportunity to study how this introduction changed Native American society in this area.

The first Euro-American settlers of the valley in the early 18th century claimed the land for agriculture. As transportation routes grew, villages appeared to support the agricultural base. After the American Revolution, this area witnessed a boom in population growth. There are several of these sites within the boundary of the park which offer an archeological record which may reconstruct the life-ways of these early frontier settlers. In the post-bellum period (after 1865), agriculture declined and was supplanted by recreation affording people the opportunity to view the natural scenic splendor of the

Water Gap. Continued research and preservation of archeological and historic sites within the Delaware Water Gap National Recreation Area promises to clarify and aid in the development of a systematic understanding of American prehistory and history in the northeastern United States.

CULTURAL LANDSCAPE

The cultural landscape of the DWGNRA is rich in physical features that tell the history of human habitation of the Upper Delaware River Valley. It comprises a mosaic of historic periods, each of which overlaid evidence of the way in which people used or interacted with the land. This evidence includes the manner in which sites were spatially organized, the response to certain natural features and topography, land use patterns, the importance of views and vistas significant circulation patterns structures use of vegetation, and small scale features. The following discussion is limited to post-Native American influences.

General Development

The physical remnants of non-Native American habitation on the landscape of the upper Delaware River Valley within the park followed very distinct and practical patterns. The flat, fertile floodplains of the Delaware River and the Flatbrook Valley were reserved for farm fields. These fields were delineated by main roads and the river to the east-west and by rock rows, tree rows and fence rows to the north-south. Roads, and eventually the dwellings that formed along them, were kept out of this flat, fertile area. These developments occurred at the foot of upland slopes such as the Pocono Highlands on the Pennsylvania side of the river, and on the ridge between the Flatbrook Valley and Delaware River in New Jersey. Animal pastures, which became a later focus for area farmers, were also kept on rolling topography and out of the flat floodplain. Because of the widespread removal of trees in this rural landscape and sloping nature of the overall valley, expansive views of the fields, river, other farmsteads and villages were a prominent feature of this area. Many of these views have been lost to natural succession, the establishment in an area of native plant and animal species. However, the historic pattern of agricultural development in the park has survived as the pervasive theme of the cultural landscape.

Farmsteads and Dwellings

Dwellings are usually found at a water source, such as a creek or spring. These water sources were generally incorporated into the development and/or developed into a pond. Evidence of these spring houses, ponds and manipulated creeks can still be seen today. Views of, and access to, farm fields and the river were significant to the organization of buildings and circulation. Some of these views have been obstructed by the lack of managed farm fields and natural succession. The sometimes steep ground of the upland slopes and terraces also affected the development of individual properties. This is illustrated by extant retaining walls and building foundations that eased grade transitions. The landscapes between clusters of farm buildings were used as animal yards, parking areas or gardens. Unfortunately, only a few of these outbuildings and relationships between them remain. Agricultural methods and building styles reflected the traditions of ethnic groups, who tended to congregate in defined areas. Stone walls and wooden fencing provided property delineation and emphasis as did trees, allees and other vegetation. Few fences have survived the years and modern agricultural practices. Planted walnut, maple, black locust, cedar, hemlock, spruce and some fruit-bearing trees also mark property locations. Again, natural succession has obscured some of the individual vegetative patterns of farmsteads.

Roads and Circulation

At the toe of valley slopes, main roads began as American Indian foot trails that Europeans widened for horseback and eventual wagon travel. Subsequently, these main roads such as Route 209 and River Road in Pennsylvania, and Route 615 and Old Mine Road in New Jersey, have become important north-south transportation routes. Main roads within the park were not only a primary determinant in the location of a farmstead or village, but were also used as a critical

part of the development itself. Many times, a main road bisected a cluster of farm structures and was used as a primary access to the rest of the farm site. Smaller road traces lead from the primary access to surrounding farm fields, ridges, lime quarries, lime kilns and the river. This pattern of roads and circulation is still very apparent today. Very few paths can be found and it is assumed that roads, driveways and open parking areas provided pedestrian circulation. Villages tended to be organized along main roads, especially at intersections. The typical village layout tended to be designed on a linear pattern, one building deep along a roadway and sometimes radially along several roads at an intersection. This is still evident today. Most roads were narrow with unpaved shoulders. In general, no sidewalks or trails existed within villages, although walkways can sometimes be found connecting front doors to the street or to a shed. It is assumed that pedestrians used the roadway for circulation. Typical features of these roadways include culverts, bridges, narrow widths, and the lack of road shoulders. Over the years, some of these roads have been widened with shoulders. Bridges and culverts have also been changed to conform to modern safety standards. However, the basic pattern of road circulation and the way in which it influenced all other valley development is still very evident today.

Villages

Today, Walpack Center and Peters Valley are easily recognized as historic villages. Other valley villages, such as Bushkill, Egypt Mills, Flatbrookville and Dingmans Ferry only partially remain. In addition to being organized along roads and at intersections, villages also occurred at the convergence of brooks and streams or at points of attraction to local settlers where grist mills or slate quarries had been established. The boundaries of villages are difficult to determine, as these centers serviced surrounding farmsteads and fields. Since they occurred at the base of a ridge, views of these fields were probably a strong feature from within these villages, as were the views of the village from the surrounding fields. Many of these fields have now given way to succession of new or second growth forest. Few street trees were used at Peters Valley, although a short row of trees is evident along the road at Walpack Center. Sugar maples, sycamores, Norway spruce, elms, oaks, locust and walnuts were planted, although very minimal plantings were used around building foundations. Once organized, a village became more than a service center. It also developed as a place for schools, churches and socializing. Churches tended to be adjacent to a cemetery, near a road and with parking. In some cases, views of the surrounding fields and the river were presented from the church. Examples of older churches and schools in the former Bushkill and Dingmans Ferry villages.

Recreation in a Historic Context

Rural landscape deterioration associated with the decline of agriculture was temporarily mitigated by the rise in recreation in the Upper Delaware Valley in the 19th and 20th centuries. This resulted in the expansion of hotels and boarding houses. Farmers opened their homes to summer boarders for extra income. Wealthy individuals purchased secluded area farms for summer residences. Through this transition, farms retained some agricultural elements such as field patterns, outbuildings and circulation patterns. These traditional settings were embellished with ornamental stonework, ornamental plantings, allees, mowed lawn areas, reflective ponds and additional cabins or other structures. These embellishments still prevail in properties such as Schoonover Farm, Zimmermann Farm and Heron's Nest. Views of the rural landscape and the river were a commanding aesthetic attraction to these recreational visitors. Again, many of these views have become obscured by natural succession. In addition to the transformation of existing farmsteads, new recreation-related facilities were established upland from the river valley, into the Pocono Highlands and Kittatinny Ridge. Boy Scout camps were developed. Summer residences such as the Crane-Goldhart house were developed. Attractions such as Childs Park and Dingmans Falls were developed.

SOCIOECONOMIC CONDITIONS

DWGNRA is located along the Delaware River between New Jersey and Pennsylvania and is comprised of 67,000 acres of woodlands, agricultural lands, mountains, creeks and ravines. It is situated less than one hundred miles from metropolitan Philadelphia and New York and includes the counties of Monroe, Northampton, Pike, Sussex and Warren. More than 60 million people live within a 6-hour drive of the park. Over 500,000 acres in these counties are in private and public open space with DWGNRA, federal wildlife management areas, state parks, state game lands and state forests representing the highest percentages.

VISITATION AND VISITOR USE

Visitors may enter DWGNRA at over 50 points, including interstate highways, state and local roads, and by river access both north and south of park boundaries. As a result, most visitors who enter and use the national recreation area are not contacted by a ranger or park representative, and many are not properly oriented and informed. Most visitors do not know they are in a unit of the National Park System.

Of the four primary visitor contact sites (three visitor centers and a historic village), none are open year-round, seven days a week. Millbrook Village and Dingmans Falls Visitor Center were open full-time for only six months per year. Kittatinny Point Visitor Center, the primary orientation station for the park, and the Bushkill Visitor Center are open only on weekends from November through April. Visitors can also obtain limited information at the Park Headquarters during the week.

Table 2. Visitation to Visitor Centers in DWGNRA

Month	Kittatiny Point Visitor Center (1995)	Bushkill Visitor Center (1998)	Dingmans Falls Visitor Center (1995)	Millbrook Village Visitor Center (1995)
Jan	1458			
Feb	2714			
Marc	4735			
April	5837		3359	
May	14118		7107	1043
June	20278		9419	1759
July	29504	4410	14998	2479
Aug	39723	6088	18122	2516
Sept	14280	3815	7298	1497
Oct	25228	3921	8709	1245
Nov	2291		1418	
Dec	2034		221	
TOTAL	**162200**	**18234**	**70651**	**10539**

Source DWGNRA Staff

PATTERNS OF PARK VISITOR USE

More than five million people visit DWGNRA each year. More than a third (36%) come to the park during the summer months of June, July and August; 26% use the park in the fall; 22% come in the spring; and only 16% visit in the winter. The overwhelming majority (89%) of visitors came from New Jersey, New York or Pennsylvania. Only 1% of visitors was international in origin. Almost 60% of those surveyed were returning visitors. Sixty-seven percent of visitors to the park came in groups of 2 to 4 people and 54% of visitors were in family groups. A significant urban population of Spanish-speaking visitors frequents the park on summer weekends.

Seventy-one percent of visitors spent less than 8 hours in the park, and 47% spent 4 hours or less. Sightseeing and picnicking were the two most common visitor activities. Road signs, park staff, and the park folder/map were the most used information/interpretive services.

CURRENT TRAIL USE

Since there is no current data documenting the number of trail users at the DWGNRA, the park contracted with The Pennsylvania State University (PSU) to determine trail visitation and economic impact for this plan.

In a study of visitors to the DWGNRA, thirty percent of park users who stop at visitor centers reported spending time hiking in the park. Therefore, it is estimated that thirty percent (82,965) of the 276,551 visitors who stopped at the visitor centers were hikers using the current DWGNRA trail system. In addition to trail users who spend time at visitor centers, researchers estimated that 47,400 hunters use the park each year. It is assumed that at least 75 percent of these hunters will spend time on trails, accounting for another 35,550 trail users. Additionally, the DWGNRA staff estimated that 51,900 users spent time on the Appalachian Trail within the park, and that 25% of the 41,639 backcountry users spend at least some time hiking on trails. Therefore, even taking into consideration that some overlap may exist among user groups, by adding trail users from these four sources it is estimated that the DWGNRA currently hosts 180,925 trail hikers per year. This estimate is summarized in Table 3.

Table 3. Summary of Estimated Number of Hikers Using DWGNRA trails

Source	# of Visitors	% of Hikers	Number of Hikers
Visitor Center Counts	276,551	30	82,965
Hunters	47,400	75	35,550
Appalachian Trail Users	51,900	100	51,900
Backcountry Users	41,639	25	10,510
Total # of Hikers			**180,925**

Although this method of calculating trail use provides an adequate estimate of the number of hikers, not all trail users are hikers. Therefore, the number of other types of trail users, such as bicyclists and horseback riders, was estimated and included to determine total trail usage. At present, hiking is the dominant trail use in the park and most trails in the park do not allow other trail uses. Bicycling and horseback use are found on only a few trails within the park. The DWGNRA staff estimate that there are currently 3,500 annual bicycle users on the trails within the park and 500 annual horseback riders. Adding these trail users to the estimated number of hikers results in a total of 184,925 annual trail users for the Delaware Water Gap National Recreation Area (Table 4).

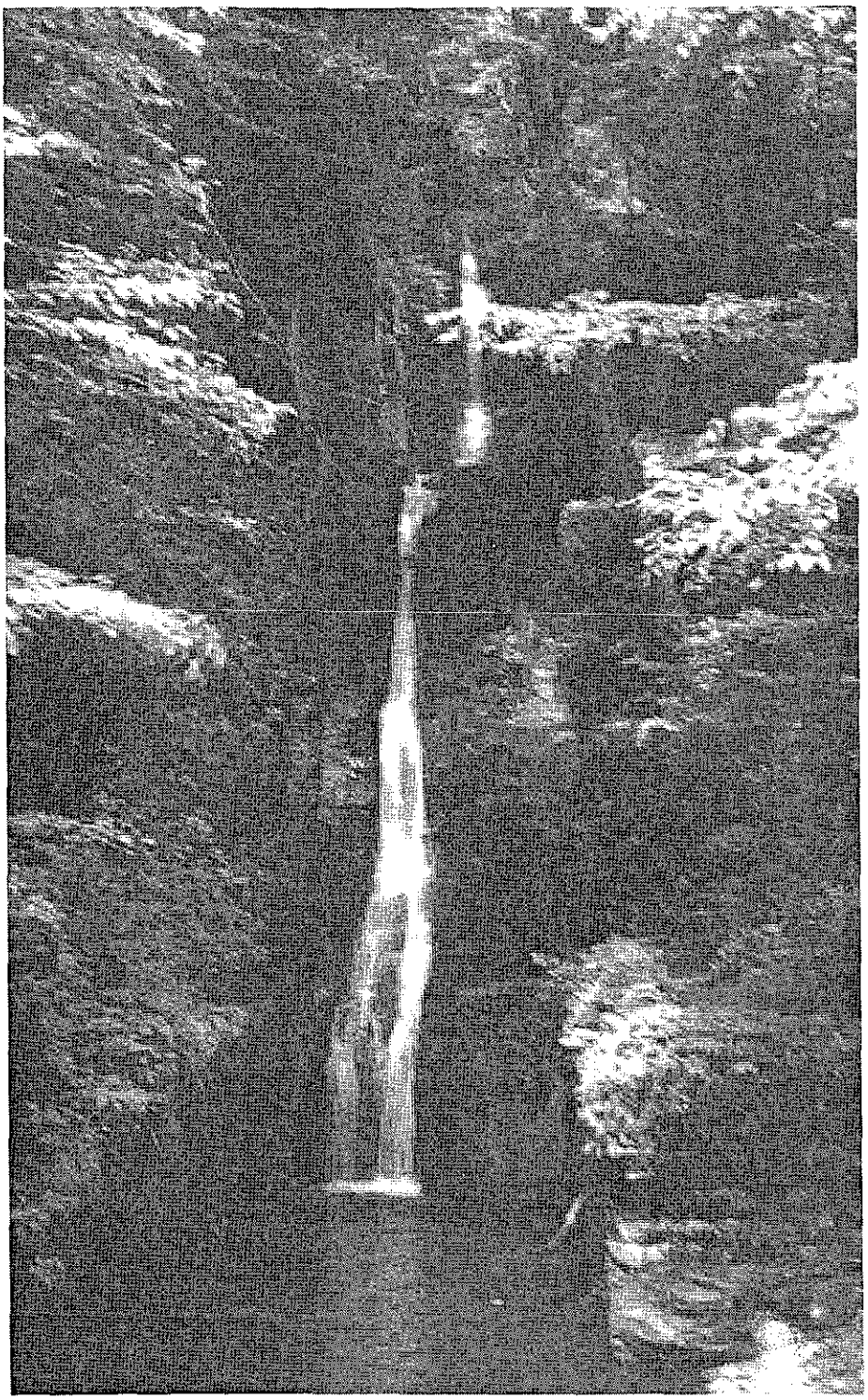
Table 4. Total Estimated Number of Trail Users at DWGNRA

Trail Activity	Number of Users
Foot Users	180,925
Bicyclists	3,500
Horse Users	500
Total	**184,925**

DEVELOPMENT AND ADJACENT LAND USE

Over the last fifteen years, the rural character of the communities adjacent to the park has been changing. In 1989, the park conducted an inventory and analysis of adjacent land uses. Ten years later, the creation of new residential units and resort complexes has led to increases in commercial development along the major road corridors that border the park. Historically, these new homes were intended for seasonal weekend and vacation use. Now, many have been converted to primary residences as people desire to live in areas with a natural setting, free from the congestion and pollution associated with city life. 75,000 more people reside in these counties than was originally forecast for the year 2000. Monroe and Pike in Pennsylvania and Sussex in New Jersey are the fastest growing commuter counties in their respective states. Sixty percent of residents are traveling to work in urban areas such as Scranton, Newark and New York. Strip malls, fast food restaurants and other similar development to meet the shopping and social needs of both residents and visitors is concentrated along the areas major roads and interchanges associated with I-80, I-84, and routes 6, 209, 739, 15 and 94.

No large scale manufacturing or industrial complexes border the park or are planned for the future.



CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

This chapter predicts the potential impacts of the alternatives, described in Chapter 2, on the affected environment, described in Chapter 3.

GENERAL METHODOLOGY

NATURAL RESOURCES

This analysis was conducted in accordance with the direction of NPS77-Natural Resources Management Guideline, NPS Management Policies, Director's Order 2-Planning, and NPS12- Environmental Compliance. These documents provide general guidance for compliance with various laws, executive orders, and other regulations, including the National Environmental Policy Act of 1969 (NEPA), the Endangered Species Act, the Clean Air Act, the Clean Water Act, the Wilderness Act, the Wild & Scenic Rivers Act, Executive Order 11988 (Floodplain Management), Executive Order 11990 (protection of Wetlands) and a Memorandum dated August 11, 1980 from the Council on Environmental Quality (protection of farmlands).

Second, the level of detail, method of analysis and scope of the environmental impact statement were determined. Impacts were evaluated in this document at a level that will permit decisions to be made about the management prescriptions that form each alternative. The likely actions that may result from a management prescription are described in Chapter 2, pages 28-30 and pages 37-39. When possible, those actions are evaluated at a level that will allow them to be implemented. However, in some cases, actions that may result from the management prescriptions cannot be implemented without additional site-specific environmental assessment in compliance with NEPA and other applicable laws and policies. Environmental consequences are evaluated in the most specific manner possible. In all cases, the best available information indicates that the actions evaluated are feasible as presented and that the analysis of consequences is accurate.

Third, the location and nature of specific trails were evaluated to determine their potential to affect natural resources. Locations of trails were compared to known sensitive areas for the various natural resource topics. The extent and type of impact were then evaluated for their potential to affect the known resources.

Wherever possible, actions were mapped using the park's GIS system. Because site-specific designs for most actions have not been developed, changes in land use, vegetation and soil disturbance are estimated at the maximum that could be affected. Actions to minimize impacts include using already-disturbed areas as much as possible where development is planned, avoiding sensitive resources, using sustainable design techniques, mitigating resource damage through careful design of implementation procedures, phasing, timing, and other similar actions.

CULTURAL RESOURCES

The National Historic Preservation Act of 1966 and its subsequent amendments govern the treatment of archeological and historical properties. Section 106 of the act specifies that all governmental agencies must take archeological and cultural impacts into account before implementing any federal action. Section 110 specifies that all government agencies inventory all of their historic properties and evaluate them according to the criteria of the National Register of Historic Places. The National Park Service's Director's Order 28 (formerly Cultural Resources Management Guideline NPS-28) provides guidance for implementing policy in regard to the preservation and treatment of archeological, cultural and historic properties included within a park.

The revised regulations of the Advisory Council on Historic Preservation (36 CFR 800.8) provide the methodology for assessing the impacts on historic

resources. An effect on a significant historic property or landscape occurs if an action has the potential to change the characteristics that qualify that property or landscape for listing on the National Register. If the action diminishes the integrity of those characteristics, it is considered to have an adverse effect. Effects that may occur later than, or at a distance from the location of the undertaking, are considered potential impacts of the action and are called indirect effects. If effects cannot be avoided during the specific design of trails or facilities, mitigation will be developed in consultation with the state historic preservation officer and the Advisory Council on Historic Preservation.

IMPACT TOPICS

To focus analysis of potential consequences of the three alternatives, specific impact topics were selected for further analysis based on legislative requirements, resource information, planning issues, concerns expressed by the public, NPS and other agencies during scoping. Other impacts were eliminated from further evaluation. Impact topics selected for further analysis include natural resources (topography, soils, floodplains, water resources, vegetation, wildlife, and prime or unique farmlands), cultural resources, landscape character and visual resources, and the socioeconomic environment. The impact topics eliminated from further evaluation are briefly discussed below and will not be analyzed in detail in this document

AIR QUALITY

NPS policy states that the service will seek to perpetuate the best possible air quality in the park because of its critical importance to visitor enjoyment, human health, scenic vistas, and preservation of natural systems and cultural resources. The region is classified as a non-attainment area for photochemical oxidants (in the excess of standards) and as an attainment area for other pollutants, according to the Environmental Protection Agency's regional office in Philadelphia. The area is also listed as class II according to the Clean Air Act of 1977 in regards to major stationary sources of air pollution. Under all the alternatives, increased emissions due to higher visitor use would not result in any significant deterioration of air quality in the national recreation area, and the area's class II standards would not be violated.

CLIMATE CHANGE

On a global scale changes in climate are associated with the increase of greenhouse gases that result from the burning of fossil fuels and the removal of vast tracts of vegetation, primarily tropical rainforests. Increased use of fossil fuels within the park would occur primarily as a result of increased visitation and the associated use of automobiles. With the development of more non-motorized trails as a method for visitors to explore the park instead of automobiles, the effect of additional vehicle emissions on global climate change is not evaluated further.

Tree removal from a large area of a landscape can alter soil chemistry, soil water, and microclimate of an area. The alternatives discussed in this plan would leave woodland and plant communities in large areas of the park. Therefore, no measurable changes in the soil chemistry, soil water and microclimate of the park is anticipated.

HAZARDOUS MATERIALS

There are no known hazardous materials on lands owned by the park. However, before trails and facilities are built, written certification of the absence of hazardous materials would be required. If any hazardous materials are found, they must be remedied before trails are developed. It is not expected there would be sufficient hazardous materials at any trail site to pose a threat to the health of visitors or NPS staff.

NOISE

Noise has been shown to impact the visitor experience as well as wildlife in some national parks and other areas. Each of the alternatives could affect noise levels on a site specific or local basis. Under Alternative A, existing snowmobile use may have an effect on the use of that same area by other visitors or wildlife. Snowmobile use is relocated under Alternatives B & C and the McDade Trail is located on the existing designated snowmobile path. This action may

improve noise levels in the McDade Trail area, but noise will increase in the areas where snowmobiles use other designated areas in the park.

During trail construction or vegetation removal, for example, noise levels could be expected to increase in the site vicinity because of vehicular and heavy equipment activity. However, this increase would be short term. Therefore, although noise levels would likely increase during trail improvements and construction, the proposals should not create a substantial adverse impact upon the resources of the park.

SACRED SITES AND INDIAN TRUST RESOURCES

DWGNRA is not considered a sacred site by the keeper of the National Register of Historic Places, nor is it an Indian Trust resource. As part of the consultation process for the Native American Graves Protection and Repatriation Act, the Delaware Tribes of Oklahoma (agreed to by the representatives of the Stockbridge-Munsee of Wisconsin) indicated that there is a known Native American Indian cemetery (unmarked) on the New Jersey side within the boundary of the Minisink Historic Landmark District. None of the alternatives will affect this area.

SOCIALLY OR ECONOMICALLY DISADVANTAGED POPULATIONS

The Department of the Interior's policy on environmental justice (Executive Order 12898) requires the NPS to evaluate impacts on these communities. Based on the analysis of potential impacts under each alternative, none of the alternatives would result in disproportionately high and adverse environmental effects, including human health, economic, and social effects, on minority or low income communities. There are no air or water pollution impacts that would adversely affect human health. Economic impacts from employment, associated earnings, and construction resulting from the action alternatives are expected to be small but positive. There would be no effect on types or character of land use in the surrounding area that could affect minority or low income communities.

PUBLIC HEALTH AND SAFETY

Hunting is a favorite form of recreation for the area; in fact, the park's enabling legislation states that hunting shall be permitted. Hunting in some form occurs almost year around in both states. Hunters routinely use park trails to access hunting areas. Since hunting has been an ongoing activity since the recreation area was created, little conflict, if any, exists between trail users and hunters. Trails are not considered "Safety Zones", and no signing is in place to warn hunters that they are in proximity of trails. However, during peak deer hunting seasons there is some concern for visitor safety on the part of park management. Prior to the start of deer season, the park places special warning signs on trailhead bulletin boards, advising trail users of the hunting season, and encouraging them to wear blaze orange. The park has records of hunters occasionally shooting themselves or one another. There are no records of a trail user being accidentally shot by a hunter.

IMPACTS TO NATURAL RESOURCES

TOPOGRAPHIC FEATURES

Alternative A: Continuation of Current Management Practices (No-action) There would be no alteration to the topographic features in the park.

Alternative B: Multiple Linking Networks (Preferred) Minimal cutting and filling may be necessary for the upgrading of existing trails and the construction of new trails. This alternative is not likely to have a significant affect on existing topography.

Alternative C: Independent Networks Impacts to topographic features will be the same as those under Alternative B.

PRIME AND UNIQUE AGRICULTURAL LANDS

Federal agencies are required to evaluate the impact of their actions on agricultural lands. The policy was developed to minimize the effect of federal projects in converting prime, unique, or locally important farmland to nonagricultural uses, particularly residential and urban development. When prime farmland is converted to other developed uses, the loss of poten-

tial cropland is only one value by which to measure impact. Generally, developing the land causes runoff that may reduce groundwater recharge and increase flood hazards. Also, marginal farmland may be put into production that is more erosive but less productive and demands more energy to farm. None of the alternatives propose to affect agricultural lands by creating an urban environment. No marginal farmlands would be used to replace any prime farmland where trails are proposed.

None of the alternatives proposes to affect prime agricultural lands through irreversible residential development; yet, some trails and parking lot development will occur. Because that development is part of a connected trails system, the action is not easily reversible.

An analysis using data from the park's geographic information system (GIS) was performed to evaluate the amount of area, currently used as cropland, that would be affected by each alternative. The cropland coverage was derived from interpreted 1:12,000 black and white aerial photography that identifies fields that comprise the permitted agricultural leasing program. The results show trails and parking overlap permitted cropland under each alternative:

- Alternative A: 1.0 trail miles, 1 parking lot
- Alternative B: 4.7 trail miles, 3 parking lots
- Alternative C: 3.0 trail miles, 3 parking lots

Alternative A: Continuation of Current Management Practices (No-action)
One existing parking lot and 1.0 miles of existing trails encroach on agricultural lands. About 1.3 acres of prime agricultural land are affected. There would be no new impacts to prime and unique farmland under this alternative.

Alternative B: Multiple Linking Networks (Preferred) Three parking lots and 4.7 miles of trails would encroach on agricultural lands. About 5.9 acres of prime agricultural lands would be affected. Trail segments would be located along hedgerows, filter strips, and field edges to minimize the loss of cropland.

Alternative C: Independent Networks
Three parking lots and 3.0 miles of trails would encroach on agricultural lands. About 3.8 acres of prime agricultural lands would be affected. Trail segments would be located along hedgerows, filter strips, and field edges to minimize the loss of cropland.

SOILS

The NPS policy states that the service will actively seek to understand and preserve the soil resources of the park and to prevent, to the extent possible, unnatural erosion, physical removal, or contamination of soil, or its contamination of other resources.

Trails could impact soils through compaction and erosion. The suitability of soils for recreational trails development is limited by steep slopes, stoniness, and wetness. Stoniness, which provides a measure of the amount and size of stones in soil, was not analyzed. The effects of each alternative on wetlands are discussed separately.

Table 5, below, summarizes the results of a slope analysis for each of the alternatives. Slopes of 16-25% provide moderate limitations to development of trails. Higher slopes mean more severe limitations.

Table 5: Miles of trails vs. slope for each alternative.

	00-03%	04-08%	09-15%	16-25%	26-70%	71-90%
Alternative A	37	36	23	10	5	0
Alternative B	71	76	46	22	9	0
Alternative C	60	58	35	17	8	0

Alternative A: Continuation of Current Management Practices (No-action) About 5% of existing trail miles occur on steep slopes (gradients greater than 25%.) These are trail sections where limitations may be severe and the potential for soil erosion the highest. Under current management, eroded sections of trails are closed or rehabilitated.

Alternative B: Multiple Linking Networks (Preferred) This alternative would double the number of park trails. About 4% of trail miles would be located on steep slopes. Many of the new trails would be located on existing roadbeds. Therefore, the additional effect on soils is expected to be minimal. Evaluating the likelihood and significance of potential adverse impacts would require further assessments specific to individual trails or groups of trails.

Alternative C: Independent Net works This alternative proposes less trail mileage than Alternative B, yet the potential impacts may be similar. About 4% of trail miles would be located on steep slopes. Many of the new trails would be located on existing roadbeds. Evaluating the likelihood and significance of potential adverse impacts would require further assessments specific to individual trails or groups of trails.

Under each of the alternatives, management action would be taken to mitigate adverse, potentially irreversible, impacts on soil caused by heavy visitor use around major park attractions and facilities. Conservation and soil amendment practices may be implemented to reduce impacts. Importation of nonnative soil amendments or other soil materials may be necessary to mitigate degradation, but this alternative must be deemed appropriate by an agronomist or trained soil management specialist and designed to avoid introduction of exotic species.

Wherever practicable, soils and plants affected by construction would be salvaged for use in site restoration. Any surplus soils and plants may be used for restoration of other degraded areas within the park, and surplus soils should be stockpiled for future use. If additional soil and plants are needed to restore disturbed sites, they may be obtained from other sites in the park if it is determined that use of an in-park source will not significantly affect cultural or natural resources or ecological processes. In any case, imported soils must be compatible with existing ones and fulfill horticultural requirements of plants used for restoration.

FLOODPLAINS

Alternative A: Continuation of Current Management Practices (No-action) Some portions of approximately 11 trails are located in the 100 year floodplain. The portions of the trails in the floodplain could be relocated, however the presence of these trail is not likely to have a significant effect on the floodplain. They are not constructed in such a manner as to create a significant obstruction or reduce the area of the floodplain. Potential effects on trails include periodic flooding and clean up.

Alternative B: Multiple Linking Networks (Preferred) Some trails would be located in a floodplain in this alternative. The trails in the floodplain could be located elsewhere, but that would not provide the same experience that is available near the river. Trails in the floodplain would also provide a hiking opportunity on relatively level terrain, which less mobile visitors could enjoy. The presence of these trails is not likely to have a significant effect on the floodplain because they are not constructed in such a manner as to create a significant obstruction or reduce the area of the floodplain.

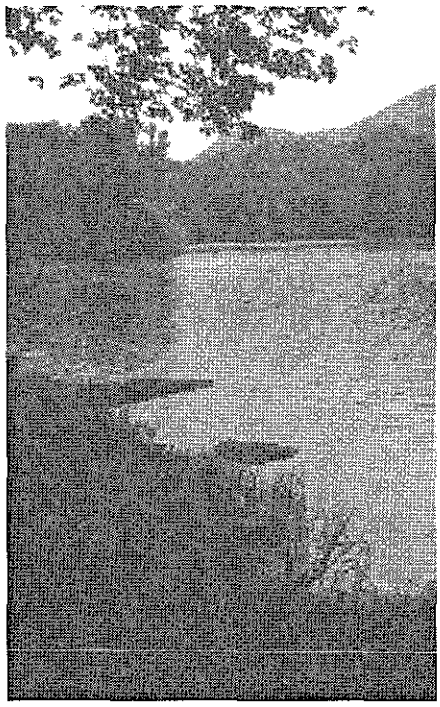
Trails and trailheads located in floodplains would not be usable if and when they were flooded, which is estimated to occur only a few days per year. Also, trails or trailheads located in or near the floodplain could be damaged by flooding, requiring additional funds for repair or cleanup. Potential effects on trails located in the floodplain include periodic flooding and may require clean up. Impacts of the alternative on the floodplain would be of short duration and would be insignificant to the floodplain and to recreation resources in DWGNRA.

Alternative C: Independent Networks Impacts to floodplains will be the same as those under Alternative B.

WATER RESOURCES

NPS policy states that the Service will maintain, rehabilitate, and perpetuate the inherent integrity of water resources and aquatic ecosystems. Specific management policies provide for protection of quality and quantity surface water and groundwater, preservation of floodplains and wetlands, maintaining, protecting, and securing water rights, and protection of aquatic biological resources.

Potential impacts to water resources are associated primarily with stream or wetland crossings and with construction occurring in close proximity to a water resource. An analysis of potential impacts to water resources was conducted by using the geographic information system to overlay each alternative on the



available baseline maps of streams, water bodies and wetlands. In comparing the locations of proposed trails relative to the locations of various water resources, a buffer of 150 feet was added to the outer boundary of each water resource. The addition of the 150 feet buffer compensates for any inaccuracies in mapping and for differences in the scales of the various baseline maps versus the scale of the alternative trail plans.

Surface Waters, Streamflow, Water Quality

Alternative A: Continuation of Current Management Practices (No-action) Approximately 34 miles of trails and 12 parking lots are located within 150 feet of surface waters (includes wetlands and streams). There are approximately 76 stream crossings.

This alternative represents existing conditions. The present-day occurrence of significant impacts to surface waters has not been studied. Any impacts currently having an adverse effect on surface waters, streamflow or water quality would continue.

Alternative B: Multiple Linking Networks (Preferred) Approximately 76 miles of trails and 30 parking lots would potentially be located within 150 feet ofsurface waters. The total number of stream crossings under Alternative B would be approximately 195. Approximately 16 miles of new trail construction would potentially occur within 150 feet of surface waters and would require 16 new stream crossings. The remaining 179 crossings occur on present park trails and road traces that will be included in the designated trail system. The condition of these crossings is not known. As site-specific studies are done, many of these crossings are likely to require repair or replacement.

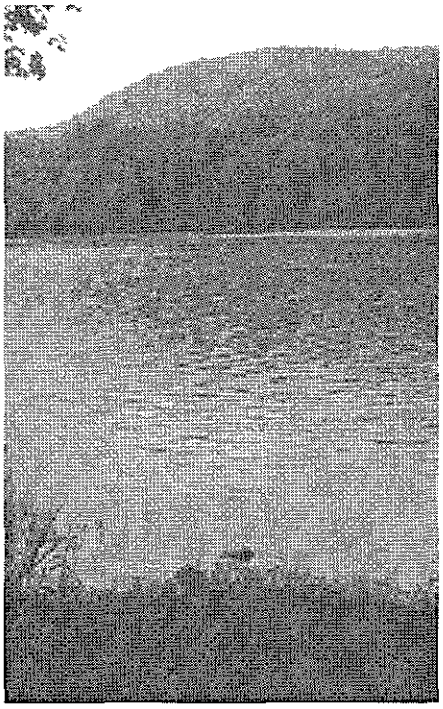
Rehabilitation of existing trails and development of new trails would not have a long-term adverse effect on surface waters, streamflow or water quality. As trails are rehabilitated or developed, trail design will incorporate measures that avoid and minimize adverse impacts, such as locating crossings at the narrowest point, sizing bridges and culverts to avoid constricting streamflow and using stable slope design and restoring the ground surface after construction to avoid

long-term erosion problems. There is some potential for erosion and siltation during construction, but adverse impacts would be mitigated by implementation of an approved erosion and sedimentation control plan.

Implementing a designated trail system also provides an opportunity to direct trail use away from sensitive surface water resources and to close trails that may currently be impacting surface waters, if those trails are not included in the designated system. This may result in a positive effect on some surface water resources.

Alternative C: Independent Networks Approximately 64 miles of trails and 26 parking lots would potentially be located within 150 feet of surface waters. The total number of stream crossings under Alternative C would be approximately 164. Approximately 13 miles of new trail construction would potentially occur within 150 feet of surface waters and would require 9 new stream crossings. The remaining 155 crossings occur on present park trails and road traces that will be included in the designated trail system. The condition of these crossings is not known. As site-specific studies are done, many of these crossings are likely to require repair or replacement.

Impacts to surface waters, streamflow and water quality would be the same as described for Alternative B.



Wetlands

Alternative A: Continuation of Current Management Practices (No-action) The present-day occurrence of significant impacts to wetlands has not been studied. Any impacts currently having an adverse effect on wetlands would continue.

Alternative B: Multiple Linking Networks (Preferred) There would be minimal to no impact on wetlands. As trails are proposed for development, field surveys would be conducted to identify wetlands and the trail design would be revised to avoid these areas. If wetlands cannot be avoided, trail design would incorporate measures that minimize impacts such as crossing a wetland at the outermost edge and using boardwalk on pilings for all wetland crossings to maintain hydrologic flow and allow movement of wildlife.

Alternative C: Independent Networks Impacts to wetlands would be the same as described for Alternative B.

Groundwater

Alternative A: Continuation of Current Management Practices (No-action) The present-day occurrence of significant impacts on groundwater have not been s-1

Alternative B: Multiple Linking Networks (Preferred) There would be no effect on groundwater. No wells or other water supply system are planned; therefore, there will be no groundwater withdrawal. All measures described above to protect surface water resources will also protect groundwater that may be hydrologically connected to those surface water resources.

Alternative C: Independent Networks Impacts to groundwater would be the same as described for Alternative B.

FISH AND WILDLIFE

The NPS policy states that the service will seek to perpetuate native animal life as part of the natural ecosystem of parks.

Alternative A: Continuation of Current Management Practices (No-action) The existing 111 miles of trails may have a high level of concentrated use. The disturbance from human presence may already have an adverse effect on displacing wildlife.

Alternative B: Multiple Smaller Networks (Preferred) The construction of new trails may result in short-term impacts

on water quality in the immediate area of construction. Monitoring would ensure that water quality remained high and fishery habitats would continue to be enhanced. The overall adverse effect on the river corridor's fisheries would be negligible.

Fishing is already a popular sport within the park and is not expected to increase due to the proposed project.

Vegetation management would help ensure the continuation of habitat diversity for the abundant and diverse wildlife populations of the area. The construction of trail and trailheads would result in some loss of habitat and displacement of wildlife, but the overall effect would be negligible.

The increased number of trails available for public use may result in less concentrated use of present park trails and potentially reduce the likelihood of disturbance to wildlife from trail use. The potential for adverse effects on wildlife may exist; however, we cannot predict the extent of the effect.

Alternative C: Independent Networks Impacts to fish and wildlife will be the same as those under Alternative B.

VEGETATION AND NON NATIVE "EXOTIC" SPECIES

NPS policy states that the service will seek to perpetuate native plant life as part of natural ecosystems. Landscapes and plants may be manipulated only when necessary to achieve appropriate management objectives.

Adverse effects to plant communities could be expected when trails construction would require earth disturbance or opening of the tree canopy, providing opportunities for invasion by exotic plants. Impacts would be most significant if the park's most biologically significant plant communities were affected.

However, trail construction may have a beneficial effect in areas currently invaded by exotic plant. Trail construction may allow the opportunity to remove exotic plants and measures would be taken to minimize further invasion.

Alternative A: Continuation of Current Management Practices (No-action) This alternative would affect about 111 miles of trail, including 1.0 mile through existing cropland, 13 miles through old fields and thickets, and 97 miles through forest.

The Appalachian National Scenic Trail encroaches on two occurrences of biologically significant native plant communities. Other trails skirt the edges of a total of five additional communities. Increased visitor presence in these areas could lead to adverse impacts from collecting or trampling of vegetation. Evaluating the likelihood and significance of potential adverse impacts would require further study and would be addressed by assessments specific to individual trails or groups of trails.

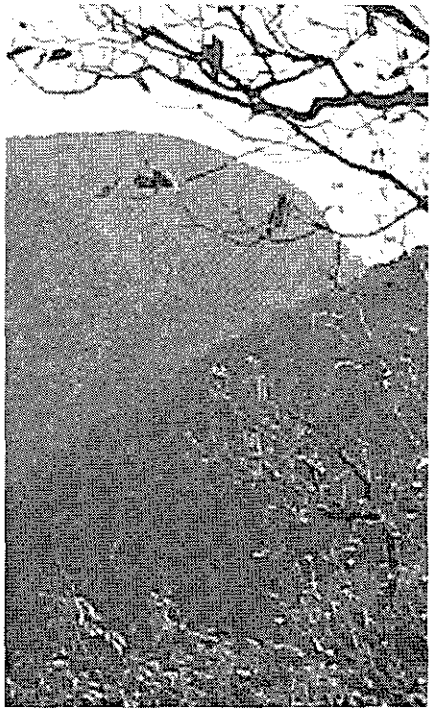
Alternative B: Multiple Linking Networks (Preferred) This alternative would affect about 224 miles of trail, including five miles through croplands, 14 miles through old fields and thickets, and 205 miles through forest. About 35 miles of new trail would be cut, including 18 miles of multi-use trail requiring heavy machinery and earth-disturbing activities.

Invasion by exotic plants could be expected in areas of new trail construction, especially in areas where earth would be moved and trees would be cleared (about 18 miles of trail). In these areas, measures would be taken to minimize the amount of earth moving and tree cutting. Disturbed soils would be seeded or planted with native species.

However, some existing or abandoned roadbeds proposed for trail use may have by this time grown over with vegetation, including invasive exotic plants. Upgrading these areas for trails would require clearing the excess vegetation and allowing the opportunity to remove the exotic plants and control further invasion.

The Appalachian National Scenic Trail encroaches on two occurrences of biologically significant native plant communities. Other trails would skirt the edges of a total of nine additional communities. Increased visitor presence in these areas could lead to adverse impacts from collecting or trampling of vegetation. Evaluating the likelihood and significance of potential adverse impacts would require further study and would be addressed by environmental assessments specific to individual trails or groups of trails.

Alternative C: Independent Networks This alternative would affect about 181 miles of trail, including three miles through croplands, nine miles through old fields and thickets, and 169 miles through forest. About 26 miles of new trail would



be cut, including 18 miles of multi-use trail requiring heavy machinery and earth-disturbing activities.

The Appalachian National Scenic Trail encroaches on two occurrences of biologically significant native plant communities. Other trails would skirt the edges of a total of eight additional communities. Increased visitor presence in these areas could lead to adverse impacts from collecting or trampling of vegetation. Evaluating the likelihood and significance of potential adverse impacts would require further study and would be addressed by environmental assessments specific to individual trails or groups of trails.

The same mitigation measures would be used in Alternatives B & C. In these alternatives, wherever practical, trails would utilize existing or abandoned roadbeds, including public roads which would be closed to vehicles; abandoned driveways and farm fields; sections of "old" U.S. 209; fire roads; logging roads, and old home sites. Earth disturbance and the associated opportunity for exotic plant invasion would be minimized. Wherever practical, trails would avoid encroaching on natural communities that have been identified by state heritage programs as biologically significant. Trails would skirt such areas or utilize previously existing roadbeds.

THREATENED OR ENDANGERED SPECIES

National Park Service policy states that the Service will identify and promote the conservation of all federally listed threatened, endangered, or candidate species within park boundaries and their critical habitats. The park also will identify all state and locally listed threatened, endangered, rare, declining, sensitive, or candidate species that are native to and present in the park and their critical habitats.

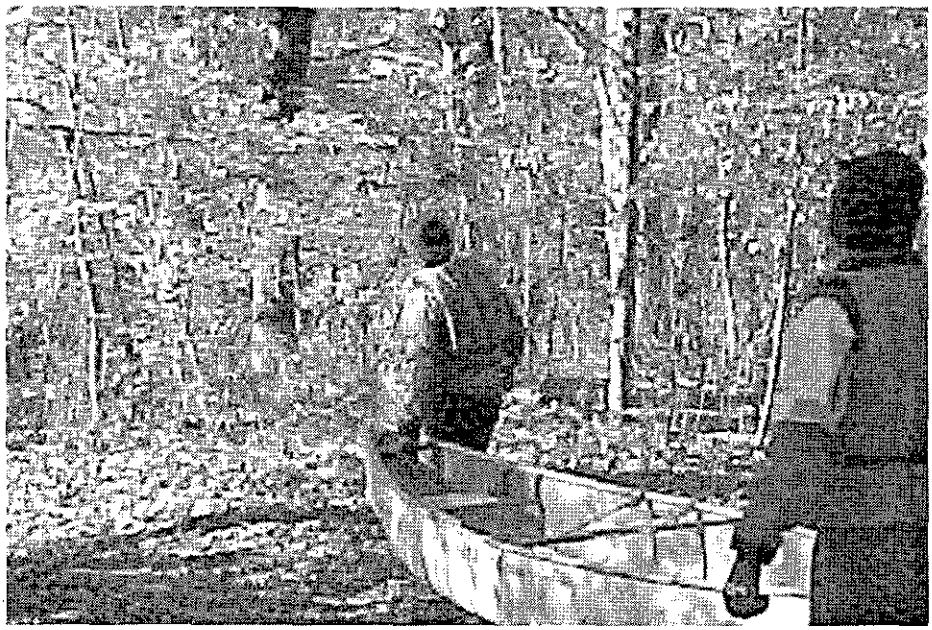
The paragraphs below discuss potential adverse effects on the federally listed threatened and endangered species in DWGNRA as a result of each of the three alternatives proposed for the park trails plan. However, the discussions presented below are based on the available information. Once the NEPA process is concluded and an alternative has been selected, impacts to threatened and endangered species will be further

addressed through consultation with the U.S. Fish and Wildlife Service and preparation of environmental assessments specific to individual trails as they are proposed for development.

Bald eagle

The locations of important eagle habitat in DWGNRA have been provided to USFWS and are used as the basis for identifying potential impacts to this species from construction and use of the proposed trails. The primary effect on bald eagles would result from trail use and construction. Human activity within 400 meters of eagles can force them to abandon the immediate area, preventing them from foraging and/or causing unnecessary expenditure of energy. Repeated intrusions into their habitat can result in physiologic stress at a time when cold weather and reduced foraging opportunities can weaken individuals, making them susceptible to disease, and can lower the reproductive success of adults.

Where trails infringe on the 400 meter buffer surrounding important habitat, strategies can be employed to eliminate disturbance of eagles by human activities. These include: seasonal restrictions on construction activities; seasonal closure of trail segments during critical periods; and use of a combination of distance, existing vegetation, and topographic features to provide visual screening between the important areas and human activity on the trails. Informal consultation with USFWS will ensure that adverse impacts to the species will be avoided.



Alternative A: Continuation of Current Management Practices (No-action) Approximately 2.2 miles of existing trails lie within the 400 meter buffer surrounding important wintering eagle habitat. Historically, visitor use of these trails during the winter months has been light and no impact to the eagle population has been documented. The one exception is a portion of the existing snowmobile trail that may result in auditory disturbance of the species in an adjacent foraging area. Use of this trail by the intended user group has been light in recent years due to infrequent snowfalls, therefore the issue of disturbance has not been addressed. Under this alternative, existing trails would continue to be available to the public. Increased visitation with no provision for additional trails may result in increased use of trails within important eagle habitat. This increased use may negatively impact the species. Additionally, more consistent snowfalls may lead to regular use of the existing snowmobile trail resulting in increased disturbance of the species.

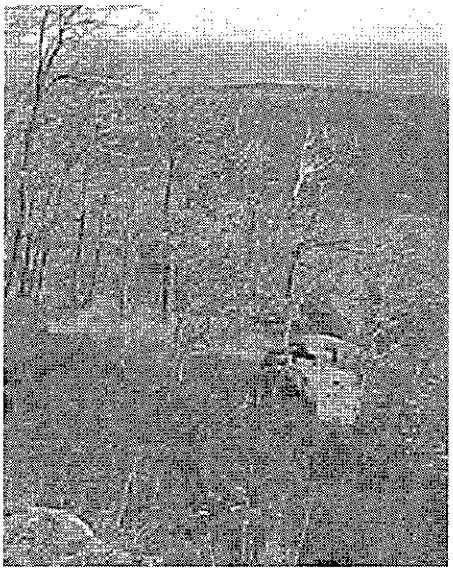
Alternative B: Multiple Linking Networks (Preferred) This alternative includes the McDade Recreational Trail that runs the length of the park in Pennsylvania. Approximately 9.25 miles of this trail is within the 400 meter buffer zone surrounding important wintering eagle habitat. The park is working closely with USFWS to ensure that construction and use of this trail does not impact the wintering eagle population. To partially achieve this goal, the McDade Recreational Trail proposes to change a portion of the existing snowmobile trail to exclude motorized vehicles. This would alleviate any potential for auditory distur-

bance of bald eagles in an adjacent foraging area by continued use of the trail by snowmobiles.

The remaining trails proposed in Alternative B result in an approximately 0.42 mile increase over the existing (Alternative A) trail length within buffer areas surrounding important eagle habitat. The increased number of trails available for public use would result in less concentrated use of present park trails and further reduce the likelihood of disturbance to the species from trail use.

Impacts to the species would be avoided by carefully aligning the trails to take advantage of existing vegetative and topographic screening; seasonal restrictions on construction activities; and, if necessary, seasonal closures of trail segments during critical periods.

Alternative C: Independent Networks This alternative also includes the McDade Recreational Trail and the same considerations discussed in Alternative B above will apply to Alternative C. The remaining trail systems proposed in Alternative C result in approximately 0.87 mile reduction in the length of existing trails (as compared to Alternative A) that lie within the 400 meter buffer surrounding important wintering eagle habitat. The increased selection of trails available for public use would result in less concentrated use of existing trails and further reduce the likelihood of disturbance to the species from trail use.



Bog turtle

Suitable habitat for this species is known to occur in 44 wetlands within the park. Based on information from state heritage programs, turtles are presumed to be present at five sites. Potentially, bog turtles could be adversely affected if trails were to cross over or too closely skirt occupied wetlands. Individuals could be accidentally harmed during trail construction or maintenance. Habitat could be degraded by exotic plants invading disturbed areas following construction. Trail users could collect turtles or trample nests.

Alternative A: Continuation of Current Management Practices (No-action) One of the trails crosses over a wetland reported to support bog turtles. Six of the trails skirt wetlands known to contain suitable, potential bog turtle habitat.

Alternative B: Multiple Linking Networks (Preferred) Two of the trails would skirt wetlands reported to support bog turtles. Twelve of the trails would skirt wetlands known to contain suitable, potential bog turtle habitat.

Alternative C: Independent Networks Two of the trails would skirt wetlands reported to support bog turtles. Eleven of the trails would skirt wetlands known to contain suitable, potential bog turtle habitat.

Indiana bat

No populations of this species are currently known to exist in the park. However, field surveys have been limited and suitable habitat is widespread. Indiana bats, if present, could be adversely affected if roost trees were eliminated during trail maintenance or construction, or if trails were to come too close to maternity colonies.

Alternative A: Continuation of Current Management Practices (No-action) About 91 of 111 miles of existing trails go through forest. Routine maintenance to remove hazard trees is scheduled to occur during months when Indiana bats would not be present. No maternity colonies are known within DWGNRA boundaries.

Alternative B: Multiple Linking Networks (Preferred) A total of 224 miles of trails would be designated. About 189 miles would utilize existing old roads, etc. and about 35 miles of new trail would be cleared. Of the new trail, about 30 miles, or 17% of the total under this alternative, would traverse forest and

could require the cutting of some trees suitable for roosting by Indiana bat.

Alternative C: Independent Networks A total of 178 miles of trails would be designated. About 152 miles would utilize existing old roads, etc. and about 26 miles of new trail would be cleared. Of the new trail, about 23 miles, or 13% of the total under this alternative, would traverse forest and could require the cutting of some trees suitable for roosting by Indiana bat.

Under each of the three alternatives, strategies would be employed to avoid or minimize potential adverse effects to Indiana bats. For example, wherever practical, trails would utilize existing or abandoned roadbeds, including public roads that would be closed to motor vehicles, abandoned driveways and farm fields, sections of "old" U.S. 209, fire roads, logging roads, and old home sites. Clearing of new trail and cutting of potential roost trees would be minimized.

Small whorled pogonia

No populations of this species are currently known to exist in the park. However, field surveys have been limited and the second- or third-growth mixed forest habitat is widespread. A characteristic common to most small whorled pogonia sites is proximity to features, such as streams or logging roads, which create long-persisting breaks in the forest canopy. The use of old woods roads figures prominently in the development of the park's trail system.

To ensure that this species is unlikely to be adversely affected by development or use of the trail system, field surveys would be conducted to assess the presence or absence of small whorled pogonia wherever suitable habitat is found along proposed trails. If populations were to be documented, informal consultation with the U.S. Fish & Wildlife Service would be initiated.

Northeastern bulrush

No populations of this species are currently known to exist in the park. However, survey work has been limited and vernal pools in forest habitat are fairly common. To ensure that this species is unlikely to be adversely affected by development or use of the trail system, field surveys would be conducted to assess the presence or absence of Northeastern bulrush wherever suitable habitat is found along proposed trails. If populations were to be documented, informal consultation with the U.S. Fish & Wildlife Service would be initiated.

IMPACTS TO CULTURAL RESOURCES

CULTURAL LANDSCAPES

Adverse effects to cultural landscapes could be expected when trails introduce new features, elements and patterns to a historic property or to the overall landscape of DWGNRA. Impacts would be most significant if the park's most significant cultural landscapes were affected.

Alternative A: Continuation of Current Management Practices (No-action) Informal trails would not be mitigated or prevented, which may cause accelerated deterioration and impact of cultural landscapes. Otherwise, no other adverse affects would be caused by this alternative.

Alternative B: Multiple Linking Networks (Preferred) Where existing circulation systems within cultural landscapes are utilized and preserved, there would be no change or impact to the property. Where existing routes are significantly altered in width, alignment, grade, vegetation or small-scale features (e.g. bridges/retaining walls), there may be an effect to the cultural landscape. Where new circulation systems are introduced to existing cultural landscapes, there may be an impact to the landscape. This alternative has the greatest number of new routes added to existing and historic circulation systems. Cumulative impacts of using a road as a trail through a historic property then rerouting vehicular traffic to compensate must be evaluated. Evaluating the likelihood and significance of such impacts would require further study and would be addressed by compliance specific to individual trails or groups of trails.

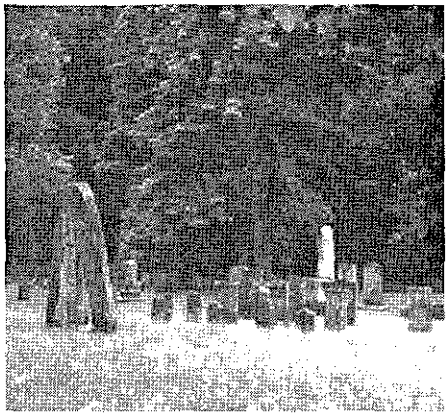
Alternative C: Independent Networks Where existing circulation systems within cultural landscapes are utilized and preserved, there would be no change or impact to the property. Where existing routes are significantly altered in width, alignment, grade, vegetation or small-scale features (e.g. bridges/retaining walls), there may be an effect to the cultural landscape. Where new circulation systems are introduced to existing cultural landscapes, there may be an effect to the landscape. Evaluating the likelihood and significance of such impacts would require further study and would be addressed by compliance specific to individual trails or groups of trails.

Strategies to avoid and minimize adverse impacts to cultural landscapes associated with trails construction and visitor use would include:

- During the process of individual trail implementation, research would evaluate affected cultural landscapes to determine significant character-defining features. This evaluation would provide the knowledge necessary to determine the likelihood and significance of impacts and may provide additional impact mitigation measures.

- Where possible, utilize existing roads and road traces that emphasize existing circulation routes. In many cases these existing circulation routes are already an appropriate width to allow for a 6'-8' trail with between 2' - 4' shoulders (approximately 14-feet maximum width). In other situations, a determination will be made on a case-by-case basis to either widen an existing route to accommodate the maximum 14-foot trail or narrow the design width of the trail to fit the existing route. This will depend largely on studies associated with compliance specific to individual trails.

- Where possible, trails would be designed to look appropriate within the cultural landscape(s). Trail surface would remain unpaved and fit within the existing width and approximate grade of historic routes. Vegetation that provides a character-defining feature within the landscape, such as tree rows, allees, fence rows, etc., should not be disturbed and new, inappropriate planting designs should not be introduced. New features such as retaining walls, safety railing, vehicle barriers/bollards, signs and parking should be designed to be compatible with the historic character and material of the landscape. These should be designed and located to minimize adverse impacts on the character and features of the cultural landscape. Changes should be identified, documented and marked in an unobtrusive manner that distinguishes them from that which is existing.



ARCHEOLOGICAL RESOURCES

The NPS policy states that archeological resources, including both organic and mineralized remains in body or trace form, will be protected, preserved, and developed for public enjoyment, interpretation, and scientific research in accordance with park management objectives and approved resource management plans.

Management actions would be taken to prevent illegal collecting and may be taken to prevent damage from natural processes such as erosion. Protection may include construction of shelters over specimens for interpretation in situ, stabilization in the field, or collection, preparation, and placement of specimens in museum collections. The localities and geologic settings of specimens will be adequately documented when specimens are collected.

Protection may also include, where necessary, the salvage collection of threatened specimens that are scientifically significant.

Alternative A: Continuation of Current Management Practices (No-action) There may be some loss of archeological resources due to visitor use. Less emphasis on interpretive programs could result in a limited public awareness of the significance of cultural resources. Vandalism, illegal collecting, and littering may currently be occurring because visitors are not fully aware of the significance of resources.

Alternative B: Multiple Linking Net-works (Preferred) Generally, implementation of this alternative would increase use throughout the recreation area. This would result in increased potential for vandalism of outlying archeological resources. However, the overall effect would be to increase the protection and preservation of archeological resources by increasing knowledge and awareness of sites.

Alternative C: Independent Net-works Impacts to archeological resources would be the same as those under Alternative B.

The purpose of the archeological program at the DWGNRA will be to protect subsurface resources in place and where necessary to mitigate unavoidable effects from ground disturbance. The primary effect of implementing the proposed plan would be to increase the level of protection for archeological resources in the recreation area.

Specifically training personnel to recognize the value of archeological resources would enable the staff to further protect these resources. Increased vigilance and enforcement will be the best protection for these resources. If necessary, access to some areas will be restricted, or sites will be covered with fill to protect them.

Additional archeological surveys and research would identify sites and would generally increase the body of scientific knowledge of human history in the DWGNRA. Protection may be mitigated by research to locate and document archeological sites. The significance of sites may be evaluated to determine their contextual, spatial, and temporal extent.

Because archeological excavation and collection is in itself a destructive process representing an irreversible and irretrievable commitment of the resource, excavation will be avoided, and nondestructive investigation techniques will be used as much as possible. The goal will be to protect archeological sites in place and to recover data from sites that will be unavoidably lost.

When ground-disturbing activities are planned, surface surveying and testing for archeological resources will be required. If sites are known to exist in an area to be disturbed, or if testing reveals the presence of previous occupation, excavation may be necessary. Every effort will be made to avoid destruction of a site by changing or shifting activities or facilities, or by sensitively designing those facilities. If archeological sites cannot be avoided, appropriate mitigation will be designed, and all recovered data and artifacts will be preserved.

IMPACTS TO THE SOCIOECONOMIC ENVIRONMENT

INHOLDINGS

Not all lands within DWGNRA are federally owned. Instead, special agreements with cooperating associations, agricultural permits and non-federal government bodies protect the natural, cultural and scenic features of the park. The designation of a new trail system would impact these parcels in the following ways:

Alternative A: Continuation of Current Management Practices (No-action) Four existing trails connect with non-NPS land. Current impacts, if any, would continue.

Alternative B: Multiple Linking Networks (Preferred) Under this alternative, trails would potentially cross 12 privately owned parcels, and 21 public (non-NPS) owned parcels. Of the 12 privately owned parcels, the NPS is currently in the process of purchasing four, and two presently have trails on them. Of the 21 publicly owned parcels, eight presently have trails on them.

Alternative C: Independent Networks Under this alternative, trails would potentially cross five privately owned parcels, of which two presently have trails on them. Trails would potentially cross 11 publicly owned parcels, of which nine already have trails on them.

If Alternative B or C were selected and once the trail system is designated, the owners of the land parcels where new trail development is proposed will be contacted to seek agreements with them for public access.

ROAD CLOSURES

Existing local and visitor travel patterns would change with the development of new trails. A few park roads that are currently open to vehicular travel would be restricted or closed as trails are developed.

Alternative A: Continuation of Current Management Practices (No-action) Current management practices regarding restricted use on roads or road closures would continue.

Alternative B: Multiple Linking Networks (Preferred) The following roads would be affected:

• *Conashaugh Road*

The McDade Recreational Trail (MRT) would be developed along a portion of the Conashaugh Road. The park plans to accommodate this by closing Conashaugh Road to vehicular traffic. Along a very short segment where the road crosses Conashaugh Creek, equestrians and bikers/hikers would share the trail. To ensure the safety of visitors along this segment, a fence will be erected to segregate horse use from bicycle/hiker use. In addition, the section of Conashaugh Road which runs up the drainage and connects to Long Meadow Road will be closed to vehicles, and will be designated for equestrian/hiking use, which will add 0.7 miles of trail to the Conashaugh View Trail.

• *McDade/Zimmermann*

The MRT would be developed along the road accessing the historic Zimmermann property. Although that road is not presently opened to the public, plans are being developed to restore and utilize the property, which may result in the need for public access. Alternatives would need to be evaluated to accommodate both the trail and public access to the property.

• *Eshback Trail System*

The Eshback Trail System, designated for hiking, bicycling, and snowmobiling, would be developed in part along the Big Egypt Road, which is presently open to motor vehicles between US Route 209 and State Route 2001. This road is closed during the winter season, so snowmobile use could be accommodated without affecting other uses. This road is a popular access for fishing and hunting. Both bicycles and vehicles would be allowed during the other seasons, but vehicle speed limits would be employed. Designation of this trail for bicycling and hiking would require shared use with motor vehicles.

• *Mountain Road*

Under Alternative B, Mountain Road would be developed for equestrian use. However, vehicular access must be maintained on this road to accommodate present uses.

• *Country Road Trail*

Alternative B calls for developing the Country Road Trail for hiking and bicycling. This presents a conflict with current equestrian use on the Upper Ridge Road portion of the trail, which would be closed to equestrian use in favor of bicycles. The plan proposes to accommodate part of this loss of existing equestrian use by adding equestrian use to the Mountain Road area.

Alternative C: Independent Networks

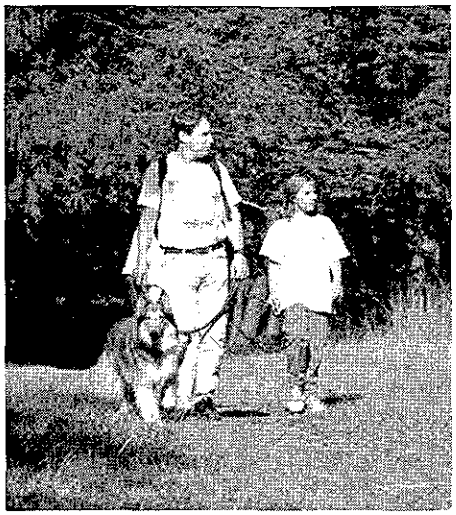
The following roads would be affected:

• *Conashaugh Road*

The McDade Recreational Trail (MRT) would be developed along a portion of the Conashaugh Road. The park plans to accommodate this by closing Conashaugh Road to vehicular traffic. Along a very short segment where the road crosses Conashaugh Creek, equestrians and bikers/hikers would share the trail. To ensure the safety of visitors along this segment, a fence will be erected to segregate horse use from bicycle/hiker use. In addition, the section of Conashaugh Road which runs up the drainage and connects to Long Meadow Road will be closed to vehicles, and will be designated for equestrian/hiking use, which will add 0.7 miles of trail to the Conashaugh View Trail.

• *McDade/Zimmermann*

The MRT would be developed along the road accessing the historic Zimmermann property. Although that road is not



presently opened to the public, plans are being developed to restore and utilize the property, which may result in the need for public access. A closure to vehicular traffic may not be necessary, but some restrictions may be required to safely accommodate both bicyclists/hikers and vehicles.

• *Eshback Trail Area*

The Eshback Trail area, designated for hiking, bicycling, and snowmobiling, would be developed in part along the Big Egypt Road, which is presently open to vehicles between US Route 209 and State Route 2001. This road is closed during the winter season, so snowmobile use could be accommodated without affecting other uses. This road is a popular access for fishing and hunting. Both bicycles and vehicles would be allowed during the other seasons, but vehicle speed limits would be employed.

For Alternatives B and C, wherever shared use with motor vehicles is considered, mitigation measures such as speed limit restrictions would be implemented to accommodate shared use.

ECONOMIC EFFECTS

To determine the economic impact of a designated trail system at the DWGNRA, the number of existing plus potential users was multiplied by expenditures and weighted by activity type. This was accomplished for each of the various trail alternatives. Direct expenditure data are only a portion of the economic impact resulting from visitor use, and do not adequately account for all of the impacts to the local region. Therefore, the direct expenditure data was entered into the IMPLAN database. IMPLAN is a computerized database that models the economic impact of expenditures on the economy of a defined region. This report provides four different measures of economic impact as estimated by IMPLAN. The economic impact of the expenditures by visitors to the proposed trails is presented below. A more detailed methodology for determining these economic impacts in included in Appendix F.

Alternative A: Continuation of Current Management Practices (No-action) This alternative is comprised of a total of 112 miles of trail which are primarily hiking only trails. The current trail use in the DWGNRA totals 184,925 users who together account for $2,137,173.50 spent in the local economy. This figure was derived by multiplying the number of users from each activity group by their respective per person/per day expenditures and adding the totals.

Table 6. Direct expenditures resulting from the current use of trails at the DWGNRA - Alternative A

	FOOT USERS	BIKERS	HORSE	TOTAL EXPENDITURES
	N=180,925	N=3,500	N=500	
	PER PERSON/PER DAY EXPENDITURES			
Food & Beverage				
Restaurants	$2.57	$4.16	$2.83	$480,952.25
Other F&B	$1.53	$2.49	$1.70	$286,380.25
Food Total	$4.10	$6.65	$4.53	$767,332.50
Lodging				
Hotel/Motel	$1.07	$1.73	$1.18	$200,234.75
Camping	$0.25	$0.40	$0.27	$46,766.25
Lodging Total	$1.32	$2.13	$1.45	$247,001.00
Transportation	$2.74	$4.44	$3.02	$512,784.50
Retail Purchases	$2.00	$3.24	$2.21	$374,295.00
Attractions & Entertainment	$0.46	$0.73	$0.50	$86,030.50
Other	$0.80	$1.30	$0.88	$149,730.00
Total	*$11.42*	*$18.49*	*$12.59*	*$2,137,173.50*

Table 7. Economic Effects of Expenditures by Visitors Using Current DWGNRA Trails - Alternative A

	DIRECT EFFECT	INDIRECT EFFECT	INDUCED EFFECT	TOTAL EFFECT	MULTIPLIER
Total Estimated Expenditure	$2,137,173.50				
Total Industry Output	$1,604,957.00	$552,462.00	$459,221	$2,616,640.00	1.63
Employee Compensation	$407,976.00	$158,464	$144,898	$711,338.00	1.74
Total Other Income	$248,312.00	$135,170	$117,191	$500,673.00	2.02
Employment	32.4	7.3	6.9	46.6	1.44

Multipliers are calculated as the total effect divided by the direct effect.

Alternative B: Multiple Linking Networks

This system is the most expansive of all three alternatives and includes a total of 224 miles of trails. These include 113 new miles of trails including 98 miles of new biking trails and an additional 7 miles of trails open to horseback riders. The total economic impacts of the Alternative B expenditures are shown in Table 13.

Table 8. Estimated Number of Trail Visits for Alternative B.

	EXISTING TRAILS (ALTERNATIVE A)	NEW FOOT TRAILS TRAFFIC ONLY	NEW FOOT TRAFFIC AND BIKE TRAILS	NEW FOOT TRAFFIC AND HORSE TRAILS	TOTAL
Hikers	180,925	42,576	161,434	12,418	397,353
Bicyclists	3,500	0	161,434	0	164,934
Horse users	500	0	0	294	794
Total Users	184,925	42,576	322,868	12,712	563,081

Table 9. Estimated Trail Related Expenditures for Alternative B.

	CURRENT USE ALTERNATIVE A TRAILS	NEW FOOT TRAFFIC ONLY	NEW MULTIPLE USE TRAILS				
Expense Categories		Foot Users	Foot Users	Bikers	Horse	New Trails	Total
		n=42,576	n=173,852	N=161,434	n=294	Subtotal	Expenditures
Food	$	$	$	$	$	$	$
Restaurants	480,952.25	109,420.32	446,799.64	671,565.44	832.02	1,228,617.42	1,709,569.67
Other F&B	286,380.25	65,141.28	265,993.56	401,970.66	499.80	733,605.30	1,019,985.55
Food Total	*767,332.50*	*174,561.60*	*712,793.20*	*1,073,536.10*	*1,331.82*	*1,962,222.72*	*2,729,555.22*
Lodging							
Hotel/Motel	200,234.75	45,556.32	186,021.64	279,280.82	346.92	511,205.70	711,440.45
Camping	46,766.25	10,644.00	43,463.00	64,573.60	79.38	118,759.98	165,526.23
Lodging Total	*247,001.00*	*56,200.32*	*229,484.64*	*343,854.42*	*426.30*	*629,965.6*	*876,966.68*
Transportation	512,784.50	116,658.24	476,354.48	716,766.96	887.88	1,310,667.56	1,823,452.06
Retail Purchases	374,295.00	85,152.00	347,704.00	523,046.16	649.74	956,551.90	1,330,846.90
Attractions & Entertainment	86,030.50	19,584.96	79,971.92	117,846.82	147.00	217,550.70	303,581.20
Other	149,730.00	34,060.80	139,081.60	209,864.20	258.72	383,265.32	532,995.32
Total	***2,137,173.50***	***486,217.92***	***1,985,389.84***	***2,984,914.66***		***701.46***	***5,460,223.88***

Table 10. Economic Effects of Expenditures by Visitors for Alternative B

	DIRECT EFFECT	INDIRECT EFFECT	INDUCED EFFECT	TOTAL EFFECT	MULTIPLIER
Total Estimated Expenditure	$7,597,397.38				
Total Industry Output	$5,705,037.00	$1,963,795.00	$1,632,084.00	$9,300,916.00	1.63
Employee Compensation	$1,449,765.00	$563,267.00	$514,971.00	$2,528,003.00	1.74
Total Other Income	$882,562.00	$480,460.00	$416,502.00	$1,779,524.00	2.02
Employment	115.3	25.9	25.7	165.9	1.44

Multipliers are calculated as the total effect divided by the direct effect.

Table 11. Estimated Number of Trail Visits for Alternative C.

	EXISTING TRAILS (ALTERNATIVE A)	NEW FOOT TRAILS TRAFFIC ONLY	NEW FOOT TRAFFIC AND BIKE TRAILS	NEW FOOT TRAFFIC AND HORSE TRAILS	TOTAL
Hikers	180,925	37,254	97,570	0	315,749
Bicyclists	3,500	0	97,570	0	101,070
Horse users	500	0	0	0	500
Total Users	184,925	37,254	195,195	0	417,374

Alternative C: Independent Networks Although this alternative is not as expansive as Alternative B, it proposes considerably more miles of trail than Alternative A. Within this alternative are 178 total miles of trail, including 21 new miles of foot traffic only trails and 55 new miles of foot traffic/bicycling trails.

Table 12. Estimated Trail Related Expenditures for Alternative C.

	CURRENT USE ALTERNATIVE A TRAILS	NEW FOOT TRAFFIC ONLY TRAILS	NEW MULTIPLE USE TRAILS				
Expense Categories		Foot Users	Foot Users	Bikers	Horse	New Trails	Total
		n=37,254	n=97,570	N=97,570	n=0	Subtotal	Expenditures
Food	$	$	$	$	$	$	$
Restaurants	480,952.25	95,742.78	250,754.90	405,891.20	0	752,388.88	1,233,341.13
Other F&B	286,380.25	56,998.62	149,282.10	242,949.30	0	449,230.02	735,610.27
Food Total	*767,332.50*	*152,741.40*	*400,037.00*	*648,840.50*	*0*	*1,201,618.90*	*1,968,951.40*
Lodging							
Hotel/Motel	200,234.75	39,861.78	104,399.90	168,796.10	0	313,057.78	513,292.53
Camping	46,766.25	9,313.50	24,392.50	39,028.00	0	72,734.00	119,500.25
Lodging Total	*247,001.00*	*49,175.28*	*128,792.40*	*207,824.10*	*0*	*385,791.78*	*632,792.78*
Transportation	512,784.50	102,075.96	267,341.80	433,210.80	0	802,628.56	1,315,413.06
Retail Purchases	374,295.00	74,508.0	195,140.00	316,126.80	0	585,774.80	960,069.80
Attractions & Entertainment	86,030.50	17,136.84	44,882.20	71,226.10	0	133,245.14	219,275.64
Other	149,730.00	29,803.20	78,056.00	126,841.00	0	234,700.20	384,430.20
Total	***2,137,173.50***	***425,440.68***	***1,114,249.40***	***1,804,060.30***	***0***	***3,343,759.38***	***5,480,932.88***

Table 13. Economic Effects of Expenditures by Visitors for Alternative C

	DIRECT EFFECT	INDIRECT EFFECT	INDUCED EFFECT	TOTAL EFFECT	MULTIPLIER
Total Estimated Expenditure	$5,480,932.88				
Total Industry Output	$4,115,788.00	$1,416,742.00	$1,177,469.00	$6,709,999.00	1.63
Employee Compensation	$1,045,957.00	$1406,360.00	$1371,527.00	$1,823,844.00	1.74
Total Other Income	$636,718.00	$346,621.00	$300,485.00	$1,283,824.00	2.02
Employment	83.2	18.7	17.8	119.7	1.44

Multipliers are calculated as the total effect divided by the direct effect.

In comparing the three proposed alternatives, it appears as if Alternative B would provide the greatest amount of positive economic impact to the DWGNRA region. The estimated expenditures for Alternative B of are more than triple the $2,137,173.50 of expenditures for the existing situation and more than two million dollars over the of estimated expenditures for Alternative C. A complete comparison of the estimated expenditures for each alternative, broken down by category, is included below:

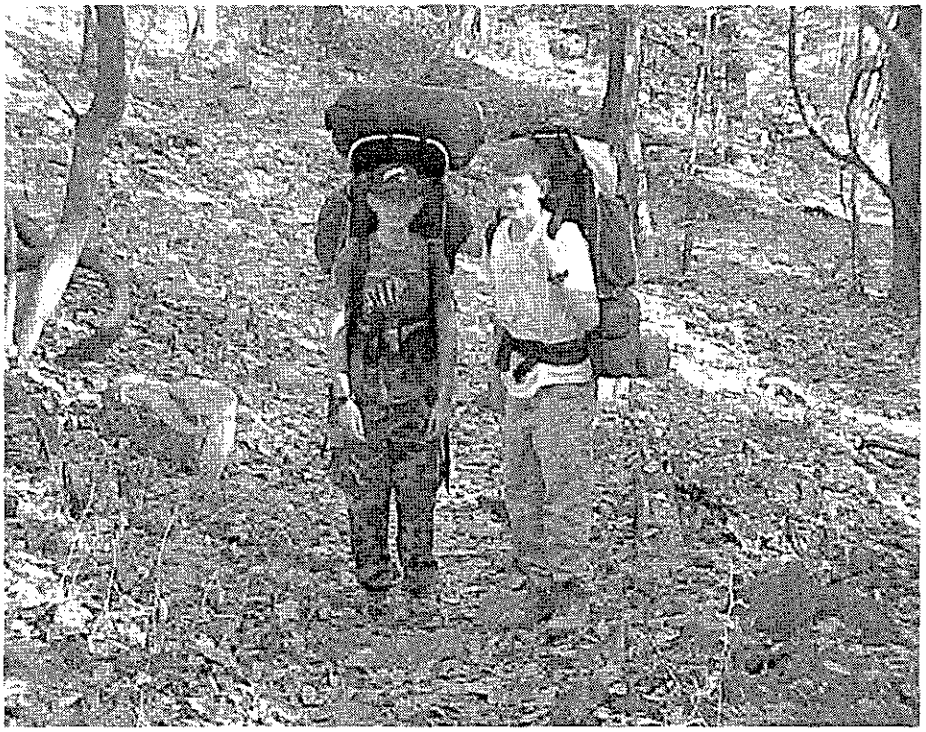


Table 14. Comparison of Estimated Expenditures Between Alternatives

	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
Expense Categories	Expenditures		
Food			
Restaurants	480,952.25	1,709,569.67	1,233,341.13
Other F&B	286,380.25	1,019,985.55	735,610.27
Food Total	*767,332.50*	*2,729,555.22*	*1,968,951.40*
Lodging			
Hotel/Motel	200,234.75	711,440.45	513,292.53
Camping	46,766.25	165,526.23	119,500.25
Lodging Total	*247,001.00*	*876,966.68*	*632,792.78*
Transportation	512,784.50	1,823,452.06	1,315,413.06
Retail Purchases	374,295.00	1,330,846.90	960,069.80
Attractions & Entertainment	86,030.50	303,581.20	219,275.64
Other	149,730.00	29,803.20	78,056.00
Total	***2,137,173.50***	***7,597,397.38***	***5,480,932.88***

UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts from implementing any of the alternatives include:

- Short and long-term disturbance and vegetation loss may result from construction activities relating to new trails and trailheads. Implementation of appropriate erosion control and revegetation measures would minimize the magnitude of these effects where they occur.

- Short and long-term changes in wildlife distribution due to human presence may occur. Construction activities relating to upgrading present trails or the development of new trails will result in a loss of wildlife habitat and displace wildlife in other areas.

- Archeological resources may be adversely impacted by development activities. At this time, no known significant archeological resources would be impacted by the improvement or development of trails and trailheads. If significant archeological resources were found before or during construction activities, the facilities would be relocated or the archeological resources could be excavated to salvage data. Under the latter condition, some impacts to archeological resources would be unavoidable.

- The process of resolving conflicts among different users through restrictions placed on particular uses may have an adverse affect on some users. For example, restricting equestrian and snowmobile use on the McDade Recreational Trail may adversely affect those who participate in those activities.

RELATIONSHIP BETWEEN SHORT-TERM USES AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

NPS is required to describe actions in terms of the NEPA objective to maintain and enhance the long-term productivity of the environment. These alternatives include numerous elements that would enhance the long-term productivity of the environment.

Relocating trails away from sensitive areas or closing trails will help protect rare, threatened and endangered species habitats and archeological sites. Clearing of vegetation for trail improvements and new construction may allow the opportunity to remove exotic plants and minimize further invasion. Directing visitor use along designated trails to access special resources such as waterfalls and hemlock ravines may reduce use of informal trails that result in soil erosion, compaction and trampling of adjacent vegetation.

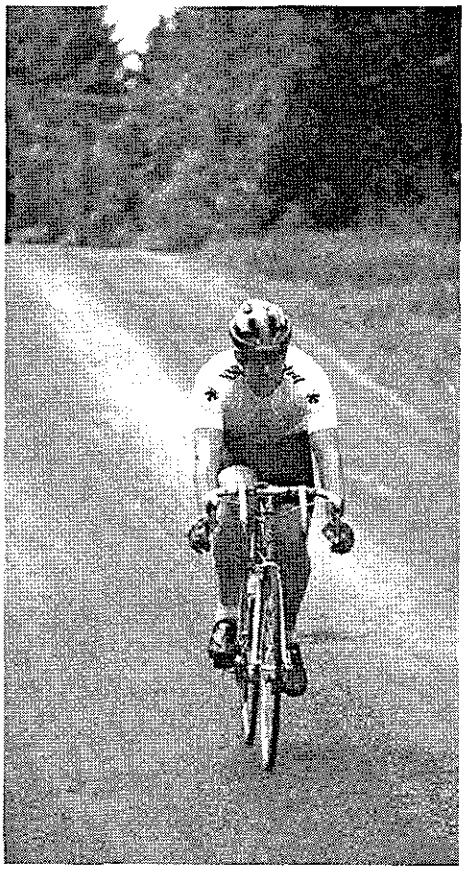
IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

An irreversible commitment of resources is one that cannot be changed once it occurs and irretrievable commitment means that the resource cannot be recovered or reused.

Limited amounts of non-renewable resources would be used for construction projects, including energy and materials There would be permanent soil and vegetation loss in areas of new trail construction.These resources are irretrievable once they are committed.

CHAPTER 5: CONSULTATION AND COORDINATION

HISTORY OF COMMUNITY PARTICIPATION



There are many different public agencies, local governments, non-profit organizations and individual citizens who have an interest in this plan. As part of the scoping for this GMPA, a series of public workshops were held in order to capture ideas, comments and concerns.

Three preliminary community workshops were held in September 1997 in Matamoras and Bushkill (PA), and Oxford (NJ). The park sent 250 letters to potential participants and placed notices in the local newspapers and the Federal Register. Members of the community heard a brief presentation about why the park needs a trail plan and ideas on how it might be developed. Participants were then involved in a variety of small and large group exercises focusing on their wishes for, and concerns about, a new designated park trail system. Comment sheets were also available for more extensive thoughts.

In November 1997, a summary of the comments received at the September meetings was sent back to participants. The summary reflected the thoughts of the many participants and was not edited; comments appeared as they were originally recorded. The planning team received many suggestions for potential trail areas and expressions of concern over use conflict and resource protection.

In January 1998, a Notice of Intent to Pursue an Environmental Impact Statement (EIS) was placed in the Federal Register. In February 1998, the park held two meetings in Oxford (NJ) and Bushkill (PA) to describe both the EIS and GMPA processes and gather additional concerns and ideas. The results of these meetings helped the planning team develop different options for a new system.

Three alternatives for designation of a new trail system were presented at two meetings in Oxford (NJ) and Bushkill (PA) in March 1998. Resource information, criteria for trail selection and an explanation of the philosophy for each alternative were presented. Participants gave both verbal and written comments that were incorporated in the selection of alternatives presented in this document.

This document was mailed to 325 persons and 90 agencies and organizations. A detailed list of these recipients begins on page 80. In addition, this document is available on the park's website at http//www.nps.gov/dewa and in all public libraries of municipalities adjacent to the park.

COMPLIANCE REQUIREMENTS

CULTURAL RESOURCES

Potential impacts on the park's cultural resources will be addressed under the provisions for assessing effects outlined in 36 CFR Part 800, regulations issued by the *Advisory Council on Historic* Preservation (ACHP) implementing section 106 of the National Historic *Preservation Act of 1966, as amended* (NHPA; 16 USC 470 et seq.) Under the "Criteria of Effect" (36 CFR Part 800.9(a), federal undertakings are considered to have an effect when they alter the character, integrity, use of cultural resource, or the qualities that qualify a property for listing in the National Register of Historic Places.

The NPS will consult with the respective Pennsylvania and New Jersey State *Historic Preservation Officers (SHPO)* and the ACHP to ensure that NPS operations, management and administration provide for the site's cultural resources in accordance with the intent of NPS policies and with sections 106, 110, and 111 of the NHPA, as stated in the 1995 Programmatic Agreement (PA) among the NPS, the ACHP and the National Conference of State Historic Preservation Officers. Under section V.A. of the programmatic agreement, all undertakings that are not considered programmatic exclusions would be reviewed in accordance with 36 CFR Part 800.

Internally, the NPS will complete an "Assessment of Actions Having an Effect on Cultural Resources" (XXX form) prior to implementation of any proposed action. The form would document any projected effects and outline actions proposed to mitigate any effects. All implementing actions for cultural resources will be reviewed using the XXX form and reviewed by the park's team of cultural resource advisors as specified in the 1995 PA.

Before any ground-disturbing action by the NPS, the park's archeologist will determine the need for archeological inventory or testing. Any such studies will be carried out and evaluated for effect before construction, in consultation with the state historic preservation officer, and the ACHP.

Letters were sent to Pennsylvania and New Jersey SHPOs and the ACHP in February 1998 notifying them of the park's intention to pursue a GMPA and EIS.

NATURAL RESOURCES

In the Commonwealth of Pennsylvania, natural resource compliance is coordinated with the U.S. Corps of Engineers, Pennsylvania Department of Environmental Protection (DEP) and in the State of New Jersey, the New Jersey Department of Environmental Protection. During the NEPA compliance process, consultation with the respective DEPs will ensure compliance with all state air and water quality standards. Any actions in floodplains or wetlands in the park will comply with Executive Orders 11988 and 11990 (floodplain management and wetlands protection). Any necessary approvals or permits from the states or other federal agencies will be obtained prior to action.

The NPS will consult with the U.S. Fish and Wildlife Service (USFWS) to avoid or mitigate adverse effects to endangered and threatened species and critical habitat. A letter was sent to the USFWS in February 1998 notifying them of the park's decision to pursue a GMPA and EIS.

As individual trails are upgraded or developed, and where environmental assessments are necessary, a determination will be made concerning the environmental consequences of a proposed action. If no significant adverse effects are identified, a Finding of No Significant Impact (FONSI) will be prepared and appended to the GMP. If the proposed trail is found to have potential for significant impact, the trail will be re-designed to avoid and minimize the impact. Alternatively, an EIS may be prepared which would document the potential adverse impact in a Record of Decision (ROD). The FONSI or ROD would conclude the compliance process for the National Environmental Policy Act for the involved actions.

Appendix C contains a partial listing of laws, regulations and policies that pertain to the planning process.

NATIONAL PARK SERVICE TEAM AND CONTRIBUTORS

DELAWARE WATER GAP NATIONAL RECREATION AREA

William Laitner, Superintendent
Dave Herrera, Assistant Superintendent
Bob Kirby, Assistant Superintendent
Elizabeth Johnson, Chief of Natural Resources (former)
Dennis McGinnis, Chief of Maintenance (former)
Doyle Nelson, Chief Ranger
Randy Turner, Chief of Visitor Services and Cultural Resources (former)

Allan Ambler, Biologist
Brad Clawson, NJ Operations Supervisor
Kathy Commisso, Secretary
Larry Commisso, Resource Management Ranger
Bob Geis, Roads & Trails Facilities Manager
Keith High, GIS Specialist
Cynthia Hunter, Civil Engineer
Jacki Katzmire, Natural Resource Specialist
Jennifer Kavanaugh, Pennsylvania Ranger
Sue Kopezynski, Historian
Zehra Osman, Community Planner
Jeff Shreiner, Biologist
Tom Solon, Historical Architect
Barry Sullivan, New Jersey District Ranger (former)
Wayne Valentine, New Jersey District Ranger
Ed Whitaker, Pennsylvania District Ranger
John Wright, Archeologist

PHILADELPHIA SUPPORT OFFICE-STEWARDSHIP & PARTNERSHIPS

Mark Alexander, Landscape Architect
James Farrell, Visual Production Specialist
Deirdre Gibson, Park Planning Program Manager
Helen Mahan-Forester, Community Planner and Project Leader
Cynthia Wilkerson, Environmental Protection Specialist

CONSULTANTS (ECONOMIC ANALYSIS)

Alan Graefe, Pennsylvania State University
Arun Upneja, Pennsylvania State University
Hans Vogelsong, Pennsylvania State University
Roger Moore, North Carolina State University

LIST OF RECIPIENTS

New Jersey Congressional Delegation
Senator Frank Lautenburg
Senator Robert Torricelli
Congresswoman Marge Roukema

Pennsylvania Congressional Delegation
Senator Rick Santorum
Senator Arlen Specter
Congressman Pat Toomey
Congressman Don Sherwood

FEDERAL AGENCIES

U.S. Department of the Interior
- Appalachian Trail Park Office
- Delaware & Lehigh Canal National Heritage Corridor/State Park
- Upper Delawarre National Scenic & Recreational River

U.S. Fish and Wildlife Service
U.S. Geological Survey
U.S. Army Corps of Engineers
Advisory Council on Historic Preservation
U.S. Department of Agriculture
- U.S. Forest Service
- National Resources Conservation Service

New Jersey State Agencies
Govenor's Office
State Historic Preservation Office
Department of Environmental Protection
High Point State Park
Stokes State Forest
Worthington State Forest
Wildlife Management Areas
- Walpack

Department of Transportation

Pennsylvania State Agencies
Govenor's Office
State Historic Preservation Office
Department of Environmental Protection
Department of Conservation and Natural Resources
Game Commission
Delaware State Forest
Fish & Boat Commission
Department of Transportation

ADJACENT MUNICIPALITIES
New Jersey
Sussex County
- Frankford Township
- Hampton Township
- Montague Township
- Sandyston Township
- Stillwater Township
- Walpack Township

Warren County
- Blairstown Township
- Hardwick Township
- Knowlton Township

PENNSYLVANIA
Monroe County
- City of East Stroudsburg
- City of Stroudsburg
- Delaware Water Gap Borough
- Middle Smithfield township
- Smithfield Township
- Stroud Township

Northampton County
- Upper Mount Bethel Township

Pike County
- City of Matamoras
- Delaware Township
- Dingman Township
- Lehman Township
- Milford Borough
- Milford Township
- Westfall Township

PARTNERSHIP AGENCIES AND ORGANIZATIONS
American Youth Hostel
Appalachian Mountain Club
Appalachian Trail Conference
Delaware Highlands Conservancy
Delaware River Basin Commission
Delaware Water Gap NRA Citizens Advisory Commission
Delaware Water Gap Equestrian Advisory Committee
Eastern National Association
Economic Development Council of Northeast Pennsylvania
Kittitany Mountain Bike Association
Montague Association for the Restoration of Community History
Minisink Valley Historical Society
Monroe Historical Association
NJ-NY Trail Conference
PA State Snowmobilers Association
Pennsylvania Rails-to-Trails Conservancy
Pike County Chamber of Commerce
Pike County Historical Society
Pocono Environmental Education Center
Pocono Mountain Vacation Bureau
Skylands of NJ Tourism Council
The Nature Conservancy
Upper Delaware Citizens Advisory Council
Upper Delaware Council
Walpack Historical Society
Walpack Valley Environmental Education Center

UNIVERSITIES
East Stroudsburg University
New York University
North Carolina State University
Pennsylvania State University

APPENDIX A: SUMMARY OF ALTERNATIVES

TRAILNAME	STATE	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
Adams Creek to Conashaugh Link	PA		River Valley	
Adams Creek	PA		River Valley	Adams Creek
American Youth Hostel	NJ	Present Park		
Appalachian National Scenic	PA/NJ	Present Park	Appalachian	Appalachian
Arrow Island	PA	Present Park	Gap View	Gap View
Blue Blaze	NJ	Present Park	Appalachian	Appalachian
Blue Mountain Lake	NJ	Present Park	Country Road	Blue Mountain Lake
Bride and Groom	PA		River Valley	Adams Creek
Buttermilk Falls	NJ	Present Park	Appalachian	Buttermilk/Silver Spray
Childs Park	PA	Present Park	River Valley	Dingmans Creek
Cliff Park	PA		River Valley	Raymondskill
Conashaugh View	PA	Present Park	River Valley	Conashaugh Horse
Coppermine	NJ	Present Park	Appalachian	Coppermine/Kaiser
Country Road	NJ		Country Road	
Coventry Pond	NJ		Country Road	Van Campen/Millbrook
Crater Lake	NJ		Appalachian	Appalachian
Cutoff Road	NJ	Present Park		
Dingmans Creek	PA	Present Park	River Valley	Dingmans Creek
Dingmans Creek to Hornbeck	PA		River Valley	
Donkeys Corner	NJ	Present Park	Country Road	
Eshback	PA		River Valley	Toms Creek/Eshback
Farmers Trace	NJ		Country Road	
Gap to Slateford	PA		Gap View	Gap View
Hamilton Ridge	NJ	Present Park	Country Road	Van Campen/Millbrook
Hidden Lake Loop	PA	Present Park	River Valley	River Valley
Hornbecks Creek	PA	Present Park	River Valley	Independent Trail
Hornbecks-PEEC Connector	PA		River Valley	
Kaiser	NJ	Present Park	Appalachian	Coppermine/Kaiser
Karamac	NJ	Present Park	Gap View	Gap View
Karamac Railroad	NJ		Gap View	Gap View
Kittatinny House Historic	NJ		Gap View	Gap View

APPENDIX A: SUMMARY OF ALTERNATIVES continued

TRAILNAME	STATE	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
Long Pine Pond Loop	NJ		Appalachian	Appalachian
Lower Hamilton	NJ	Present Park	Country Road	Van Campens/Millbrook
McDade Recreational	PA		River Valley	River Valley
McDade Trail to Stucki Pond	PA		River Valley	
Military Road	NJ	Present Park	Country Road	Walpack
Mill Creek	PA		River Valley	
Mountain Road	NJ		Country Road	
Orchard	NJ	Present Park	Country Road	Van Campens/Millbrook
PEEC	PA	Present Park	River Valley	PEEC
Peters Valley	NJ		Country Road	Independent Trail
Pioneer	NJ	Present Park	Country Road	Van Campens/Millbrook
Pool Colony	NJ		Country Road	Blue Mountain Lake
Railway Avenue	PA	Present Park	River Valley	Independent Trail
Rattlesnake Swamp	NJ	Present Park	Appalachian	Appalachian
Raymondskill Creek	NJ	Present Park	River Valley	Raymondskill
Red Dot	NJ	Present Park	Appalachian	Appalachian
Rivers Bend	NJ		Country Road	Van Campens/Millbrook
Silver Spray Falls	NJ		Country Road	Buttermilk/Silver Spray
Slateford Loop	NJ	Present Park	Gap View	Gap View
Snowmobile	NJ	Present Park	River Valley	Toms Creek/Eshback
Sproul	PA		River Valley	
Theune	PA		River Valley	River Valley
Thunder Mountain	NJ	Present Park	Country Road	Walpack
Toms Creek	PA	Present Park	River Valley	Toms Creek/Eshback
Upper Ridge Road	NJ	Present Park	Country Road	Independent Trail
Van Campens Glen	NJ	Present Park	Country Road	Van Campen/Millbrook
Van Campens to Rattlesnake	NJ		Country Road	
Walpack Environmental Education Center	NJ		Country Road	Walpack
Walpack Ridge	NJ		Country Road	Walpack
Woods Road	NJ		Country Road	

APPENDIX B: TRAILHEAD/PARKING AREA COST ESTIMATES

The need for restrooms at a trailhead was determined based on an analysis of parking spaces, the current volume of use per trail, and an estimate of the potential for increased use through development of a trail. The potential for increased use is quantified by: plans for expanding or upgrading a parking lot; a new trail providing a connection to other high use areas or completing a loop; the amount of time a trail user expends on a given trail and the resulting frequency a facility provides per visit; and, significant resources that would be protected by providing a restroom. In general, for parking areas with less than 10 cars, no additional comfort facilities were planned. For parking areas with greater than 10 and less than 20 spaces, 2 toilet fixtures would be provided, one for each sex. For parking areas serving greater than 20 cars, a minimum of 4 toilet fixtures may be provided.

Water based, conventional septic tank and leachfield systems will be the first priority wherever economical and where the soils permit. When this option fails, alternate systems will be considered. The types of restroom services vary, depending upon such factors as locality, climate, topography, local soils, and accessibility. Federal guidelines and research documents, such as NPS-83, Guidelines for the Selection of a Toilet Facility, Remote Waste Management, In Depth Design and Maintenance for Vault Toilets, and, Composting Toilet Systems, Planning, Design, and Maintenance will be utilized in the selection of an appropriate wastewater treatment and disposal system specific to each remote site. Portable chemical toilets are inexpensive alternatives for areas with access for pumping and seasonal use. These toilets are often not well received by the public, inspire vandalism and, per NPS-83 are not recommended for use in a permanent installation. Vault toilets are typically low cost to construct, are not unduly limited by the numbers of visitors that can be served and are suggested for use in areas that are accessible to pumping service vehicles. However, vault toilets can create odor problems where wind is limited, air inversions occur or where convection currents from the solar heat gain is limited. Electric fans can be an alternative to assist in evacuating the restroom, but odors can still accumulate just outside the vent and therefore, just outside the building. Maintenance is also a chore as disgruntled visitors often resort to throwing items down the fixture that can not be pumped. Composting toilets are suitable for remote areas where pumping is not an option. These fixtures are not recommended for conditions where visitation is greater than 75 visitors per day per toilet. They often require a lot of attention, continual addition of wood chips and aerating the compost, draining excess liquids etc.

Selection of restroom facilities for the trailheads demonstrating upgrades of comfort stations or construction of a new facility was made on the above criteria. Best design and construction practices will be incorporated to protect public health while reducing capital investment and minimize maintenance labor and replacement costs at each trailhead.

	EXISTING CONDITIONS			ALTERNATIVE B PROPOSED				ALTERNATIVE C PROPOSED			
TRAIL NAME	SURFACE TYPE	PARKING SPACES	COMFORT STATION	SURFACE TYPE	PARKING SPACES	COMFORT STATION	COST	SURFACE TYPE	PARKING SPACES	COMFORT STATION	COST
ADA	DIRT	6		GRAVEL	6		$4,660	GRAVEL	6		$4,660
ADAMS CREEK	DIRT	8		GRAVEL	8		$6,660	GRAVEL	8		$6,660
AMC LOT	GRAVEL	30		GRAVEL	30		$7,200	GRAVEL	30		$7,200
ARROW ISLAND	ASPHALT	18		ASPHALT	18	CHEMICAL	$10,400	ASPHALT	18	CHEMICAL	$10,400
BLUE MOUNTAIN LAKE	GRAVEL	20	CHEMICAL	GRAVEL	20		$5,700	GRAVEL	20		$5,700
BLUE MOUNTAIN ROAD	DIRT	12		GRAVEL	12		$16,3400	GRAVEL	12		$16,340
BRIDE AND GROOM	DIRT	3		GRAVEL	3		$2,330	GRAVEL	3		$2,330
BUCK LOT	DIRT	4		GRAVEL	10	CHEMICAL	$12,650				
BUSHKILL LAUNCH	ASPHALT	25	COMPOST	ASPHALT	25		$2,700	ASPHALT	25		$2,700
BUSHKILL VISITOR CENTER	GRAVEL	40	WATER	GRAVEL	40		$4,300	GRAVEL	40		$4,300
BUTTERMILK FALLS	GRAVEL	40	CHEMICAL	GRAVEL	20		$5,700	GRAVEL	20		$ 5,700
CAMP ROAD	DIRT	3		GRAVEL	3		$2,330	GRAVEL	3		$2,330
CHILDS PARK	GRAVEL	55	COMPOST	GRAVEL	25		$9,150	GRAVEL	25		$9,150
CONASHAUGH	GRAVEL	25	CHEMICAL		25		$6,450	GRAVEL	25		$6,450
COPPERMINE	DIRT	20	CHEMICAL	GRAVEL	20		$12,600	GRAVEL	20		$12,600
CRATER LAKE	GRAVEL	20		GRAVEL	20	COMPOST	$48,500	GRAVEL	20	COMPOST	$48,500
DINGMANS FALLS	ASPHALT	30	CHEMICAL	ASPHALT	30		$2,700	ASPHALT	30	COMPOST	$2,700
DINGMANS LAUNCH	ASPHALT	80	WATER	ASPHALT	80		$2,700	ASPHALT	80		$2,700
DONKEY CORNER	DIRT	2		ASPHALT	2		$1,820				
DUCK POND	ASPHALT	12	VAULT	ASPHALT	12		$2,700	ASPHALT	12		$2,700
DUNNFIELD	ASPHALT	30	YES	ASPHALT	12		$5,400	ASPHALT	12		$2,700
ESCHBACK	DIRT	20		GRAVEL	20	COMPOST	$57,000	GRAVEL	20	COMPOST	$57,600

APPENDIX B: TRAILHEAD/PARKING AREA COST ESTIMATES

	EXISTING CONDITION			ALTERNATIVE B PROPOSED				ALTERNATIVE C PROPOSED			
TRAIL NAME	SURFACE TYPE	PARKING SPACES	COMFORT STATION	SURFACE TYPE	PARKING SPACES	COMFORT STATION	COST	SURFACE TYPE	PARKING SPACES	COMFORT STATION	COST
FARMERS TRACE	DIRT	4		GRAVEL	4		$2,840				
HACKERS FALLS	GRAVEL	10		GRAVEL	10	CHEMICAL	$7,700	GRAVEL	10	CHEMICAL	$7,700
HAMILTON	GRAVEL	5		GRAVEL	8		$5,750	GRAVEL	8		$5,750
HIALEAH	GRAVEL	20	VAULT	GRAVEL	25	COMPOST	$90,150	GRAVEL	25	COMPOST	$90,150
HIDDEN LAKE	ASPHALT	20	CHEMICAL	GRAVEL	20		$8,400	GRAVEL	20		$8,400
HORNBECKS	GRAVEL	4		GRAVEL	4		$2,840	GRAVEL	4		$2,840
JAGER ROAD	DIRT	10		GRAVEL	10	CHEMICAL	$12,650	GRAVEL	10	CHEMICAL	$12,650
KAISER	GRAVEL	20		GRAVEL	20	CHEMICAL	$10.700	GRAVEL	20	CHEMICAL	$10,700
KARAMAC	GRAVEL	15		GRAVEL	15	CHEMICAL	$9,950	GRAVEL	15	CHEMICAL	$9,950
LENAPE	GRAVEL	25	CHEMICAL	GRAVEL	25		$6,450	GRAVEL	25		$6,450
LOCH LOMOND	GRAVEL	12	CHEMICAL	GRAVEL	12		$4,500				
LOWER ESHBACK	GRAVEL	10	COMPOST	GRAVEL	10		$4,200	GRAVEL	10		$4,200
MILFORD BEACH	ASPHALT		WATER	ASPHALT			$2,700	ASPHALT			$2,700
MILL CREEK	GRAVEL	10		GRAVEL	10	CHEMICAL	$6,700				
MILLBROOK	ASPHALT		WATER	ASPHALT			$5,400	ASPHALT			$5,400
MILLVILLE	DIRT	5		GRAVEL	10	CHEMICAL	$16,575				
OLD DINGMANS ROAD	DIRT	4		GRAVEL	10	CHEMICAL	$11,830				
OLD TRAIN STATION	GRAVEL	30		GRAVEL	30	COMPOST	$84,900	GRAVEL	30	COMPOST	$84,900
PETER'S VALLEY	ASPHALT	6		ASPHALT	6		$800	ASPHALT	6		$800
RATTLESNAKE SWAMP	GRAVEL	8		GRAVEL	8		$5,560	GRAVEL	8		$5,560
RAYMONDSKILL	ASPHALT DIRT	20 10	COMPOST	ASPHALT GRAVEL	 10		$2,700 $5,750	ASPHALT GRAVEL	 10		$2,700 $5,750
RED DOT (NOT NPS PROPERTY)	ASPHALT	20		ASPHALT	20		$2,700	ASPHALT	20		$2,700
RESORT POINT	ASPHALT	12		ASPHALT	12	CHEMICAL	$5,200	ASPHALT	12	CHEMICAL	$ 5,200
SHANNA	DIRT	40		GRAVEL	40	COMPOST	$67,500	GRAVEL	25		$9,150
SILVER SPRAY FARMS	DIRT	2		GRAVE;	2		$1,820	GRAVEL	2		$1,820
SKYLINE	GRAVEL	8		GRAVEL	8		$5,300	GRAVEL	8		$15,300
SMITHFIELD BEACH	ASPHALT	278	COMPOST	ASPHALT	278		$5,400	ASPHALT	278		$5,400
STUCKI POND	GRAVEL	10		GRAVEL	10	CHEMICAL	$4,375	GRAVE;	10	CHEMICAL	$4,375
THREE BRIDGES LOT (NOT NPS PROPERTY)	DIRT	25		GRAVEL	25	N/A	$2,700				
TOM'S CREEK	GRAVEL	20	CHEMICAL	GRAVEL	20	COMPOST	$50,700	GRAVEL	20	COMPOST	$50,700
TURN FARM	GRAVEL	14		GRAVEL	14	CHEMICAL	$9,800	GRAVEL	14	CHEMICAL	$9,800
UPPER ESHBACK	DIRT	4		GRAVEL	4		$2,840	GRAVEL	4		$2,840
UPPER HORNBECKS	DIRT	3		GRAVEL	3		$2,330	GRAVEL	3		$2,330
VAN CAMPEN INN	GRAVEL	20		GRAVEL	20	COMPOST	$50,700	GRAVEL	20	COMPOST	$50,700
VAN CAMPEN GLEN	GRAVEL	15	CHEMICAL	GRAVEL	15		$4,950	GRAVEL	15		$4,950
VAN NESS ROAD	GRAVEL	4		GRAVEL	4		$2,840				
WALPACK ENVIRONMENTAL	DIRT	30	WATER	GAVEL	30		$20,250	GRAVEL	30		$02,250
WALPACK RIDGE	GRAVEL	5		GRAVEL	5	CHEMICAL	$6.700	GRAVEL	10	CHEMICAL	$6,700
WATERGATE	ASPHALT	50	WATER	ASPHALT	50		$5,400	ASPHALT	50		$5,400
ZIMMERMAN	DIRT	5		GRAVEL	5		$5,250	GRAVEL	5		$5,250

ALTERNATIVE A PARKING AREA ALTERNATIVE B ALTERNATIVE C

APPENDIX C: PERTINENT LAWS AND REGULATIONS

The following is a partial list of laws, regulations, and policies that pertain to the GMPA and to compliance actions necessary during plan implementation.

FEDERAL LEGISLATION

American with Disabilities Act (42 USC & 1201 et seq.)
Antiquities Act of 1906 (16 USC & 470a et seq.)
Archeological and Historic Preservation Act of 1974 (16 USC & 469a-1)
Archeological Resources Preservation Act of 1979 (16 USC & 470)
Bald Eagle Act (16 USC & 668)
Clean Air Act, as amended (42 USC & 7401 et seq.)
Clean Water Act (33 USC &1251 et seq.)
Enabling Legislation, Delaware Water Gap National Recreation Area (1965)
Endangered Species Act of 1973, as amended (16 USC &1531 et seq.)
Fish and Wildlife Coordination Act (16 USC & 661, 662)
Historic Sites Act of 1935 (P.L. 74-292; 49 Stat. 666; 16 USC)
National Environmental Policy Act of 1969 (42 USC & 4321 et seq.)
National Historic Preservation Act of 1966, as amended (16 USC & 470f); Amended 1980 and 1992; P.L. 96-515; 94 Stat. 2997)
National Park Service Organic Act (16 USC & 1 et seq.)
Native American Graves Protection and Repatriation Act (25 U.S.C. 3001)
Parks, Forests, and Public Property (36 CFR 13)
Prime and Unique Agricultural Lands and NEPA (Federal Register 45:59189)
Rehabilitation Act of 1973, as amended (29 USC 792); Amended 1978;P.L. 95-602

EXECUTIVE ORDERS

Executive Order 11593, "Protection and Enhancement of the Cultural Environment"
Executive Order 11988, "Floodplain Management"
Executive Order 11990, "Protection of Wetlands"

POLICIES AND REGULATIONS

National Park Service, U.S. Department of the Interior, Management Policies, (1988)

APPENDIX D: COST ESTIMATES

ESTIMATED COSTS

This GMPA gives guidance in the form of management prescriptions for future decision making regarding resource protection, public use and development, but it does not elaborate on the details of definitive actions. Therefore, the costs provided in this appendix are indicative of the costs of implementing the alternatives. They are provided so that reviewers can compare the general costs and benefits of the GMPA alternatives. Specific costs would be determined for individual trails and trailhead components after detailed designs are produced.

The costs estimated for implementing Alternative B and Alternative C were calculated using NPS Class C costs. A Class C estimate is a conceptual cost estimate based on square foot and unit costs of similar construction or identifiable unit costs of similar construction items. These estimates were prepared without detailed designs or a fully defined scope of work, since those are not available at this stage of the planning process.

The number of additional NPS staff required for Alternative B and C was calculated by estimating the time needed to accomplish the actions listed for each prescription. Support costs were based on current costs, and include training, travel, utilities, supplies, vehicles and other related expenses. This information is included in the totals for each action alternative so that reviewers may get a more complete idea of the additional personnel and costs required to support each alternative.

Table 15: Existing Trail Operations and Maintenance Costs- Alternative A

Activity	Annual Cost
Development and Maintenance	$35,000
Trails Planning, Coordination and Management	$15,000
Park Trail Crew	$15,000
Total	$65,000

Table 16: Projected Additional Operations and Maintenance Costs-Alternatives B & C

Activity	Annual Cost
Establish park trails office:	
Trail Coordinator, GS-023-09	$46,200
Support Costs (20%)	9,200
Increase ranger patrol:	
Seasonal patrol rangers, GS-025-05	$44,000
Support costs (20%)	8,800
Install trail signage:	
Trail signs	$1,000
Wayside exhibits	5,000
Trailhead bulletin boards	4,000
Expand seasonal maintenance crew:	
Crew Leader (WG-6) + 5 Laborers (WG-3)	$72,500
Support Costs (20%)	14,500
Create or revise publications (maps, brochures)	$5,000
Conduct workshops	$2,500
Increase monitoring program:	
Seasonal biological technician, GS-5	$10,000
Special studies contracting	10,000
Total Estimated Annual Operating Costs	**$232,700**

Table 17: Projected Development Costs - Alternative B

CONSTRUCTION TYPE	MILES	CONSTRUCTION COST PER MILE	NET CONSTRUCTION COSTS
Natural Surface: Improvements and Upgrades	58	$24,600	$1,426,800
Natural Surface: New Construction	17	$32,100	$552,120
Gravel Surface: Improvements and Upgrades	94	$97,000	$9,088,900
Gravel surface: New Construction	20	$145,00	$2,827,500
Trailheads/Parking Lots			$741,570
Alternative B Total:			*$14,636,890*

Table 18: Projected Development Costs - Alternative C

CONSTRUCTION TYPE	MILES	CONSTRUCTION COST ER MILE	NET CONSTRUCTION COSTS
Natural Surface: Improvements and Upgrades	51	$24,600	$1,261,980
Natural Surface: New Construction	17	$32,100	$559,650
Gravel Surface: Improvements and Upgrades	81	$97,000	$7,818,200
Gravel surface: New Construction	19	$145,00	$2,682,500
Trailheads/Parking Lots			$679,115
Alternative C Total:			*$12,971,445*

APPENDIX E: CARRYING CAPACITY

Establishing a carrying capacity for trails requires determining the point at which additional users degrade park resources and the interpretive experience suggested in each network. Visitors may enter DWGNRA at over 50 points, including interstate highways, state and local roads, and by river access both north and south of park boundaries. As a result, most visitors that enter and use the national recreation area are not contacted by a ranger or park representative, and many are not properly oriented and informed. The park does not have accurate counts of visitors using various trails. For this plan, current and projected visitor use was determined by working with Pennsylvania State University staff. Appendix F on page 142 provides estimated numbers of trail users.

Currently, present park trails associated with major visitor centers, picnic areas, or attractions such as waterfalls, are experiencing the highest concentrated use.- Majority of the use occurs on summer weekends in places such as the Appalachian National Scenic Trail off of Interstate-80, Dingmans Falls, Childs Park, and Buttermilk Falls. In the past few years, DWGNRA has taken positive steps to address trail-related resource impacts. Through the assistance of their trail partners, new boardwalks and steps were installed at Dingmans Falls and Buttermilk Falls to reduce soil erosion and direct visitor use.

One of the major goals of this plan is to disperse visitors and various uses through the development of additional trails and facilities. Designing and establishing multi-use trails, such as the McDade Recreational Trail and the Country Road Trail, will help to manage concentrated use in the park, by offering a safe recreational trail experience while helping to protect the park's natural and cultural resources from uncontrolled visitation. In addition, the numbers of users on trails is often determined by the amount of access points, parking spaces and facilities available to them. Appendix B on page 135 provides a list of 62 existing and potential trailheads that vary in size and facilities. These trailheads would be designed and developed to compliment the adjacent trails and their appropriate uses.

Each network, and its collection of trails, was designed to focus on a specific visitor experience and provide access to significant park resources. Opportunities to explore the park in a variety of ways would be promoted.

In order to increase the capacity of the trails system to handle large amounts of visitation, former road traces and disturbed areas became the foundation for improvements and developments. Trails will be enhanced through proper design, engineering and drainage to reduce impacts and provide a safe and enjoyable experience. Park staff would also survey and document trail damage to adjacent resources. Present park trails that encourage encroachment would be relocated or eliminated. The park would establish monitoring programs and encourage partner participation in both monitoring and education

APPENDIX F: ECONOMIC IMPACTS METHODOLOGY

DETERMINING CURRENT TRAIL USE

In order to determine the economic impact of a resource on an economy, the number of people using that resource must be known. Since there is no current data concerning the number of trail users at the DWGNRA, this number had to be estimated based on the numbers that do exist. This estimate of current trail use was calculated as follows:

The DWGNRA Staff provided counts for visitation to visitor centers throughout the park (Table 19). While these numbers provide a good base for estimating visitation, some of the visitor centers are open for only a portion of the year. To estimate the total year-round visitation to the park, the percentage of visitors by month was calculated for the Kittatinny Point Visitor Center, which was the only center that provided a complete year round visitor count. These percentages were then extrapolated to the other visitor centers to estimate visitation for the months with missing data. Table 20 provides a profile of total estimated visitation for all visitor centers.

TABLE 19. VISITATION TO VISITOR CENTERS IN DWGNRA

MONTH	KITTATINY POINT VISITOR CENTER (1995)	PERCENT	BUSHKILL VISITOR CENTER (1998)	DINGMANS FALLS VISITOR CENTER (1995)	MILLBROOK VILLAGE VISITOR CENTER (1995)
Jan	1458	1%			
Feb	2714	2%			
March	4735	3%			
April	5837	4%		3359	
May	1411	9%		7107	1043
June	20278	13%		9419	1759
July	29504	18%	4410	14998	2479
Aug	39723	24%	6088	18122	2516
Sept	14280	9%	3815	7298	1497
Oct	25228	16%	3921	8709	1245
Nov	2291		1%		1418
Dec	2034		1%		221
Total	***162200***	***100%***	***18234***	***70651***	***10539***

Source DWGNRA Staff

TABLE 20. ESTIMATED VISITATION TO VISITOR CENTERS IN DWGNRA

MONTH	KITTATINY POINT VISITOR CENTER (1995)	BUSHKILL VISITOR CENTER (1998)	DINGMANS FALLS VISITOR CENTER (1995)	MILLBROOK VILLAGE VISITOR CENTER (1995)	TOTAL
Jan	1458	272	752	120	2602
Feb	2714	544	1503	240	5001
March	4735	816	2255	360	8166
April	5837	1089	3359	480	10765
May	14118	2449	7107	1043	24717
June	20278	3538	9419	1759	34994
July	29504	`4410	14998	2479	51391
Aug	39723	6088	18122	2516	66449
Sept	14280	3815	7298	1497	26890
Oct	25228	3921	8709	1245	39103
Nov	2291	272	1418	120	4101
Dec	2034	272	221	120	2647
% Accounted for	100%	67%	94%	88%	
Total					
Known	**162200**	**18234**	**70651**	**10539**	**261624**
Estimated	**162200**	**27214**	**75161**	**11976**	**276551**

In their study of visitors to the DWGNRA, Madison and Machlis (1990) found that thirty percent of park users who stop at visitor centers reported spending time hiking in the park. Therefore, it is estimated that thirty percent (82,965) of the 276,551 visitors who stopped at the visitor centers were hikers using the current DWGNRA trail system.

In addition to trail users who spend time at visitor centers, Strauss and Moran (1992) estimated that 47,400 hunters use the park on a yearly basis. It is assumed that at least 75 percent of these hunters will spend time on trails, accounting for another 35,550 trail users. Additionally, the DWGNRA staff estimated that 51,900 users spent time on the Appalachian Trail within the park, and that 25% of the 41,639 backcountry users spend at least some time hiking on trails. Therefore, by adding trail users from these three sources we estimate that the DWGNRA currently hosts 180,925 trail hikers per year. This estimate is summarized in Table 21.

TABLE 21. SUMMARY OF ESTIMATED NUMBER OF HIKERS USING DWGNRA TRAILS

SOURCE	# OF VISITORS	% OF HIKERS	NUMBER OF HIKERS
Visitor Center Counts	276,551	30	82,965
Hunters	47,400	75	35,550
Appalachian Trail Users	51,900	100	51,900
Backcountry Users	41,639	25	10,510
Total # of Hikers			**180,925**

Although this method of calculating trail use provides an adequate estimate of the number of hikers, not all trail users are hikers. Therefore, the number of other types of trail users, such as bicyclists and horseback riders, must be estimated and included to determine total trail usage. At present, hiking is the dominant trail use in the park and most trails in the park do not allow other trail uses. Bicycling and horseback use are found on only a few trails within the park. The DWGNRA staff estimate that there are currently 3,500 annual bicycle users on the trails within the park and 500 annual horseback riders. Adding these trail users to the estimated number of hikers results in a total of 184,925 annual trail users for the Delaware Water Gap National Recreation Area (Table 22).

TABLE 22. TOTAL ESTIMATED NUMBER OF TRAIL USERS AT DWGNRA

TRAIL ACTIVITY	NUMBER OF USERS
Foot Users	180,925
Bicyclists	3,500
Horse Users	500
Total	**184,925**

CALCULATION OF EXPENDITURE ESTIMATES FOR DELAWARE WATER GAP NATIONAL RECREATION AREA

In order to estimate the expenditures of DWGNRA trail users, spending data from previously completed studies was extrapolated to the DWGNRA. Nine of the economic impact studies which summarize findings at 34 separate trails contained figures for per-person/per day spending. After using a consumer price index to convert these figures to 1995 dollars, an average was taken as a base figure to estimate per person/per day expenditures for DWGNRA trail visitors. Table 23 provides a summary of how this estimate was calculated.

TABLE 23. SUMMARY OF PER PERSON/PER DAY EXPENDITURE DATA

TRAIL	STATE	DATE	PER PERSON/PER DAY EXPENDITURES	1995 $
Oil Creek State Park Bike Trail	PA	1990	$25.86	$30.91
North Central Rail-Trail	MD	1994	$6.30	$6.46
Heritage Trail, St Marks Trail, Lafayette Trail	IA, FL, CA	1992	$7.60	$8.27
6 Minnesota State Trails	MN	1990-91	$5.39	$6.44
19 Illinois Bike Trails	IL	1990	$7.95	$9.50
Elroy-Sparta Trail	WI	1989	$14.88	$18.64
Sugar River Trail	WI	1986	$9.04	$12.45
2 Mount Rogers NRA Trails	VA	1994	$17.20	$17.65
Ghost Town Trail	PA	`1996	$5.46	$5.33
Average			**$11.07**	**$12.85**

Although the total expenditures per visitor is a useful figure, it can become more valuable if broken down into various expenditure categories. To accomplish this, further extrapolation was necessary. Four studies in the literature review contained economic data from trail users which provided a breakdown of expenditures by category. The percentage of the total expenditures for each spending category was calculated for each study (Table 23) and the average of these was then applied to the $12.85 total spending figure calculated earlier. Table 24 provides estimates of trail user expenditures by expense categories.

TABLE 24. PERCENTAGE OF EXPENDITURES PER CATEGORY

TRAIL	MT ROGERS	MOORE TRAILS	OIL CREEK STATE PARK BIKE TRAIL	GHOST TOWN TRAIL	AVERAGE
EXPENSE CATEGORY	%	%	%	%	%
FOOD					
Restaurants	10	30	NA	NA	20
Other Food and Beverage	11	13	NA	NA	12
Food Total	21	43	35	44	36
LODGING					
Hotel/Motel	20	6	NA	NA	13
Camping	5	2	NA	NA	3
Lodging Total	25	8	10	3	11.5
Transportation	8	30	24	35	24
Retail Purchases	25	11	24	10	17.5
Attractions and Entertainment	6	3	7	0	4
Other	15	6	0	8	7
TOTAL				**100**	**$12.85**

TABLE 25. ESTIMATED EXPENDITURES PER PERSON/ PER DAY BY EXPENSE CATEGORY FOR DWGNRA

EXPENSE CATEGORY	%	AMOUNT
FOOD		
Restaurants	22.5	$2.89
Other Food and Beverage	13.5	$1.73
Food Total	36	$4.62
LODGING		
Hotel/Motel	9.3	$1.20
Camping	2.2	$.28
Lodging Total	11.5	$1.48
Transportation	24	$3.08
Retail Purchases*	17.5	$2.25
Attractions and Entertainment	4	$.51
Other**	7	$.90
TOTAL	**100**	**$12.85**

TABLE 26. EXPENSES PER PERSON/PER DAY BY ACTIVITY TYPE FOR DWGNRA

EXPENSE CATEGORY	FOOT USERS	BIKERS	HORSE USERS	WEIGHTED AVERAGE
Food				
Restaurants	$2.57	$4.16	$2.83	$2.89
Other Food and Beverage	$1.53	$2.49	$1.70	$1.73
Food Total	$4.11	$6.65	$4.53	$4.62
Lodging				
Hotel/Motel	$1.07	$1.73	$1.18	$1.20
Camping	$.25	$.40	$.27	$.28
Lodging Total	$1.32	$2.13	$1.45	$1.48
Transportation	$2.74	$4.44	$3.02	$3.08
Retail Purchases	$2.00	$3.24	$2.21	$2.25
Attractions and Entertainment	$.46	$.73	$.50	$.51
Other	$.80	$1.30	$.88	$.90
TOTAL	**$11.43**	**$18.50**	**$12.59**	**$12.85**

**There is very little literature stating what "Retail Purchases" includes. The assumption will be made that this category includes such items as Souvenirs, clothing, film and developing, and durable goods such as bicycle parts, hiking gear, or horse tack.*

***The "Other" category is usually used as a catch-all for respondents who have a difficult time fitting their purchases into one of the expenditure categories on the survey. This item is difficult to interpret and should only be used for the calculation of the total expenditures.*

The literature also supports the notion that different types of users spend differing amounts while visiting trails. In the studies that examined differences in expenditures between different trail user groups, it was found that on average foot users spent 89% as much as the "average" users, horse users spent 98% as much, and bikers spent 144% as much. These percentages were then applied to estimated spending averages to determine spending by different activity groups as shown in Table 25.

DETERMINING THE ECONOMIC IMPACT OF TRAIL USE AT THE DELAWARE WATER GAP NATIONAL RECREATION AREA

To determine the economic impact of trail users at the DWGNRA, the number of users was multiplied by expenditures and weighted by activity type. This was accomplished for each of the various trail alternatives. Direct expenditure data are only a portion of the economic impact resulting from visitor use, and do not adequately account for all of the impacts to the local region. Therefore, the direct expenditure data was entered into the

IMPLAN database. IMPLAN is a computerized database that models the economic impact of expenditures on the economy of a defined region. This report provides four different measures of economic impact as estimated by IMPLAN. The economic impact of the expenditures by the visitors to the proposed trails is presented below.

TOTAL INDUSTRY OUTPUT

This is the estimated value of the production of goods and services in the five-county region surrounding the Delaware Water Gap due to the expected expenditures by the proposed visitors.

EMPLOYEE COMPENSATION

Employees working in the region also benefit from the increase in the expenditures in the local economy. The benefit manifests itself in many different ways: some people may see an increase in their work hours, some may get increased compensation, or new workers may be hired. The calculation of the benefit amount takes into account the following: salaries, wages, overtime pay, health benefits, retirement benefits, etc. This measure calculates the increment of these benefits due to the increase in local spending from visitors attracted by the proposed trail system. It is the sum total of all compensation (and benefits) paid to employees.

TOTAL OTHER INCOME

This measure takes into account all the other economic benefit that accrues to individuals, not included in the Employee Compensation measure. Some examples are income to self-employed individuals, rents on property, royalties and dividends, etc.

EMPLOYMENT

Based on the economy of the region, incremental expenditures result in new jobs. These new jobs may consist of either additional hours for current employees or the hiring of new employees. IMPLAN calculates the total additional hours that result from the incremental expenditures to estimate the number of jobs that result from these expenditures.

Three kinds of economic impacts are estimated for each of these four economic categories: direct impact, indirect impact and induced impact. Direct impacts result from the initial spending by visitors to the region. The indirect impacts result from the businesses that make purchases from other businesses as a result of the initial spending. The induced impacts reflect the impact of increases in household spending resulting from increases in compensation. For example, the total money spent to eat in restaurants is the direct impact. The local expenditures made by the restaurant as a result of the increased customers represent the indirect impact. Some examples would be the additional groceries needed by the restaurant or additional laundry expenses. The additional compensation received by the employees of the restaurant also causes additional purchases in the local economy resulting in the induced impact.

SUBCHAPTER LXXIII
DELAWARE WATER GAP NATIONAL RECREATION AREA

SUBCHAPTER REFERRED TO IN OTHER SECTIONS

This subchapter is referred to in section 1274 of this title.

§ 4600. Establishment of area; statement of purposes

In order to further the purposes of the joint resolution approved September 27, 1961 (re Delaware River Basin compact-75 Stat. 688) and to provide in a manner coordinated with the other purposes of the Tocks Island Reser voir project, for public outdoor recreation use and enjoyment of the proposed Tocks Island Reservoir and lands adjacent thereto by the people of the United States and for preservation of the scenic, scientific, and historic features contributing to public enjoyment of such lands and waters, the Secretary of the Interior is authorized, as herein provided, to establish and administer the Delaware Water Gap National Recreation Area, hereinafter referred to as the "area", as part of the Tocks Island Res ervoir project. hereinafter referred to as "the project".
(Pub. L. 89-158, §1, Sept. 1, 1965, 79 Stat. 612.)

REFERENCES IN TEXT
The joint resolution approved September 27, 1961. referred to in text. is Pub. L. 87-328. which was not classilied to the Code.

§ 1600-1.Acquisition of lands

(a) Authority of Secretary of Army; transfer of jurisdiction over lands to Secretary of the Interior; authority of such Secretary; retention of use and occupancy rights; termination and transfer of authority and funds; acquisition priorities

The Secretary of the Army is authorized and directed to acquire, by such means as he may deem to be in the public interest, and as a part of his acquisition of properties for the project, lands and interests therein within the boundaries of the area, as generally depicted on the drawing entitled "Proposed Tocks Island Na tional Recreation Area" dated and numbered September 1962, NRA-TI-7100, which drawing is on file in the Office of the National Park Service, Department of the Interior. In acquiring these lands, the Secretary of the Army may utilize such statutory authorities as are available to him for the acquisition of project lands: Provided, That the Secretary of the Army shall acquire no lands or interests in land by exchange for lands or interests in land in Federal ownership unless the latter are in the States of Pennsylvania, New Jersey, or New York. Peri odically, and as soon as practicable after such lands and interests within the area are acquired, the Secretary of the Army shall transfer jurisdiction thereover to the Secretary of the Interior for the purposes of this sub chapter. Beginning on November 10, 1978, the Secretary of the Interior is authorized to acquire for purposes of the recreation area established under this subchapter all lands and interests therein within the exterior boundaries of the area depicted on the drawing referred to in this subsection (including any lands within such exterior boundaries designated for acquisition by the Secretary of the Army in connection with the project referred to in this subsection). In exercising such authority, the Secre tary of the Interior may permit the retention of rights of use and occupancy in the same manner as provided in the case of acquisitions by the Secretary of the Army under subsection l ld) of this section. On November 10, 1978, the acquisition authorities of any other Federal agency contained in this subsection shall termi nate and the head of any other Federal agency 1 shall transfer to the Secretary of the Interior jurisdiction over all lands and interests therein acquired by said agency under the authority of this subchapter, or any other authority of law which lands are within the exterior boundaries of the area depicted on the drawing referred to in this subsection. On November 10, 1978, all unexpended balances available to any other Federal agency for acquisition of land within the exterior boundaries referred to in the preceding sentence shall be transferred to the Secretary of the Interior to be used for such purposes. In carrying out his acquisition authority under this section the Secretary shall give priority to the following:

(1) completion of acquisition of lands for which condemnation proceedings have been started pursuant to the authorization of the project referred to in this subsection;

(2) acquisition of lands of beneficial owners, not being a corporation, who in the judgment of the Secretary would suffer hardship if acquisition of their lands were delayed;

(3) acquisition of lands on which, in the judgment of the Secretary, there is an imminent danger of development that would be in compatible with the purposes of the recreation area;

(4) acquisition of lands of beneficial owners, not being a corporation, who are willing to sell their lands provided they are able to continue to use it for non-commercial residential purposes for a limited period of time which will not, in the judgment of the Secretary, unduly interfere with the development of public

use facilities for such national recrea tion area, pursuant to the authorization for such area;

(5) acquisition of scenic easements when, in the judgment of the Secretary, such ease ments are sufficient to carry out the purposes for which such national recreation area was authorized; and

(6) acquisition of lands necessary to preserve the integrity of the recreation area.

(lb) Omission of designated lands from area

Notwithstanding the provisions of subsection I (a) of this section. the Secretary of the Interior is authorized, after consultation with appropriate public officials of the affected political sub divisions of the States of Pennsylvania or New Jersey, as the case may be, to designate not more than three hundred acres adjacent and contiguous to the Borough of Milford, Pennsylvania, and not more than one thousand acres in 13ussex County, New Jersey, for omission from the Delaware Valley National Recreation Area and the lands so designated shall not be ac quired for said national recreation area under authority of this subchapter.

(c) Extension of boundaries: study and report to Congress

The Secretary of the Interior shall investi gate, study, and report to the President and the Congress on the feasibility and usefulness of extending the boundaries of the Delaware Water Gap National Recreation Area to include, in whole or in part, that portion of Tocks Island Reservoir which lies upstream from the northern *terminus of the national recreation area* as shown on the map hereinbefore referred to and lands adjacent to said portion of said reservoir. No such extension of boundaries, however, shall be made until authorized by Act of Congress.

(d) Noncommercial residential occupancy for life or fixed term of years: price for property; "improved residential property" *defined; waiver relocation assistance* benefits or rights

The beneficial owner, not being a corporation, of a freehold interest acquired before Jan uary 1, 1965, in improved residential property within the area to be acquired by the Secretary of the Army under authority of this sub chapter, the continued use of which property for noncommercial residential purposes for a limited time will not, in the judgment of the Secretary of the Interior, unduly interfere with the development of public-use facilities for the national recreation area and will not, in the judgment of the Secretary of the Army, unduly interfere with the operation of the Tocks Island Reservoir project, may retain a right of use and occupancy of such property for non commercial residential purposes for, as said owner may elect, either (i) a period terminating upon his death or the death of his spouse, whichever occurs later, or (ii) a term of not more than twenty-five years: Provided That in no case shall the period or term for which such right of use and occupancy is retained extend beyond the term of the freehold interest ac quired by the United States. The price payable to the owner of such property shall be reduced by an amount equal to the value of the right re tained. As used in this subchapter "improved residential property" means a single-family year-round dwelling, the construction of *which was begun before January 21,* 1963, which dwelling serves as the owner's permanent place of abode at the time of its acquisition by the United States, together with not more than three acres of land on which the dwelling and appurtenant buildings are located which land the Secretary of the Interior or the Secretary of the Army, as the case may be, finds is reasonably necessary for the owner's continued use and occupancy of the dwelling: Provided, further, That whenever an owner of property elects to retain a right of use and occupancy pursuant to this subchapter, such owner shall be deemed to have waived any benefits or rights under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 [42 U.S.C. 4601 et seq.].

(Pub. L. 89-158, § 2, Sept. 1, 1965, 79 Stat. 612; Pub. L. 92-575, § 2. Oct. 27, 1972, 86 Stat. 1250; Pub. L. 95-625, title *III, § 316, Nov. 10, 1978, 92 Stat. 3483.)*

REFERENCES IN TEXT

The Uniform Relocation Assistance and Real Property Acquisition Policies Act Or 1970. referred to in subsec. (d). is Pub. L. 91-646, Jan. 2. 1971, 84 Stat. 1894. as amended, which is classified generally to chapter 61 (§ 4601 et seq.) of Title 42, The Public Health and Welfare. For complete classification of this Act to the Code, see Short Title note set out under section 4601 of Title 42 and Tables.

AMENDMENTS

1978—Subsec. (a). Pub. L. 95-625 authorized acquisition of lands within the exterior boundaries of the area by the Secretary of the Interior, retention of use and occupancy rights. termination of Federal agency authority over lands and

transfer of authority and funds to the Secretary of the Interior. and prescribed acquisition priorities for the Secretary of the Interior.
1972—Subsec. (d). Pub. L.92-575 provided for waiver of benefits or rights under the Uniform Relocation As sistance and Real Property Acquisition Policies Act of 1970. upon election to retain right of use and occupan cy pursuant to this subchapter.

SECTION REFERRED
TO IN OTHER SECTIONS

This section is referred to in sections 460O-2. 460O-7 of This title.
§ 1600-2. Establishment of area

(a) Publication in Federal Register; description of boundaries: administration of transferred lands and waters

As soon as practicable after September 1 1965, and following the transfer to the Secre tary of the Interior by the Secretary of the Army of jurisdiction over those lands and interests therein within the boundary generally depicted on the drawing described in section 460O-1 of this title which, in the opinion of the Secretary of the Interior, constitute an efficiently administrable unit. the Secretary of the Interior shall declare establishment of the area by publication of notice thereof in the Federal Register. Such notice shall contain a detailed description of the boundaries of the area which shall encompass, to the extent practicable, the lands and waters shown on said drawing. Prior to such establishment, the Secretary of the Interior shall administer such transferred lands and waters, consistent with the construction of the project, for purposes in contemplation of the establishment of the area pursuant to this subchapter.

(b) Adjustments in boundaries; publication in Federal Register; acquisition of additional lands; acrea6e limitations

The Secretary of the Interior may subsequently make adjustments in the boundary of the area by publication of the amended description thereof in the Federal Register and acquire, by such means as he may deem to be in the public interest, including an exchange of excluded for included lands or interests therein with or without the payment or receipt of money to equalize values, additional lands and interests therein included in the area by reason of the boundary adjustment: *Provided.* That the area encompassed by such revised boundary shall not exceed the acreage included within the detailed boundary first described pursuant to this section.

(c) Continuance of existing uses

On lands acquired pursuant to this sub chapter for recreation purposes the Secretary of the Army, with the concurrence of the Secre tary of the Interior may permit the continu ance of existing uses consistent with the purposes of this subchapter.
(Pub. L. 89-158, §3, Sept. 1. 1965, 79 Stat. 613.)

§4600-3. Administration authorities for conservation, management, or disposal of natural resources: coordination of administrative responsibilities of the Secretary of the Interior and Secretary of the Army

In the administration of the area for the purposes of this subchapter, the Secretary of the Interior may utilize such statutory authorities relating to areas of the national park system and such statutory authorities otherwise available to him for the conservation, management, or disposal of vegetative, mineral, or fish or wildlife resources as he deems appropriate to carry out the purposes of this subchapter. To assure consistent and effective planning, development, and operation for all purposes of the project, the Secretary of the Interior and the Secretary of the Army shall coordinate the administration of their respective responsibilities in the project: and such administration shall be consistent with the joint resolution approved September 27. 1961 (re Delaware River Basin compact; 75 Stat. 688).
(Pub. L. 89-158. § 4, Sept. 1, 1965. 79 Stat. 613.)

SECTION REFERRED TO IN OTHER
SECTIONS

This section is referred to in section 4600-4 of this title.
4600-4. Land and water use management plan: adoption, implementation, and revision: provisions

In the administration of the area for the pur poses of this subchapter, the Secretary of the Interior, subject to provisions of section 4600-3 of this title, shall adopt and implement, and may from time to time revise, a land and water use management plan, which shall include specific provision for, in order of priority—

(1) public outdoor recreation benefits;

(2) preservation of scenic, scientific, and historic features contributing to public enjoy ment;

(3) such utilization of natural resources as in the judgment of the Secretary of the Interior is consistent with, and does not significantly impair, public recreation and protection of scenic, scientific, and historic features contributing to public enjoyment.

(Pub. L. 89-158. § 5, Sept. 1, 1965, 79 Stat. 614.)

§ 4600-5. Hunting and fishing

The Secretary of the Interior shall permit hunting and fishing on lands and waters under his jurisdiction within the area in accordance with the applicable laws and regulations of the States concerned and of the United States. The Secretary of the Interior may designate zones where, and establish periods when, no hunting shall be permitted for reasons of public safety, wildlife management, administration, or public use and enjoyment not compatible with hunt ing, and may, in his plan for the area, provide areas for intensive fish and wildlife management, including public hunting and fishing, and shall issue appropriate regulations after consultation with appropriate officials of the States concerned. The Secretary of the Interior shall encourage such officials to adopt uniform regulations applicable to the whole of the Delaware Water Gap National Recreation Area.
(Pub. L. 89-158, § 6, Sept. 1, 1965, 79 Stat. 614.)

§ 460O-6. Civil and criminal jurisdiction and taxing power of the State

Nothing in this subchapter shall be construed to deprive any State or political subdivision thereof, of its right to exercise civil and criminal jurisdiction over the lands and waters within the area or of its right to tax persons, corporations, franchises, or property on the lands and waters included in the area.
(Pub. L. 89-158, § 7, Sept. 1, 1965, 79 Stat. 614.)
§460O-7. Authorization of appropriations

There are hereby authorized to be appropriated to the Secretary of the Interior for the acquisition of lands and interests in land pursuant to the provisions of section 480O-l of this title and for expenses incident thereto not more than $65,000,000 which moneys shall be transferred to the Secretary of the Army. There are also authorized to be appropriated not more than $18.200,000 for the cost of installing and constructing recreation facilities on the lands and interests in lands so acquired. The amounts herein authorized to be appropriated are supplemental to those authorized to be appropriated for the Tocks Island project and related facilities by the Flood Control Act of 1982 (78 Stat. 1182).
(Pub. L. 89-158, § 8, Sept. 1, 1965, 79 Stat. 814; Pub. L. 92-575, § 1, Oct. 27, 1972, 86 Stat. 1250.)

REFERENCES IN TEXT

The amounts authorized to be appropreated for the Tocks Island project and related facilitles bY the Flood Control Act of 19B2, referred to In text, appear at 76 Stdt. 1182, and were not classified to the Code. The Flood Control Act of 1962 jS Title II of PUb. L 87-874. oct. 23,1962,76 Stat. 1173. for complete classification Df this Act to the Code. see Tables.

AMENDMENTS

1972—Pub. L. 92-575 increased appropriations authorization to $65.000.000 from $37,412,000.

Sec. 1274. Component rivers and adjacent lands

(20) DELAWARE, NEW YORX, PENNSYLVANIA, AND NEW JERSEY—The segment from the point where the river crosses the northern boundary of the Delaware Water Gap National Recreation Area to the point where the river crosses the southern boundary of such recreation area; to be administered by the Secretary of the Interior. For purposes of carrying out this chapter with respect to the river designated by this paragraph, there are authorized to be appropriated such sums as may be necessary. Action required to be taken under subsection (b) of this section with respect to such segment shall be taken within one year from November 10, 1978, except that, with respect to such segment, in lieu of the boundaries provided for in such sub section (b). the boundaries shall be the banks of the river. Any visitors facilities established for purposes of use and enjoyment of the river under the authority of the Act establishing the Delaware Water Gap National Recreation Area [16 U.S.C. 4600 et seq.] shall be compatible with the purposes of this chapter and shall be located at an appropriate distance from the river.

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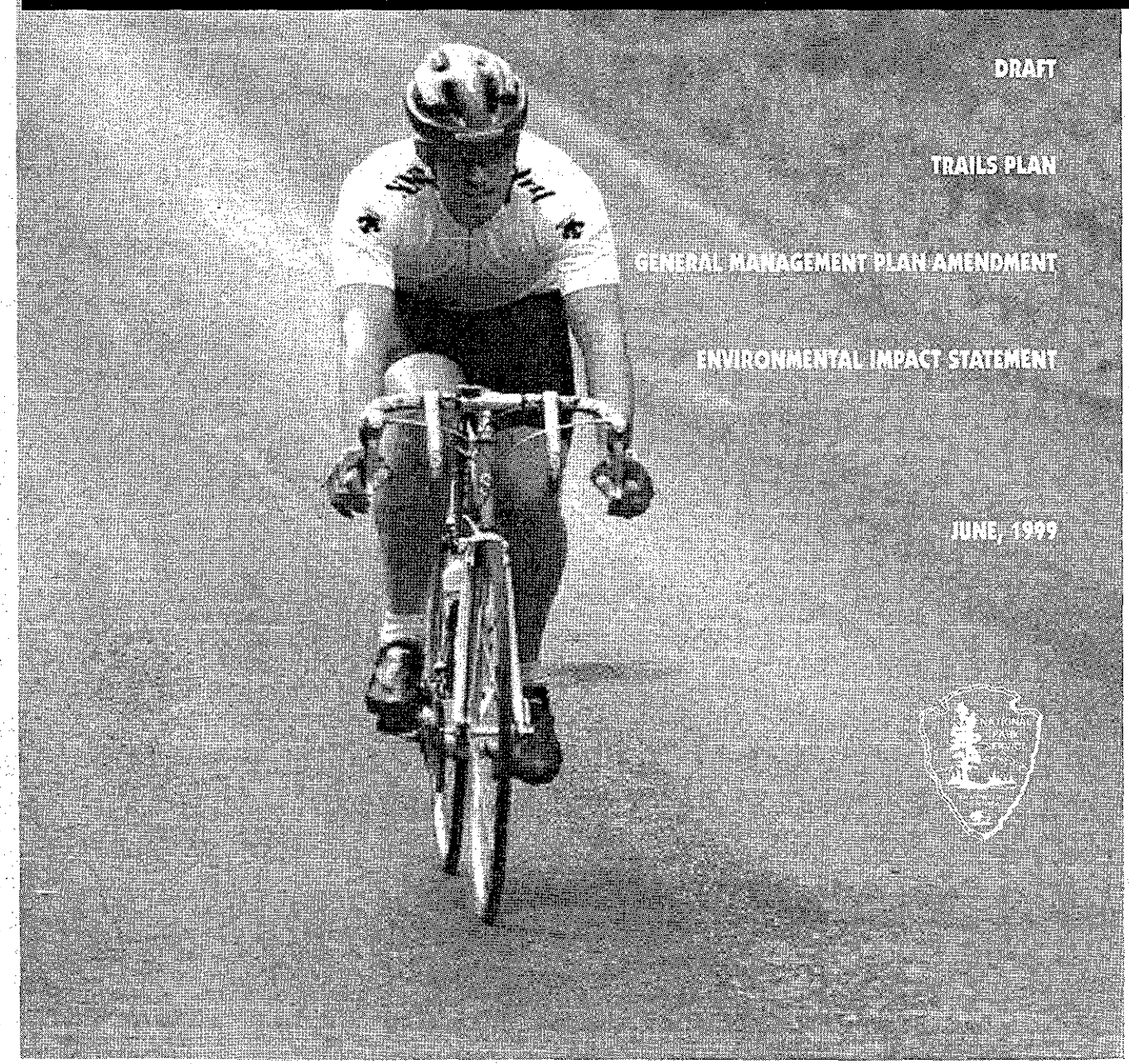
DELAWARE WATER GAP NATIONAL RECREATION AREA



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TRAILS PLAN

GENERAL MANAGEMENT PLAN AMENDMENT

ENVIRONMENTAL IMPACT STATEMENT

JUNE, 1999