



U.S. Department of Transportation  
Federal Highway Administration  
Eastern Federal Lands Highway

# Delaware Water Gap National Recreation Area Alternative Transportation Feasibility Study

## FINAL APPENDIX



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## Appendix A: Existing Data and Conditions

This appendix is adapted from Technical Memorandum No. 2.

### A.1 Project Purpose and Description

#### A.1.1 Introduction

The Delaware Water Gap National Recreation Area (DEWA) is a linear National Recreation Area (DEWA) consisting of 67,210 acres in northern New Jersey and northeastern Pennsylvania. Congress designated the site as a national recreation area in 1965 and in 1978 designated the section of the Delaware River within DEWA part of the National Wild and Scenic River System. DEWA is one of the most visited in the National Park System. Approximately 5 million people visit the site each year to participate in a range of recreation activities, including hiking, biking, fishing hunting, camping, picnicking, water sports, and winter sports. The vast majority of the visitors (89 percent) are from New Jersey, Pennsylvania, and New York.

Access to DEWA is served by several major interstate and federal highways. Interstate 84 runs east-west just to the north of DEWA. Interstate 80, runs parallel to I-84, cutting across the southernmost tip of DEWA. US 209 runs north-south through DEWA. The gateway communities near DEWA have expressed concern over the growing congestion problems in the region. Many visitors travel to and within DEWA by private automobiles due to limited opportunities for crossing the Delaware River, the lack of connections to DEWA by rail or bus, and DEWA emphasis on dispersed recreation. Also, the character of the surrounding community has changed significantly over the last 15 years due to the increasing development of residential and resort units along major corridors bordering DEWA. Three of the five counties in which DEWA is located are among the fastest growing counties in their respective states.

For policy guidance DEWA relies primarily on its 1987 General Management Plan (GMP) and a Trails Plan (June 1999), which amends the GMP. Also, a Strategic Plan for DEWA was completed in 1998.

A report entitled “*Field Report: Delaware Water Gap National Recreation Area*” recently prepared by the Federal Highway Administration and Federal Transit Administration, identifies several Feasible strategies for alternative transportation systems at DEWA including tourist shuttles within DEWA, commuter rail, shuttle to rail, biking, equestrian, park and ride, improved signage, and livery services. An additional strategy may, in some cases, involve access or user fees.

DEWA management has identified Alternative Transportation Systems (ATS) as a means of advancing their mission of conserving the natural, cultural, and scenic resources of the recreation area. ATS can improve conservation by reducing the transportation footprint on public lands, and can reduce the need for infrastructure to support private automobiles, and mitigate conflicts with wildlife. ATS can also be used

to improve outdoor recreation opportunities by informing visitors of underused resources areas and as a medium for interpretive experiences.

This Appendix A discusses supporting existing conditions information accumulated through research, and during stakeholder interviews and public meetings.

### A.1.2 Purpose and Need for Project

DEWA is a distinctive combination of natural, cultural, and recreational features that collectively offer outstanding opportunities for public use and enjoyment in an increasingly urbanized region. The significance of the park is summarized in several statements that capture the essence of DEWA's importance to our natural and cultural heritage<sup>1</sup>. Significance statements for DEWA are listed below:

- **Water Quality:** The Delaware River waters are of exceptional quality. It is one of the last free-flowing rivers on the eastern seaboard and the river offers outstanding recreational and scenic opportunities. Approximately 40 miles of the River within the boundaries of DEWA have been designated as the Middle Delaware National Scenic River, a unit of the National Wild and Scenic River System.
- **Visitor Access/Recreational Resources:** As one of the largest public open spaces remaining in the northeastern metropolitan corridor, DEWA provides a broad diversity of exceptional, unique and close-to-home recreational opportunities for more than 60 million people who live within a 6-hour drive of DEWA.
- **Natural Resources:** DEWA's outstanding geologic and natural features form some of the best-known scenic landscapes in the northeastern United States, and illustrate the characteristic landforms and biotic areas of the Appalachia Ridge and Valley Province and the Southern Appalachian Plateau Province.
- **Significant Natural Area:** Open-space combined with other regional protection and preservation initiatives creates a multi-state greenway corridor which preserves essential habitat for the sustained health of plant and animal communities, including potentially threatened species, in the region.
- **Cultural Resources:** DEWA contains the most significant concentration and diversity of known archaeological resources, from prehistoric to historic, in the northeastern United States, as well as outstanding examples of Native American and European settlement manifested by diverse cultural landscapes and structures.

<sup>1</sup> Delaware Water Gap National Recreation Area: Trail Plan and General Management Plan Amendment, 2001

These significance statements define the distinctive and unique qualities of DEWA. If these qualities of DEWA are to be preserved they must overcome a number of challenges, including<sup>2</sup>:

- Shortfalls in operational funding;
- Inadequate capital budgetary increases;
- Increasing congestion from private automobiles; and
- Increasing land development in the Pocono Region.

Taking into consideration these goals and challenges, the purpose of this project is to prepare an Alternative Transportation Feasibility Study, make recommendations that are consistent with DEWA's goals, and resolve transportation commensurate with the need to improve visitor access within DEWA. It is necessary that alternative transportation options be identified that will address the long-term needs of visitors and resource protection.

As part of the overall study there is a need for a carefully planned and executed discovery of the existing data and conditions to develop a proper understanding of the visitor access challenges facing DEWA and the surrounding areas to identify and implement improvements necessary as part of DEWA's sustainable future. Identification of existing or adopted plans helps identify opportunities for partnerships that enhance the overall coexistence and operation of numerous transportation providers, modes and facilities throughout DEWA. The contents of this appendix will help facilitate options that are both feasible, viable, and have the support of local communities.

### **A.1.3 Project Partners and Stakeholders**

Two formal project partners are proponents of this study. They are the Delaware Water Gap National Recreation Area and the Federal Highway Administration - Eastern Federal Lands Highway Division (FHWA-EFL).

There are numerous project stakeholders. Stakeholders include civic organizations, state and local government agencies and numerous transportation agencies and bodies. DEWA representatives identified an initial list of project stakeholders, representing potential partners in the implementation of an ATS.

The following stakeholders were initially identified and invited to participate in the study:

- Delaware Township;
- Delaware River Joint Toll Bridge Commission;
- Dingmans Campground and River Trips;
- Fernwood Resort;
- Lehman Township;
- Middle Smithfield Township;

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<sup>2</sup> Delaware Water Gap National Recreation Area Business Plan, 2003

- Monroe County Transit Authority;
- New Jersey Transit;
- New Jersey Transportation Planning Authority;
- New Jersey Division of Parks and Forestry (Worthington State Forest);
- New Jersey Department of Environmental protection – Division of Parks and Forestry – State Parks Service;
- New Jersey Department of Transportation;
- Parks and Recreation for Northampton County;
- PennDOT, Engineering District 4-0;
- Peter’s Valley Craft Center;
- Pike County Office of Community Planning;
- Pike County Roads Task Force;
- Pocono Mountains Visitor’s Bureau;
- Shawnee General Store;
- Shawnee Resort and Golf Course;
- Smithfield Township;
- Sussex County Planning Department;
- TransOptions, Northwest New Jersey; and
- Warren County Transportation Advisory Council.

Stakeholders presented a wide array of existing transportation options in the study area. DEWA acknowledges that this list is not exhaustive. It is expected that as the ATS Feasibility Study progresses that additional stakeholders will be identified who would be invited to participate in stakeholder and public outreach meetings.

#### **A.1.4 Existing Studies and Plans**

Data collection, and the gathering of any pertinent existing studies, is part of this ATS Feasibility Study. The initial collection of these materials includes the following:

- General Reports
  - Delaware Water Gap National Recreation Area Trails Plan and General Management Plan Amendment – Final (General Management Plan) (December 2001);
  - DEWA Feasibility Analysis for Five River Sites (January 10, 2005), Prepared by Booz Allen Hamilton;
  - DEWA Visitor Access Safety Study, Document # 620-D-259, PMIS# 99570 (July 2004);
  - Delaware Water Gap Field Report – DEWA; and
  - DEWA Business Plan, National Parks Service, US Department of Interior, (October 2003).
- General Information Publications
  - Cultural Resource Management, Volume 25, No. 3, (2002) “Saved from the Dam”, Delaware Water Gap National Recreation Area;



- ❑ Delaware Water Gap National Recreation Area Trail Guide (Dingmans Falls Ravine) July 14, 2007;
  - ❑ Delaware Water Gap National Recreation Area Woods and Water Falls – Trails on the Pennsylvania Side (July 14, 2007);
  - ❑ Delaware Water Gap National Recreation Area Hunting (November 1, 2005);
  - ❑ Delaware Water Gap National Recreation Area Fishing (November 6, 2006);
  - ❑ Delaware Water Gap National Recreation Area Ranger-Led Programs – Summer 2008 (July 11, 2008);
  - ❑ Delaware Water Gap National Recreation Area Campgrounds – Pennsylvania (November 4, 2005);
  - ❑ Delaware Water Gap National Recreation Area Campgrounds – New Jersey (May 24, 2006);
  - ❑ Delaware Water Gap National Recreation Area Road Bike Touring (June 15, 2008);
  - ❑ Delaware Water Gap National Recreation Area Canoe Liveries (June 20, 2007);
  - ❑ Delaware Water Gap National Recreation Area Crosscountry Trails – Hiking and Crosscountry Skiing (July 17, 2007);
  - ❑ Delaware Water Gap National Recreation Area River Guide (November 27, 2007);
  - ❑ Delaware Water Gap National Recreation Area River Campsite and Access Points (May 15, 2007);
  - ❑ Delaware Water Gap National Recreation Area Millbrook Village (April 3, 2004);
  - ❑ Delaware Water Gap National Recreation Area Appalachian Trail – Governing Regulations (November 22, 2006);
  - ❑ Delaware Water Gap National Recreation Area Appalachian Trail Camp Locations (December 15, 2005);
  - ❑ Delaware Water Gap National Recreation Area Hikes: The Gap and New Jersey (July 17, 2007);
  - ❑ Delaware Water Gap National Recreation Area Delaware River Clean Up Day – July 23, 2008 (April 11, 2008);
  - ❑ Delaware Water Gap National Recreation Area Pocono Environmental Education center Trails (November 22, 2005); and
  - ❑ Delaware Water Gap National Recreation Area Junior Ranger Gazette – Volume Three (Summer 2008), National Park Service, National Park Foundation and Unilever, a Proud Partner of America’s National Parks.
- Other Studies and Publications
- ❑ Middle Smithfield Township Project Query 2008 (September 15, 2008);
  - ❑ DRAFT 2008-2012 New Jersey Statewide Comprehensive Outdoors Preservation Plan, New Jersey Department of Environmental protection, Green Acres Program (August 29, 2007);

- ❑ Pike County Comprehensive Plan (Final), Pike County Planning Commission, November 2006;
- ❑ Pike County Transportation Service Evaluation Study – Draft Interim Report, Existing Public Transportation Services. Prepared for Pennsylvania Public Transportation Association (PPTA), prepared by Abrams-Cherwony & Associates (April 2007);
- ❑ Pike County Conservation District (PCCD) Programs and Services;
- ❑ Pike County Conservation District (PCCD) Spring 2008 Newsletter;
- ❑ Pike County: Where People, Land, and Water Meet;
- ❑ Monroe County Transportation Authority (MCTA) - Transit Development Plan;
- ❑ Monroe County Transportation Authority (MCTA) - Interim Report: Service Area Profile (June 2007). Submitted by Abrams-Cherwony & Associates, and Mundle & Associates, Inc.;
- ❑ Monroe County Transportation Authority (MCTA) - Interim Report: Existing Transit System (November 2007). Submitted by Abrams-Cherwony & Associates, and Mundle & Associates, Inc.;
- ❑ Monroe County Transportation Authority (MCTA) - Interim Report: Service Proposals (May 2008), submitted by Abrams-Cherwony & Associates, and Mundle & Associates, Inc.;
- ❑ Monroe County Transportation Authority (MCTA) - Yellow Route Eastbound (November 2, 2008);
- ❑ Water Gap Trolley Brochure; and
- ❑ Peters Valley Course Selection Guide 2008.

As additional information comes to light it will be consulted during the preparation of the alternative transportation options so that informed decision making can take place.

### **A.1.5 Regional Planning Bodies and Planning Initiatives**

Two regional planning bodies are responsible for large-scale planning initiatives in the study area. In New Jersey, the North New Jersey Transportation Planning Authority, Inc. (NJTPA) supports planning in the northern counties of New Jersey in areas that are contiguous with DEWA's New Jersey boundary. In Pennsylvania the Northeastern Pennsylvania Alliance Rural Planning Organization (NEPA RPO) provides similar support for planning initiatives in counties contiguous with the Pennsylvania boundary of DEWA. For purposes of clarity, it must be pointed out that the NEPA acronym used for this organization should not be confused with the more commonly used National Environmental Policy Act (NEPA).

NJTPA is a well established organization, while NEPA was formed less than two years ago. Consequently, NJTPA has already developed a Regional Transportation Plan called the *Access and Mobility 2030 Regional Transportation Plan* that provides planning goals and objectives that address pressures placed on the region's roadways. Pressures that are identified by NJTPA include 150 million miles driven by vehicles over the region's roadways each day; more than 250 million trips taken by bus, rail and ferry each year; more than 550 million tons of freight moved through the region annually; and the

average of seven trips a day by each of the region's 2.4 million households. Currently there is a regional effort underway to revise the current region's transportation plan

NEPA is currently developing a long term regional transportation plan that will address transportation issues in areas contiguous to the Pennsylvania side of DEWA.

### **New Jersey Planning Initiatives**

NJTPA's efforts are focused on finding ways to expand the regions transportation network, accommodating and enhancing the roadway system, and endorsing land use policies that will change the course of trends that impact transportation. An additional stated objective is that the benefits and burdens of transportation investments are to be shared equitably with all communities. These objectives are important factors that should be considered as part of DEWA feasibility study and efforts should be made to identify synergies with NJTPA as a stakeholder. The *Access and Mobility 2030 Regional Transportation Plan* identifies challenges that New Jersey is experiencing with its transportation network. These include:

- Aging and heavily used infrastructure;
- Auto congestion;
- Auto emissions;
- Improving transit reliability;
- Movement of freight (commercial); and
- Auto and pedestrian safety.

The plan identifies the following eight aspects of transportation performance: accessibility; reliability; sustainability; inter-modality; highway mobility; transit mobility; walk/bike mobility; and freight mobility. These eight aspects are being used to measure and implement:

- A capital investment strategy;
- Wise regional growth;
- Safer systems;
- Fixing the system;
- Expanded public transit;
- Improved roads;
- More efficient freight movement;
- Incident management and application of transportation technology; and
- Walking and bicycling.

The *Access and Mobility 2030 Regional Transportation Plan* has direct bearing on DEWA's alternative transportation study and the planning team should remain cognizant of its objectives and strategies. Mention is made of the Lackawanna Cutoff Rail expansion project which has direct bearing on the study as it would potentially increase commuter traffic through the southern end of DEWA and provide a rail connection from Hoboken, New Jersey to the southern boundary of DEWA. The New York Susquehanna & Western Railroad and an extension of the Raritan Valley Line to

Philipsburg are also currently undergoing transit studies which could impact visitor access to DEWA. The regional transportation plan also makes mention of safety projects. Sections of I-80 in Warren County have safety projects identified in the proximity of the Delaware Water Gap. Bicycle facility improvements are proposed for the study area in Warren and Sussex County; the majority of which would be in Sussex County. The Delaware Water Gap Visitors Center is also listed as a 2030 Regional Transportation Plan project. An exhaustive list of transportation improvement projects for Sussex and Warren Counties is provided in the project index of the 2030 Regional Transportation Plan. The FY 2009 Project Development Work Program of NJTPA provides additional lists of projects that could have bearing on DEWA. In the period 2006 to 2007 no new NJTPA PLANNING projects were completed in Sussex or Warren Counties.

### **Pennsylvania Planning Initiatives**

As NEPA is a relatively new organization, it has not had the opportunity to develop long range transportation plans similar to those developed by NJTPA. Currently an initiative is underway to develop a long range plan.

In NEPA's 2007 Annual Report, details are provided on communication and government services which highlight NEPA's collaboration objectives with PennDOT and the counties found within the study area.

As a regional agency, NEPA has the opportunity to influence transportation needs and priorities in the study area. NEPA convenes two transportation committees which include the NPRPTO Committee and the Focus 81 Committee. NEPA staff also participates in the following committees and advisory groups:

- Lackawanna-Luzerne Transportation Study (LLTS) MPO;
- Lehigh Valley Planning Commission MPO;
- PennDOT Statewide Congestion Management Study Committee ;
- PennDOT – PA Mobility Plan Committee;
- PennDOT – District 4-0 Trail Symposium Meeting ;
- PennDOT Planning & Programming Financial Work Group Committee;
- Passenger Rail Service Restoration Project (NYC to Scranton ) Technical Advisory Committee (TAC);
- Delaware River Joint Toll Bridge Commission Northerly Crossings Corridor Congestion Mitigation Study Interagency Advisory Committee (IAC);
- Wilkes-Barre Chamber of Commerce Transportation Task Force;
- Monroe County Greenway Group;
- Intelligent Transportation Systems (ITS) Regional Advisory Panel (RAP) – District 4-0;
- Intelligent Transportation Systems (ITS) Regional Advisory Panel (RAP) – District 5-0;
- Congested Corridor Improvement Program US Route 6 Milford to Matamoras–Pike County Committee; and

- Congested Corridor Improvement Program US Route 6 Honesdale to Texas Township to Matamoras— Wayne County Committee.

In addition, the Northeastern Pennsylvania Alliance (NEPA) has partnered with PennDOT to launch the Local Technical Assistance Program (LTAP) training series in both the Lackawanna-Luzerne Metropolitan Planning Organization (MPO) region and the NEPA Rural Planning Organization (RPO) region, which includes Carbon, Monroe, Pike, Schuylkill, and Pike counties.

NEPA has identified a number of Transportation Enhancement Projects in Monroe County and Pike County, which focus on road enhancement projects located within East Stroudsburg, Stroud Township, Milford Borough, and Matamoras Borough. None of these projects have any direct impacts on transportation planning within DEWA. Two Congested Corridor Improvement Program (CCIP) studies have been initiated in the study area. They are the US Route 6 Milford to Matamoras study and the US Route 6 Honesday to Texas Township study. It is expected that these studies may improve congestion issues to the north of the study area.

In 2007 and 2008, the Monroe County Transit Authority commissioned two studies that made service proposals for a Transit Development Plan. Most of the study outcomes focus on the urban areas around Stroudsburg. An outcome of this study is the extension of transit bus services to Bushkill which should improve public access to the southern end of DEWA.

Pike County and the Pennsylvania Public Transportation Association commissioned a Transportation Service Evaluation study that was completed in February 2008. Of importance to DEWA alternative study is the recommendation that a Milford to Matamoras fixed route would be established that could be linked to the New York Metro line station located in Port Jervis. Should this happen, Milford's role as a gateway community to the northern end of DEWA would be enhanced.

## **A.2 Study Area Description**

The Delaware Water Gap National Recreation Area (DEWA), designated by Congress in 1965, is a linear DEWA of 67,210 acres in northwestern New Jersey and northeastern Pennsylvania. DEWA includes 40 miles of the Delaware River and the neighboring valley and mountains. In 1978 Congress designated the section of the Delaware River within DEWA as part of the National Wild and Scenic River System.

At the southern tip of DEWA, the Delaware River cuts through a gap in the Appalachian Mountains. Interstate 84 runs east-west to the north of DEWA, while Interstate 80 cuts across the southernmost tip of DEWA. US 209 is the main access route to DEWA and runs north-south on the Pennsylvania side of DEWA. Road access is more limited on the New Jersey side of DEWA. US 206 provides limited access to the northern part of DEWA on the Pennsylvania side of the Delaware River. Numerous State Park and Forest Roads, National Park Service Roads, and county and state roads provide access to areas bordering DEWA or recreation opportunities within DEWA. Although called US 209, the section of US 209 located within the boundary of DEWA is owned and maintained by the National Park Service.

The primary study area is defined as the entire park and adjacent municipal boundaries, federal lands, and state parks (Figure A-1 and Figure A-2).

## **A.3 Natural Environment**

### **A.3.1 Landscape (Geomorphology and Topography)**

The geomorphology of DEWA is fairly complex and is the result of glacial activity and fluvial erosion over millions of years. Delaware Water Gap is one of the best places to see the power of water erosion at work in North America. Millions of years of erosion, combined with the gradual uplift of land surfaces, have resulted in a former level Paleozoic era plain eroding into the ridges and valleys prevalent in the study area today.

Rocks that are seen at the Delaware Water Gap are primarily from the Silurian (408-438 million years ago) and the Devonian (350-408 million years ago). Sections of the Delaware River, found within DEWA boundaries, lie between the Appalachian Plateau physiographic province and Catskill physiographic section. The elevation of the valley that forms DEWA ranges from 300 to 400 feet above sea level. The topography of the study area is characterized by rolling hills that vary in elevation from 800 to 2,000 feet and consist of a series of indistinct and irregular escarpments. The relief of these hills is generally between 300 and 500 feet, although it ranges to 700 feet in a few locations. There are a number of mountains in the study area that exceed 1,000 feet in height and include ridges in High Point State Park, the Sunset Mountains, and Mt. Tammany.

Topographical features throughout the river corridor have a marked diversity of unique land forms. Geologic processes over time have left many economically valuable deposits, including bluestone, sand and gravel, shale, and peat. The parent materials of most of the soils within the river corridor have been accumulated largely through glacial action and deposited as till or outwash from receding glaciers. Red and gray sandstone, siltstone, and shale are primary contributors to the soils.

Fluvial materials deposited in the river valley are the source of valuable prime agricultural land, 3,000 acres of which is leased to farmers within the boundaries of DEWA. In addition, there are 37 watershed associated with tributaries to the Delaware River within DEWA, as well as approximately 700 wetlands, lakes and ponds. Many of the rock ponds are vestiges of glacial activity and are found on both the Pennsylvania and New Jersey sides of DEWA at higher elevations. Some of these ponds include Sunfish pond, Catfish Pond, Lone Pine Pond, and Hemlock Pond. The natural state of much of the river system and its pristine condition has resulted in very high water quality in the river. Most wetlands are found in low lying areas along the riparian corridor formed by the Delaware River. Of particular interest to the area are a number of bogs (high mountain swamps) that are found in the Delaware River Corridor, as well as a high elevation swamp found in the Dryden Kuser Natural Area which is the highest elevation swamp of its kind in the world.

### **A.3.2 Vegetation**

Plant life in DEWA is varied, much of which is dependent upon elevation. Over 1,100 plant species have been identified in DEWA. A mixture of hard woods and conifers are

found within the study area boundary. Chestnut Oak forests, yellow poplars, wind dwarfed-gray birch, and quaking aspen are found in the project study area. Mixed oak, maple and hickory trees are typically found down slope. Mountain laurel, wild blueberry, pitch pine, red pine, and scrub oak are typically found at higher elevations and often exhibit stunted growth. On the steep slopes of the study area, cool evergreen forests consisting of eastern hemlock are more common. Well shaded areas, particularly those near riparian corridors and waterfalls often have a high presence of ferns. Lowbush blueberry, sweet fern, mountain laurel, and rhododendron are often found growing under trees. Boreal conifer swamps are also found in the project study area where emergent plants grow within glacial bogs.

### A.3.3 Animal Species

The ridges and valleys of the study area serve as an invaluable environment for wildlife in Pennsylvania and New Jersey. The ridges and the Delaware River serve as significant migratory paths for hawks, eagles, and millions of songbirds along the eastern seaboard. The Kittatinny ridge is designated as an Important Bird Area (IBA).

In recent DEWA inventories, 40 mammal species, 50 amphibian and reptile species, 250 bird species, and 55 fish species have been identified within DEWA. It is not uncommon for hikers to observe black bear, bobcat, coyote, turkey, red-tailed hawk, whitetail deer, raccoons, snakes, opossum, porcupine, skunks, squirrels, rabbits, river otter, red and gray fox, and many insects in the study area. Black bear are encountered in DEWA, but typically avoid human contact. Two venomous snakes are also found in DEWA. They include the Eastern Timber Rattlesnake and the Copperhead which are found in dry and rocky areas.

National Park Service policy promotes the conservation of all federally-listed threatened, endangered or candidate species within DEWA boundaries and their critical habitats. The following species have been identified by the NPS species meriting special attention in DEWA:

- **Bald eagle** - Bald eagle habitat is scattered throughout DEWA. The biggest threat to their existence in DEWA is the proximity to human activity which can cause physiologic stress.
- **Bog turtle** – Bog turtles are known to potentially occur in 44 wetlands within DEWA. Turtles have been identified at five sites. Bog turtles can be adversely affected if trails cross over occupied wetlands.

DEWA has a variety of aquatic habitats, and is home to both warm-water and cold-water fish species as well as river otters. The Delaware River offers a chance to catch smallmouth bass, bluegill, channel catfish, muskellunge, American shad, trout, walleye, white sucker, and panfish. Shad reach the recreation area around May. The small lakes and ponds provide excellent fishing for rock bass, pickerel, catfish, sunfish, and panfish. Brook trout and brown trout are found in most in tributaries such as Flat Brook and Bushkill Creek, and rainbow trout are found in Van Campens Brook. Fishing in the recreation area will continue is managed as a cooperative endeavor with the states of



Pennsylvania and New Jersey. Waters are stocked at Hidden Lake, Lower Blue Mt. Lake, Flat Brook, Bushkill Creek, and Dingmans Creek.

## **A.4 Human Environment**

A description of the area representing the human environment adjacent to DEWA is discussed in this section of the document (Figure A-1 and Figure A-2).

### **A.4.1 City/Townships/Counties**

The following communities and counties are located in DEWA or in areas adjacent to DEWA.

- **Communities** – Pennsylvania cities included within the study area include Stroudsburg, and Milford. Adjacent Pennsylvania townships include Stroud, Upper Mt. Bethel, Smithfield, Middle Smithfield, Porter, Lehman, Delaware, Dingman, Milford, and Westfall. New Jersey townships include Montague, Sandyston, Frankford, Hampton, Stillwater, Frelinghuysen, Blairstown, and Knowlton. There are several small communities also in or near the Study Area including Delaware Water Gap, Marshall's Creek, Bushkill, and Dingmans Ferry in Pennsylvania; Hainesville, Layton, Swartswood, Stillwater, Blairstown, Walnut Valley, Hainesburg, Columbia, and Portland in New Jersey.
- **Counties** – DEWA falls into five counties - Sussex and Warren Counties in New Jersey; and Pike, Monroe, and Northampton Counties in Pennsylvania.
- **Larger Cities** – Scranton, Pennsylvania is located approximately 55 miles to the northwest of DEWA; Newark, New Jersey is located approximately 80 miles to the east; Philadelphia, Pennsylvania is located approximately 100 miles to the southeast; and New York City is located approximately 100 miles to the east.

Most land is privately-owned in areas adjacent to DEWA. Largely rural in nature, the area is characterized by low density development with much of the land use characterized as either agricultural or forested. Residential areas consist largely of homes on large acreages. Areas to the west of DEWA are currently undergoing development by large developers who are building planned communities on privately-owned land. Many of these developments are gated communities with homes built in larger densities than are traditional for the project study area. The larger communities of Stroudsburg, Milford, Matamoras, and Port Jervis are urban communities.

### **A.4.2 Public and State Lands**

Public lands in the study area are managed by the National Park Service and the Bureau of Reclamation. State lands are managed by the States of Pennsylvania and New Jersey.

Public lands in Pennsylvania are managed by the Department of Conservation and Natural Resources (DCNR). All public lands located within the study area are dedicated to recreation and natural conservation (Figure A-2). They include the following State Forests and State Parks:

- **Big Pocono State Park** – The Park consists of 1,306 acres of rugged terrain on the summit and slopes of Camelback Mountain. Recreational opportunities include picnicking, hiking, horseback riding, bicycling and hunting. The park does not have a common boundary with DEWA.
- **Beltzville State Park** – The Park consists of 2,972 acres of land found in the Southern foothills of the Poconos, 5 miles east of Lehighton. Recreation facilities are the result of a cooperative effort of the US Army Corps of Engineers, DCNR and the Pennsylvania Game Commission. Recreation Activities include fishing, hiking, boating on Beltzville Lake, picnicking, and hunting. The park does not have a common boundary with DEWA.
- **Cherry Valley National Wildlife Refuge** – Located in Monroe County, Pennsylvania, this 20,000+ acre refuge was established in December 2008.
- **Delaware State Forest** - The state forest is located in Pennsylvania Bureau of Forestry District #19. The forest consists of several tracts located in Monroe and Pike counties. Six natural areas have been designated on the Delaware State Forest and include: the Bruce Lake Natural Area (2,845 acres); Stillwater Natural Area (1,031 acres); Pennel Run Natural Area (936 acres); Buckhorn Natural Areas (535 acres); Pine Lake Natural Area (67 acres); and the Little Mud Pond Swamp Natural Area (182 acres). Recreation activities that are permitted in the State Forest include hiking and camping, fishing and boating, sightseeing, ATV trails, and picnicking. The forest does not have a common boundary with DEWA.

Public lands in New Jersey are managed by the New Jersey Department of Environmental Protection, Division of Parks and Forestry. All public lands located within the study area are dedicated to recreation and natural conservation. They include the following State Forests and State Parks:

- **High Point State Park** – the state park is located to the north-east of DEWA. Founded in 1923, the park's landscape was designed by the Olmsted brothers. The park lies at an elevation of 1,803 feet above sea level and offers views of farmland, forested land, hills and valleys in three states. Park activities include hunting, educational programs, swimming, hiking, camping, and picnicking. The Dryden natural Area (1,500 acres) is located within the boundaries of the park as are 11 marked and named trails. Part of the Appalachian Trail transects with the park as well. Other recreation areas of interest include the Cedar Swamp Trail and the High Point Cross Country Ski Center. Although the park does not share a common boundary with DEWA, it does share a common boundary with the Stokes State Forest that shares a common boundary with DEWA.
- **Stokes State Forest** – the state forest is famous for its breathtaking and panoramic views from the Sunset Mountains along the Appalachian Trials. Much of the forest consists of undeveloped forest land and mountain ridges. Sunrise

Mountain is one of the most visited sites in the forest. The Tillman Ravine Natural Area (525 acres) located within the forest is home to many threatened and endangered species which include the threatened barred owl. Recreation activities allowed within the forest include camping, fishing, hunting, hiking, and picnicking. A large section of the Appalachian Trail runs along the eastern boundary of the forest while sections of the eastern boundary are contiguous with DEWA.

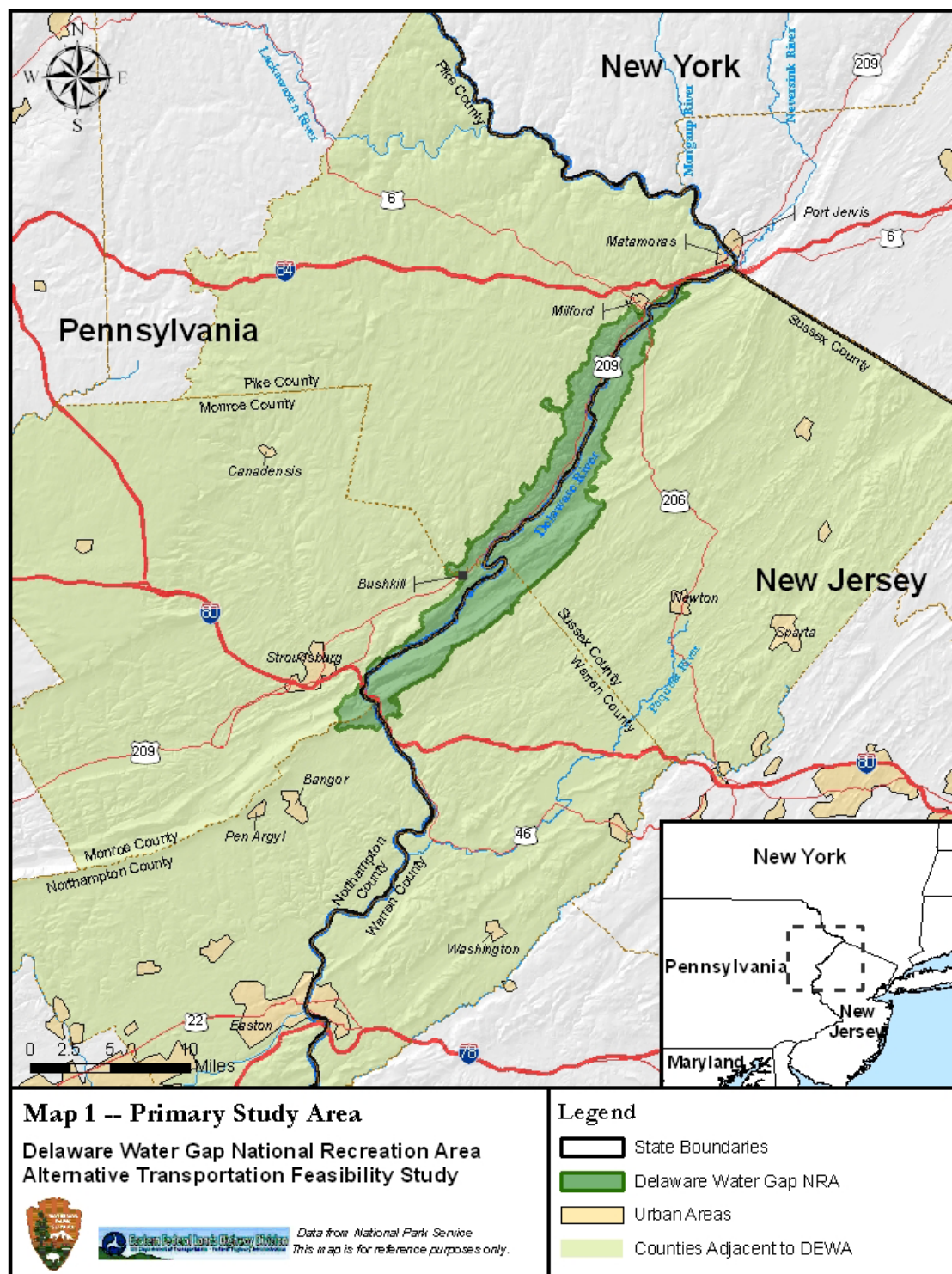
- **Swartswood State Park** – the park was established in 1914 as New Jersey’s first state park. The park is open year round and offers seasonal recreation activities. There are 4 trails located within the Park. They include the Dick Pond Multi-use Trail, the Spring Lake Trail, the Bear Claw Trail, and the Grist Mill Trail. The state park also runs summer interpretive nature programs. Recreation activities that are allowed within the park include: hiking, bicycling, rollerblading, skate boarding, camping, fishing, hunting, and boating.
- **Worthington State Forest** – the state forest is located within the boundaries of DEWA. Some of the most rugged terrain in New Jersey is found within the boundaries of the forest. Over 26 miles of trails are found in the forest as well as 5 miles of canoe trails along the Delaware River. Seven miles of the Appalachian Trail is also found within the forest. All trails are for hiking purposes only. The Dunnfield Creek Natural Area (1,085 acres) and the Sunfish Pond Natural Area (258 acres) are places of interest in the forest. Mt. Tammany (1,527 ft) is a popular viewing area of the Delaware Water Gap. Recreation activities that are allowed within the forest include hiking, camping, canoeing, fishing, hunting, and picnicking.

The **George W. Childs Recreation Site** is a former state park located in Dingmans Ferry in Delaware Township, Pike County. The site is named for George Childs, whose widow deeded the land to the commonwealth of Pennsylvania in 1912. The site contains three main waterfalls: Factory Falls, Fulmer Falls and Deer Leap Falls and is a few miles upstream from Dingmans Falls and Silverthread Falls. The ruins of Joseph Brooks' 19th century woolen mill are also located within the recreation site.

**The Appalachian Trail** is located along most of the eastern boundary of DEWA. New Jersey is home to 72 miles (116 km) of the trail. The trail enters New Jersey along the Interstate 80 bridge over the Delaware River, ascends from the Delaware Water Gap to the top of Kittatinny Ridge in Worthington State Forest, passes Sunfish Pond (right), continues through Stokes State Forest and eventually reaches High Point State Park, highest peak in New Jersey (a side trail is required to reach the actual peak). The Appalachian Trail is famous for its many hikers many who attempt to hike it in its entirety in a single season. The Appalachian Trail is home to thousands of species of plants and animals, including 2,000 distinct rare, threatened, endangered, and sensitive plant, and animal species. The Appalachian Trail is relatively safe. Most injuries or incidents are consistent with comparable outdoor activities. Most hazards are related to

weather conditions, human error, plants, animals, diseases, and fellow humans encountered along the trail.

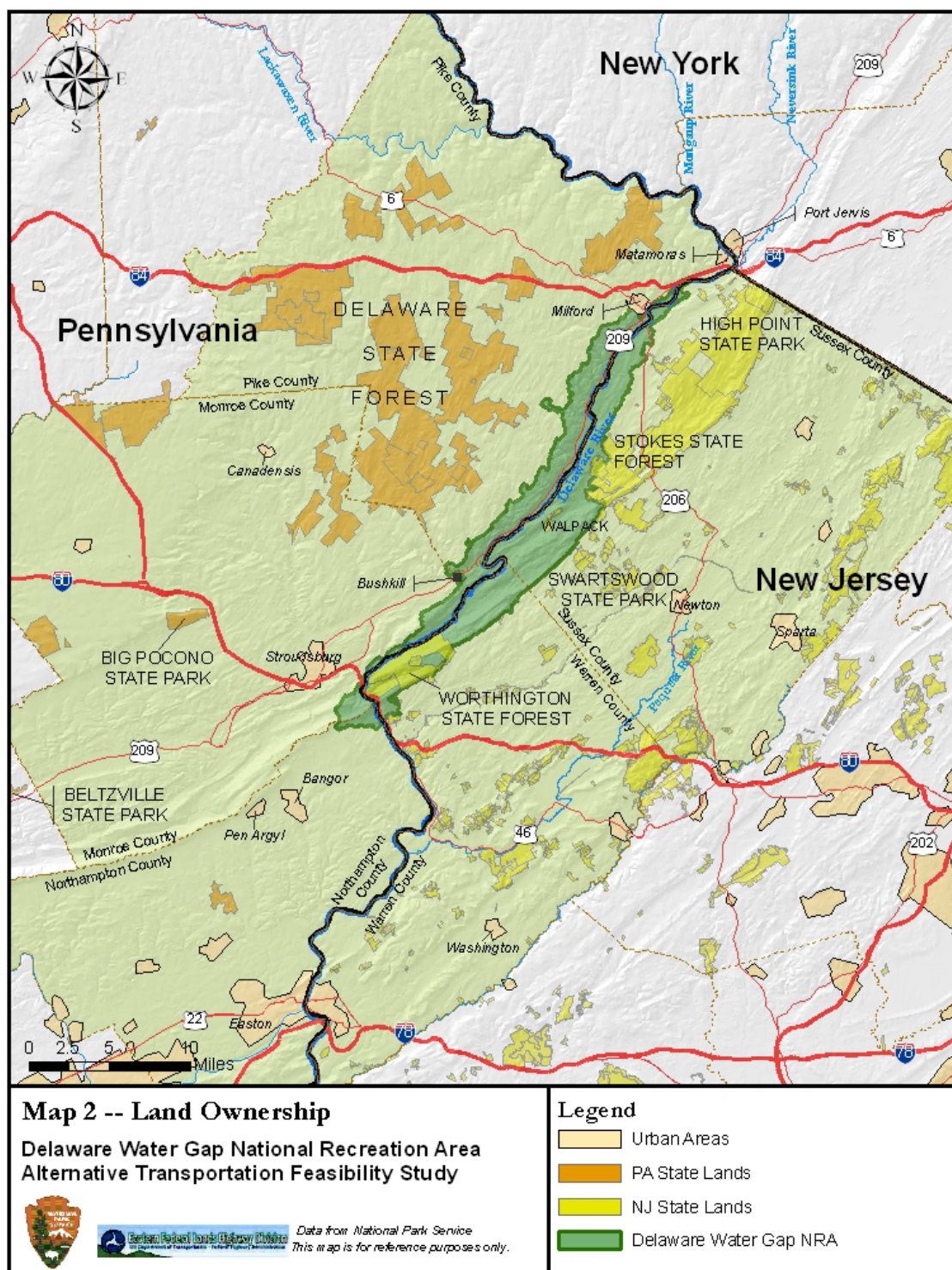
**Figure A-1: Map of Delaware Water Gap National Recreation Area**



Source: Jacobs Engineering Group, Inc.



**Figure A-2: Map of Jurisdictions**



Source: Jacobs Engineering Group, Inc.

## **A.5 Delaware Water Gap National Recreation Area**

### **A.5.1 History of DEWA**

DEWA has been a unit of the National Park Service (NPS) since 1965. Land was originally acquired for the Tocks Island and Reservoirs to serve as a water supply and flood control project. Floods along the Delaware River in the 1950s prompted the United States Army Corp of Engineers (USACE) to propose a dam for flood control, water supply, and power generation. The proposed dam would create a reservoir extending from Tocks Island 37 miles upstream to Port Jervis. In 1965 Congress designated the land around the proposed reservoir as an NPS unit. The land and waters in which the reservoir was to be built were managed by the US Army Corp of Engineers. Between 1965 and 1979 many of the existing structures on DEWA grounds were destroyed to prepare for the construction of the dam and the reservoir. During this time, residents were relocated to neighboring communities. By the early 1970s the project was halted indefinitely for ecological and economic concerns. The land was turned over to the NPS in 1978 for oversight and management. In 1978 Congress designated the portion of the Delaware River that runs through DEWA as a unit of the National Wild and Scenic River System. In 1992 the Tocks Island reservoir was de-authorized.

### **A.5.2 Description**

The 67,210-acre DEWA includes the Delaware River, mountain trails, and several historical sites. Most DEWA activity is concentrated at developed recreation sites which include swimming, picnicking, and boating areas. There are three contact locations for the public to obtain information on recreation opportunities in DEWA. They are the Bushkill Meeting Center (open weekends), DEWA Headquarters at Bushkill (open weekdays), and the Kittatinny Point Visitors Center. There is an additional Visitor's Center located at Dingmans Falls which is currently closed.

DEWA boundary is relatively porous and it is estimated that there are at least 50 minor and major entry points. The towns of Stroudsburg, Delaware Water Gap, and Milford are considered DEWA's gateway communities. Entry to DEWA is free. Shawnee-on-Delaware, Marshalls Creek, and Bushkill are smaller communities found on the periphery of DEWA. Millbrook Village hosts regular blacksmithing and woodworking demonstrations.

Most land located within DEWA boundaries is managed by the National Park Service and falls under its jurisdiction except for three instances. Worthington State Forest and land around the Walpack Valley Environmental Education Center is managed by the state of New Jersey (Figure A-2). A small parcel of land around Dingmans Ferry is also privately owned by the operators of the toll bridge. The privately owned toll bridge at Dingmans Ferry places some restrictions on planning initiatives for this study. The road system located within Worthington State Forest is also owned by the State of New Jersey and will require collaboration if any decisions are made pertaining to it.

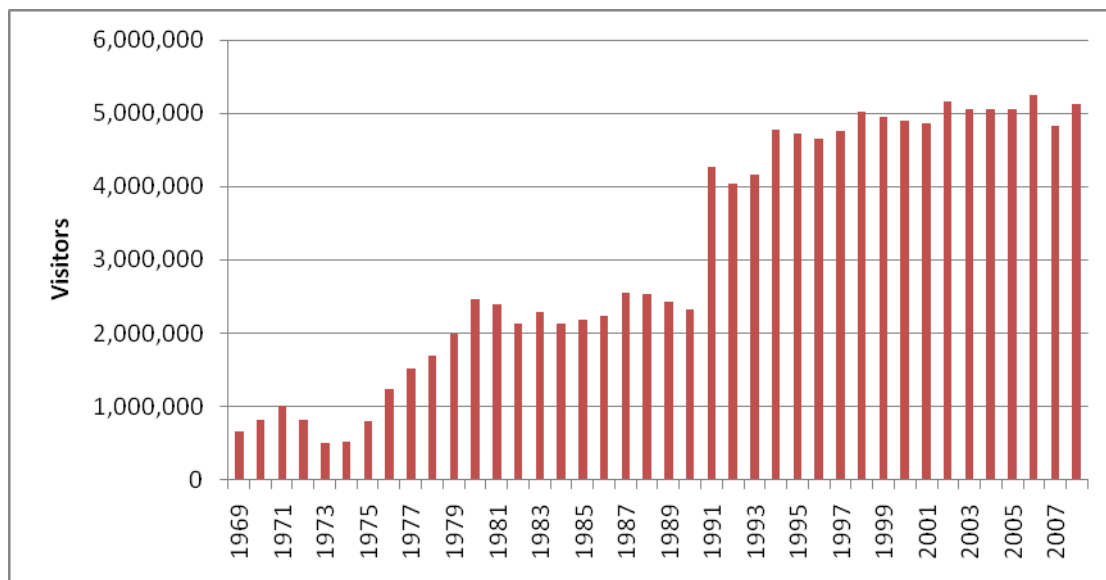


DEWA has 110 permanent employees and 60 seasonal employees. In 2003, 618 volunteers donated 29,772 hours of service to DEWA.

### A.5.3 Visitation Levels and Visitor Profiles

DEWA is the ninth most visited site in the NPS system. It is estimated that visitation levels are approximately 5 million annually. Visitation levels have grown over 4 fold since 1976 (Figure A-3).

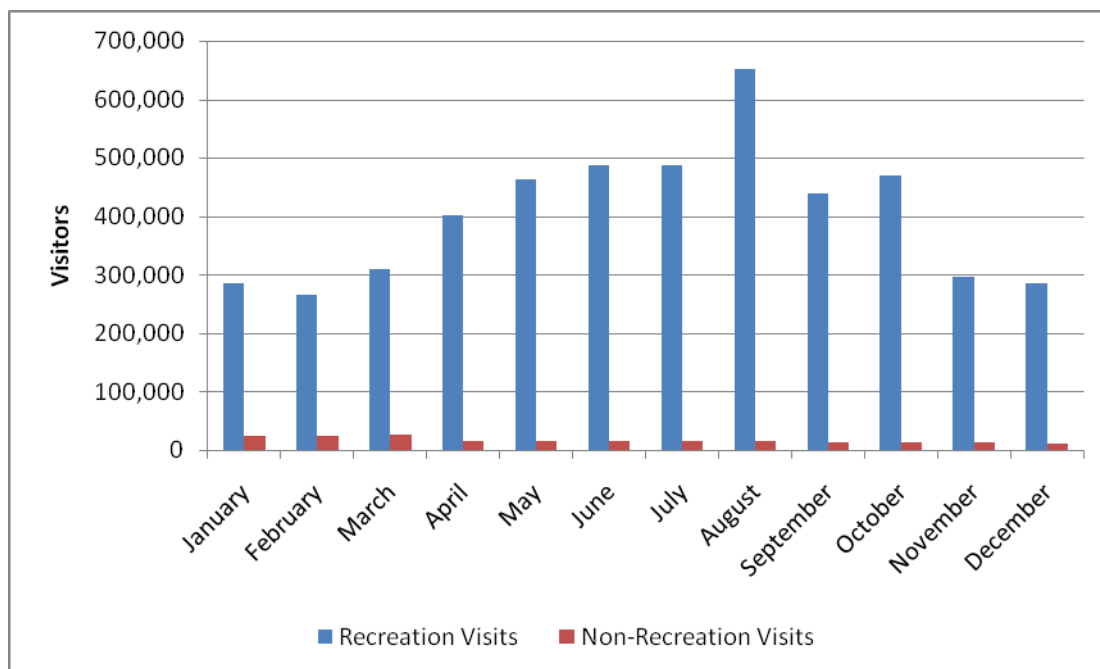
**Figure A-3: Annual Visitors to DEWA**



Source: NPS Public Use Statistics Office

In 2003, it was estimated that visitation had increased by a compound annual growth of 2.5 percent over the previous ten years. Most visitors are day-use visitors since there are few overnight activities and facilities. Most visits occur during the summer months (36 percent) of June, July, and August (Figure A-4).

**Figure A-4: 2007 Monthly Visitors to DEWA**



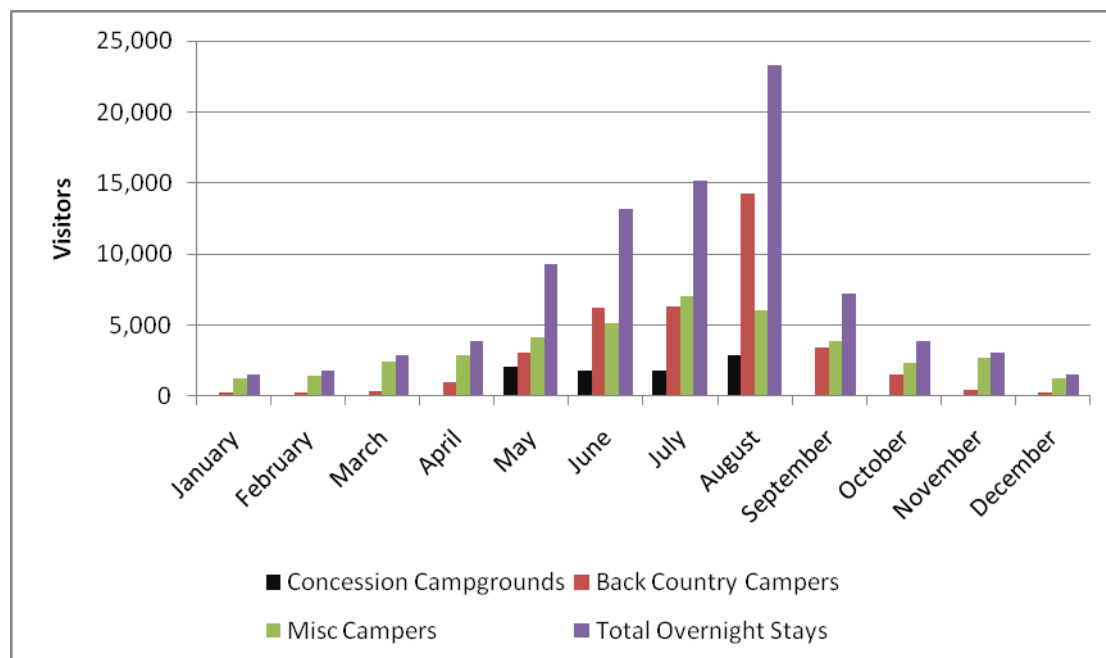
Source: National Park Service Public Use Statistics Office

Most visitors (89 percent) are from New Jersey, Pennsylvania, and New York. About 60 percent of visitors are repeat visitors. Two-thirds of visitors come in groups of two to four and spend between four and eight hours in DEWA.

Weekends have the highest visitation numbers and it is not uncommon for some of the swim beaches to experience over 1,000 visitors per day.

Camping is a popular activity in DEWA. Camping occurs predominantly during the warmer months (May through August). Most campers tend to be back country campers or campers who stay in DEWA's concession campground at Dingmans Ferry (Figure A-5).

**Figure A-5: Camping in DEWA**



Source: National Park Service Public Use Statistics Office

#### **A.5.4 Road Network and Parking**

There are 86 miles of paved roadways and 83 miles of unpaved roadways in DEWA. US 209 forms the main backbone of the road transportation network on the Pennsylvanian side of DEWA. To the north, US 206 serves as a major transportation artery for DEWA. Interstate 80 transects the southern end of DEWA and serves as a major entry point to DEWA. I-84 and SR 6 provide easy access to DEWA from the north (see).

The western boundary of DEWA is accessed by numerous roads that descend from the high lying ridges where many new planned communities are located. These roads are a major source of congestion in DEWA and include the following: SR 402, Bushkill Falls Road, Silver Lake Road, SR 739, and SR 2001. The Northeastern Pennsylvania Alliance Rural Planning Organization voted at its October 21, 2008 meeting to adopt a funding plan for the Marshall's Creek Traffic Relief Project. Funding up to \$27.7 million, was approved which will be sufficient to fund an alternative road option that should alleviate traffic congestion at the southern end of DEWA.

On the New Jersey side of DEWA access is more limited due to the Kittatinny Mountain Range which forms a natural boundary. Limited access is provided by SR 602, SR 627, SR 615, SR 560, and SR 645. Low traffic volumes are characteristic of roadways on the New Jersey side of DEWA.

Sections of the roadways located within DEWA are designated NPS roads and these include River Road, US 209, SR 615, and Old Mine Road. Heavy commercial traffic is

restricted on DEWA section of US 209. The southern most section of Old Mine Road located within the boundary of Worthington State Forest is the property of the New Jersey Department of Environmental Protection, Division of Parks and Forestry.

East-west traffic movement is severely restricted due presence of the Delaware River. Three toll bridges provide limited crossing points for visitors to DEWA. These crossing are found at Delaware Water Gap, Dingmans Ferry, and at Milford.

There are approximately 220 designated parking spots located in 23 developed parking lots in DEWA. The majority are located at Kittatinny Point Visitors Center, Smithfield Beach, Milford and Dingmans launch. Parking areas currently do not provide adequate parking for visitors during weekends in the summer months. The parking at Smithfield Beach operates as a fee area and allows DEWA some control over parking congestion and over use. There are also many other locations throughout DEWA where parking is permitted. These include roadside pull-offs, trail heads, and abandoned home sites. Unfortunately, many unplanned pull-offs have been created along roads in DEWA. These are considered unsafe and undesirable and are being removed.

#### **A.5.5 Existing DEWA Fleet**

A Fleet Report conducted in January 2005 by the Center for Park Management found that in FY 2004 DEWA operated a fleet of 136 vehicles, of which 108 were owned by the Department of the Interior and 28 were owned by the General Services Administration. This review also found that the annual cost of the fleet was approximately \$350,000 per year, that the average vehicle age was 11 years, and that each vehicle logged approximately 6,400 miles per year.

#### **A.5.6 Existing Transportation Operations**

Most visitors to DEWA use private vehicles as there are no existing public transportation operations within DEWA boundaries; however MCTA began a service extension from Stroudsburg to the South Contact Station in Bushkill turnaround (yellow line) in November 2008 that provides access to the southern part of DEWA.

The existing private and public transportation options that operate in areas adjacent to DEWA include:

- Two private shuttle services that provide services within the Fernwood Resort and Shawnee Resort;
- The Water Gap Trolley;
- The Metropolitan Transportation Authority (MTA) Metro-North Railroad from Port Jervis to New York City provides access to the northern end of the Study Area;
- Greyhound bus services;
- Local taxi services (limited service in rural areas);
- A paratransit operator providing service for handicapped/senior citizens in Pike County;

- School buses;
- Numerous transportation vehicles supporting various recreational activities including canoe liveries and education groups; and
- The Martz bus system that runs buses to a location just below the southern end of DEWA.

Currently, New Jersey Transit and several New Jersey and Pennsylvania counties are undertaking an assessment of restoring passenger rail service from Scranton, Pennsylvania to Hoboken, New Jersey, through the southern end of DEWA. The yet to be reinstated Lackawanna Cutoff-Monroe County Rail Authority commuter railway line would have a station adjacent to I-80 just outside of DEWA boundaries. Shuttle buses and/or trail could potentially connect visitors to DEWA's facilities.

The alternative transportation study for which this existing conditions report is being written will examine a number of strategies to improve visitor access to DEWA. Mechanized transportation options include, tourist shuttles, commuter rail extensions, rail shuttles, water taxi/ferries across the Delaware River.

### **A.5.7 Park Trails and Hiking**

Trails have always been an important part of DEWA (Figure A-6). Native American trails in the study area were used by European settlers who widened existing footpaths into roads for horseback travel. An example of such a trail was the Minsi Path which extended from Stroudsburg through to Milford and followed the approximate route followed by US 209 today. Many of the existing trails were developed before the area was designated a national reserve area. Continued use of trails by residents of the area who were relocated in the 1960s has led to the development of many formal and informal trails in DEWA. Three types of trails can be identified in DEWA. These include existing trails, informal trails (remnants of former trails that are not recognized by DEWA), and proposed trails (new trails recommended for inclusion in the designated system). Trails are defined by use in DEWA. These include hiking trails, equestrian trails, cross-country skiing trails, and multi-use trails. Trails provide opportunities for DEWA to be explored by visitors. The designated trail consists of 53 trails totaling 223 miles in length. A program to upgrade trails is currently underway and it is estimated that approximately 34 miles of trails will require total new construction. Hiking is permitted on all trails in DEWA. However, upgrades to multi-use trails will see an increase in mileage for bicycles to 95 miles, equestrian to 19 miles, and cross country skiing to 93 miles.

The most recent DEWA trails plan designates a trail system organized into four networks. They are the Appalachian, Country Road, Gap View, and River Valley networks. Each of these networks contains a series of trails that enhance a particular visitor experience and provides for specific uses.

- **Appalachian Trail Network** – These hiking trails provide an isolated, remote, wooded experience for the majority of the network. Present DEWA trails include:

- ❑ Appalachian National Scenic;
- ❑ Blue Blaze;
- ❑ Buttermilk Falls;
- ❑ Coppermine;
- ❑ Kaiser;
- ❑ Rattlesnake Swamp; and
- ❑ Red Dot.

Proposed trails include:

- ❑ Crater Lake Loop; and
- ❑ Long Pine Pond Loop.

- **Country Road 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 trails include:

- ❑ Blue Mountain Lake;
- ❑ Buttermilk Falls;
- ❑ Military Road;
- ❑ Orchard;
- ❑ Pioneer;
- ❑ Upper Ridge Road; and
- ❑ Van Campens Glen.

Proposed trails include:

- ❑ Country Road;
- ❑ Coventry Road;
- ❑ Farmers Road;
- ❑ Hamilton Ridge;
- ❑ Mountain Road;
- ❑ Peters Valley;
- ❑ Pool Colony;
- ❑ Rivers Bend;
- ❑ Silver Spray Falls;
- ❑ Walpack Environmental Education Center;
- ❑ Walpack Ridge; and
- ❑ 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 focuses on present DEWA trails and

facilities for intensive day-use hiking on the majority of its trails. Present DEWA trails include:

- ❑ Appalachian National Scenic;
- ❑ Arrow Island;
- ❑ Blue Blaze;
- ❑ Karamac;
- ❑ Slateford Loop; and
- ❑ Red Dot.

Proposed Trails include:

- ❑ Gap to Slateford;
- ❑ Karamac Railroad; and
- ❑ 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 DEWA boundary. Present DEWA Trails include:

- ❑ Childs Park;
- ❑ Conashaugh View;
- ❑ Dingmans Creek;
- ❑ Hidden Lake Loop;
- ❑ Hornbecks Creek;
- ❑ PEEC;
- ❑ Railway Avenue;
- ❑ Raymondskill Creek; and
- ❑ Toms Creek.

Proposed trails include:

- ❑ Adams Creek;
- ❑ Adams Creek to Conashaugh Link;
- ❑ Bridge and Groom;
- ❑ Cliff Park;
- ❑ Dingmans to Hornbecks;
- ❑ Eshback;
- ❑ Hornbecks – PEEC;
- ❑ McDade Recreational;
- ❑ McDade to Stucki Pond;
- ❑ Mill Creek;
- ❑ Sproul Road; and
- ❑ Theune.

Currently DEWA trails are associated with major visitor centers, picnic areas, or attractions such as waterfalls, experience the highest concentrated use. Majority of use occurs on summer weekends in places such as the Appalachian National Scenic Trail, Dingmans Falls, Childs Park, and Buttermilk Falls, located within the park.

There are 63 trailheads in DEWA. Trailhead facilities vary but can include restrooms, parking spaces, benches, trash cans, and information kiosks. Detailed descriptions of all the trails listed above can be found in the Delaware Water Gap National Recreation Area Trails Plan and General Management Plan Amendment of 2001.

In the past few years DEWA has taken positive steps to address trail-related resource impacts. One of the major goals is to disperse visitors and uses through the addition of additional trails. The McDade Recreational Trail and the Country Road Trail will help achieve the goal of dispersed recreation in DEWA.

The Delaware Water Gap National Recreation Area General Management Plan identifies a hiking, bicycling, and cross country skiing trail along the Pennsylvania side of the Delaware River as a proposed facility development, consistent with the enabling legislation for DEWA which is “for public outdoor recreation use and enjoyment.” In addition, DEWA Trails Plan calls for primary trails on both sides of the river as high priorities. Planning for this trail began in 1996 to link existing visitor facilities at DEWA, such as boat accesses, beaches, picnic areas, and campgrounds.

The McDade Trail would stretch essentially the full length of DEWA, ultimately providing trail access from two communities bordering DEWA, Shawnee-on-the-Delaware to the south, and the Borough of Milford to the north. The trail would offer a variety of difficulty levels and would include some sections that would accommodate persons in wheelchairs. Approximately seven miles of the trail has been opened to the public. An additional 12 miles has been completed to date with the exception of trail bridges which are expected to be installed in the spring of 2009. When the bridge work is completed additional sections of the trail will be opened to the public. It is expected that the trail will be substantially completed by fall 2009 with the exception of some sections that are dependent upon planned roadway and bridge work by the Federal Highway Administration.

Existing partnerships and new partnerships with trail support organizations is being encouraged to sponsor the development and maintenance of existing and proposed trails. Partners are considered a resource for resource education, patrolling, and compliance. Trail partners include:

- Appalachian Trail Park Office;
- Appalachian Trail Conference;
- Appalachian Mountain Club;
- Delaware Water Gap Equestrian Advisory Committee;
- Kittatinny Mountain Bike Association;



- New Jersey State Parks;
- NY-NJ Trail Conference; and
- Wilmington Trail Club.

### A.5.8 Other Recreation Activities

The Delaware River which winds its way through the park is DEWA's focal point. Its exceptional water quality provide some of the best canoeing, rafting, tubing, and fishing to be found in the eastern United States.

There is no entry fee to DEWA; however user fees are charged at some recreation sites in the summer. Canoes and rafts can be rented from livery services in the area. Some non-for-profit organizations operate services from DEWA in addition to some for-profit concessions. Leasing of historic structures provides a small amount of income to DEWA which helps reduce the demands of the operating budget.

Other recreation opportunities that are found in DEWA include:

- Technical climbing on the surrounding escarpments;
- Hunting and fishing;
- Swimming in numerous lakes and the Delaware River;
- Camping on the river's shores and islands;
- Hiking;
- Bicycling on trails and roads;
- Bird watching;
- Wildlife photography;
- Nature study; and
- Environmental education.

More detail is provided in the following sections on the different recreation opportunities found within DEWA.

- **Winter Sports** - Winter sports, including cross-country skiing, snow shoeing, ice fishing, ice skating, and ice climbing are also popular activities. Slateford Farmhouse is the location of three short trails that offer cross-country skiing on the Pennsylvania side of DEWA. This trail is supplemented by skiing trail segments that are currently under construction. On the New Jersey side of DEWA 10 miles of cross country skiing trails are found at Blue Mountain Lakes. Trails serve as hiking trails in the summer months.
- **Bicycling** - Bicycling is becoming a popular recreation activity in DEWA. The recently opened Blue Mountain Lake Mountain Bike trail as well as sections of the McDade Trail is popular with bicyclists. It is estimated that approximately 3,500 cyclists use the trails annually. Many road bikers also use the road network within DEWA for long distance endurance bicycling. Currently biking trails and the road network system are inadequate from a safety perspective, especially in areas with high automobile traffic. Old Mine Road (20 miles) in New Jersey and

the stretch of road from the Douglas Parking area through to Peters Valley (18 miles) offer safer routes for road bicyclists. Mountain bicyclists are encouraged to use former unpaved sections of the Old Mine Road and the McDade Trail. Bicycling is not recommended on Routes 209, 739, or River Road because of high traffic volumes.

- **Equestrian Activities** - The horseback riding trail in Pennsylvania is relatively new. Approximately 500 equestrians are estimated to visit DEWA with their horses annually.
- **Sightseeing and Touring** – More than 200 miles of roads wind through DEWA’s scenic valleys, ridges and past historic buildings and foliage observations in the spring and fall.
- **Camping** – Tent and RV sites are available at private campgrounds. Two campgrounds and 62 river camp sites are located within the boundaries of DEWA. Primitive campsites are available for through-hikers on the Appalachian Trail and for canoeists on extended river trips.
- **Picnicking** – Picnicking is a popular activity. Picnic tables are scattered throughout DEWA for the convenience of day visitors.
- **Swimming** – The Delaware River is one of the cleanest and most scenic in the East. Three swim beaches are located in DEWA. Bathhouses, picnic areas, parking, and life guarded areas are available at Smithfield and Milford Beaches, and will soon be available at Turtle Beach.
- **Boating** – The 40 miles of the Delaware areas within the recreation area attract people who enjoy canoeing, tubing, and rafting. Nine boat and canoe launch areas are located within DEWA. River access points are located every eight to ten miles for easy day trips. Liveries are licensed to rent equipment and provide transportation between access points on the river. Sections of the river are dangerous at high water.
- **Fishing** – The many lakes and ponds found within the recreation area provide excellent fishing for panfish, bass, and pickerel. Rainbow trout, brook trout, or brown trout are found in most streams. The river has American shad, smallmouth bass, walleye, eel, catfish, and muskellunge. Licenses are required for fishing if over the age of 16.
- **Hunting** – Hunting is permitted in some sections of DEWA in accordance with the game regulations of Pennsylvania or New Jersey.
- **Wildlife and Bird watching** – The wide diversity of wildlife makes DEWA one of the best places in the East to watch for raptors and migratory birds.

Places of interest that are popular with visitors to DEWA include the following:

- **Peters Valley Craft Education Center** – Skilled artisans that live in the education center teach beginning and advance courses, show techniques, and sell their wares.
- **Millbrook Village** – The village was founded in 1832 when Abram Garriss, a local farmer, built a grain mill along the newly built Columbia-Walpack Turnpike where the turnpike crossed a stream known as Van Campens Mill Brooke. Soon Abram and his neighbors organized a Methodist congregation and built a small church with a school in the basement. The village flourished in the 1800s but by 1900 the village was in decline. The mill closed just after 1900 and by 1950 only the blacksmith was doing business in the town. Today the village serves as a recreation of a later 19th century rural community. Twenty four structures and an old cemetery can be visited in Millbrook Village
- **Pocono Environmental Education Center (PEEC)** – The center offers study programs in a residential environment. The center has 12 miles of hiking trails through DEWA and has access to 20,000 acres of public land nearby.
- **Mohican Outdoor Center** – This facility which is run by the Appalachian Mountain club offers recreation programs and workshops for members and non-members. The center also serves as a base of operations for work projects within DEWA.

#### **A.5.9 Cultural Resources**

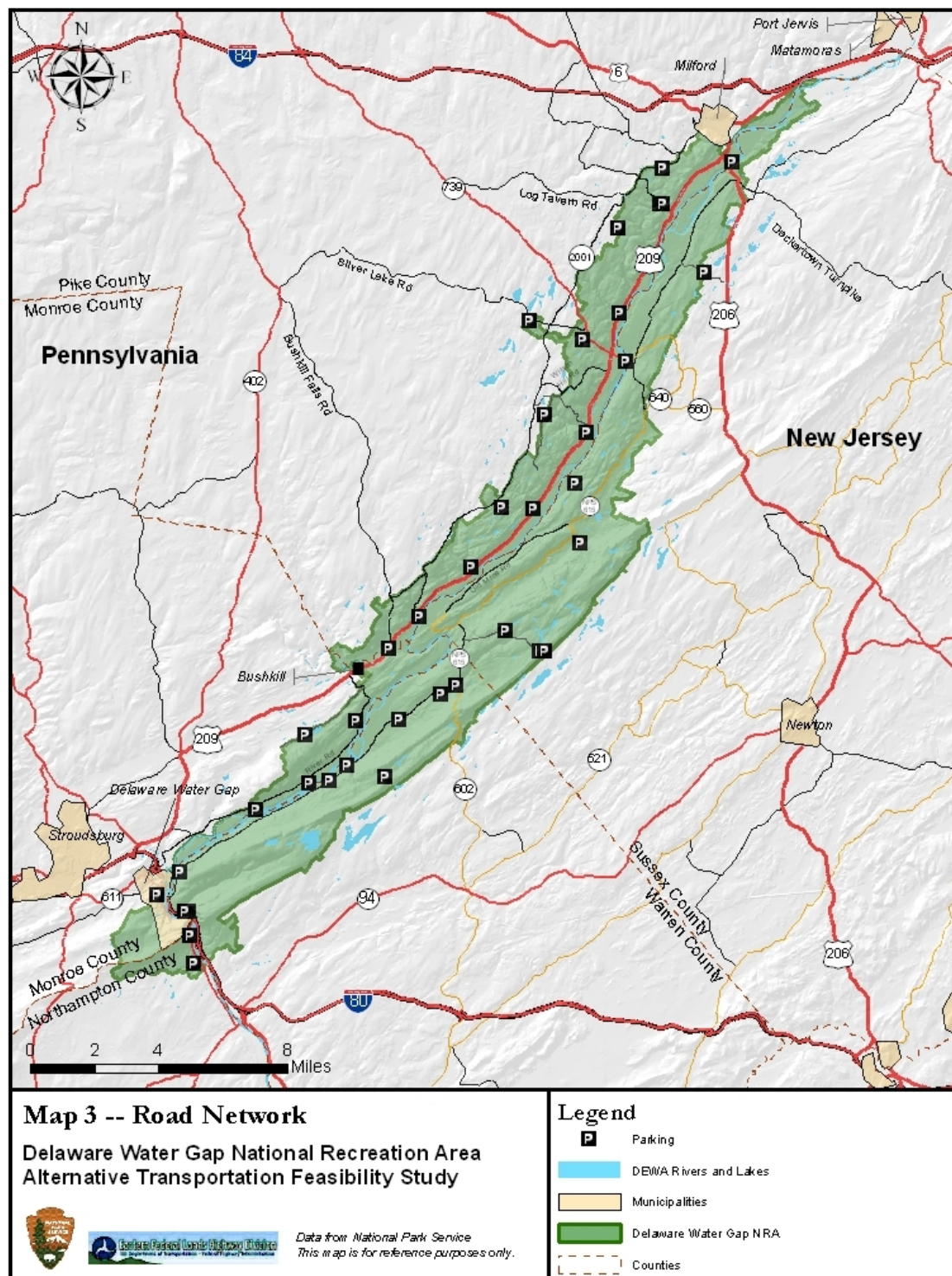
DEWA has a remarkable variety of cultural resources, both pre-historic and historic. Archeological excavations have uncovered a large number of American Indian villages, camps and other significant sites. American Indian artifacts discovered in the area indicate the area has been inhabited from about 8,500 BC to the present.

There are vestiges of the French and Indian War and the frontier life of early America. Over 458 archeological sites have been identified and 1.2 million cultural artifacts have been recovered in DEWA. The archeological sites that have been identified have provided opportunities for studying the natural evolution and sequences of the Delaware, Lenape, and Munsee Indians. There is also a wide variety of distinctive historic architecture examples found in the valley covering early European settlement from the early Dutch through to the Victorian era. Of interest to visitors is the variety of construction material that was used to construct structures associated with these different periods of settlement. Many of the historic structures were acquired by the NPS as a result of the proposed Tocks Dam and Reservoir. The relocation of former residents has helped with the preservation of many of these structures which can be viewed in several historic villages that capture the sights and activities of the region's past. Millbrook Village hosts regular demonstrations of the cultural past representative of the study area. To aid in the preservation of cultural landscapes, DEWA leases 3,000 acres of

land to local farmers. This practice also allows DEWA to maintain open spaces and enhance the diversity of scenic, cultural, and wildlife habitats.

Nineteen individual properties and four historic districts containing 58 major structures are listed on the National Register of Historic Places. Eighty historic properties are located within DEWA and 73 cultural landscapes have been identified. Structures date back to 1726. In addition, there are many other buildings that are eligible for listing on the Register. The Walpack Center and Peters Valley are two unique historical villages within DEWA boundaries; partial villages can be found at Bushkill, Egypt Mills, Flatbrookville, and Dingmans Ferry.

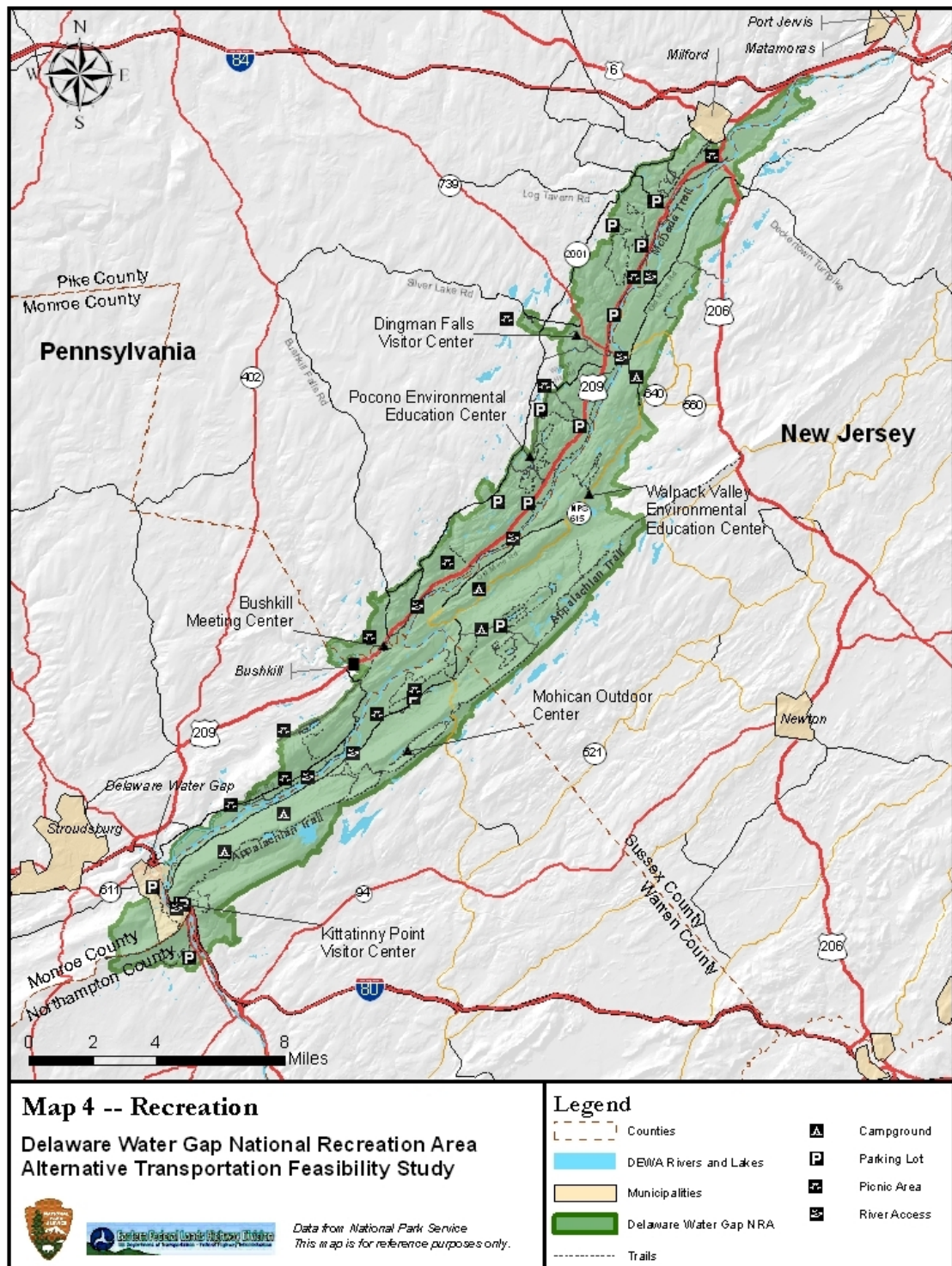
**Figure A-6: Map of Road Network**



Source: Jacobs Engineering Group, Inc.



Figure A-7: Map of Recreation Area



Source: Jacobs Engineering Group, Inc.

## **A.6 Population Demographics**

### **A.6.1 Regional Population Demographics**

The character of the surrounding community has changed significantly over the last 15 years due to increasing development, especially on the Pennsylvania side of DEWA. Three of the counties in which DEWA is located are among the fastest growing counties in their respective states. Current estimates from the 2000 US Census project that the resident population in surrounding communities will increase by 40 percent by 2030.

According to 2006 Census Bureau estimates, there are nearly 40.5 million inhabitants in the tri-state area that surrounds DEWA. This population accounts for 13 percent of the total national population. Of the nearly 40.5 million inhabitants who live in the tri-state area, over 12.4 million are estimated to live in Pennsylvania, 8.7 million in New Jersey, and 19.3 million in New York (Census Bureau, 2006). The combined population of the five counties adjacent to DEWA study area is nearly 68,000. They are distributed as follows: Monroe County, Pennsylvania (166,000); Pike County, Pennsylvania (58,000); Northampton County, Pennsylvania (291,000); Sussex County, New Jersey (153, 000), and Warren County, New Jersey (111,000).

Minorities are not well represented in the study area. White persons form approximately 90 percent of the population in the study area, followed by African American persons at approximately 4 percent. Smaller groups of Asian and indigenous people make up the remainder.

As can be seen from the population figures, listed above, the most populous areas that are adjacent to DEWA are found on the Pennsylvania side of the Delaware River. The large population residing on the western boundary of DEWA is significant as it is the source of many of visitors to DEWA and is the cause of much of the traffic congestion experienced on the Pennsylvanian side of DEWA, especially along US 209. Housing developments planned to accommodate commuters who work in the Newark and New York areas are expected to add to the population adjacent to DEWA and contribute to an overall increase in visitation to the study area over the next few years.

Visitation pressures on the New Jersey Side of DEWA are less for two reasons. Most of the inhabitants who formerly lived within the boundary of DEWA were relocated when the Tocks Island Dam and Reservoir was proposed in the 1960s. Secondly, the Kittatinny Mountain Range forms a natural boundary between DEWA and most of the inhabitants of Warren and Sussex Counties who would recreate on the New Jersey side if there was better road access.

### **A.6.2 County Demographic Characteristics**

#### Monroe County

As of the 2000 census, there were approximately 139,000 people, 49,500 households, and 36,500 families residing in the county. The population density was 228 people per square

mile. There were 67,500 housing units at an average density of 111 per square mile. The racial makeup of the county was 88.21 percent White, 6.02 percent African American, 0.21 percent Native American, 1.11 percent Asian, 0.03 percent Pacific Islander.

There were 49,500 households out of which 36.20 percent had children under the age of 18 living with them, 60.70 percent were married couples living together, 8.80 percent had a female householder with no husband present, and 26.30 percent were non-families. 20.20 percent of all households were made up of individuals and 7.80 percent had someone living alone who was 65 years of age or older. The average household size was 2.73 and the average family size was 3.16. In the county, the population was spread out with 26.80 percent under the age of 18, 8.60 percent from 18 to 24, 28.80 percent from 25 to 44, 23.50 percent from 45 to 64, and 12.30 percent who were 65 years of age or older. The median age was 37 years. For every 100 females there were 97.60 males. For every 100 females age 18 and over, there were 94.40 males.

#### Pike County

As of the 2000 census, there were approximately 46,000 people, 17,400 households, and 13,000 families residing in the county. The population density was 85 people per square mile (33/km<sup>2</sup>). There were 34,700 housing units at an average density of 63 per square mile (24/km<sup>2</sup>). The racial makeup of the county was 93.10 percent White, 3.27 percent African American, 0.24 percent Native American, 0.62 percent Asian, 0.01 percent Pacific Islander, 1.30 percent from other races, and 1.47 percent from two or more races.

There were 17,400 households out of which 34.40 percent had children under the age of 18 living with them, 63.50 percent were married couples living together, 7.60 percent had a female householder with no husband present, and 25.30 percent were non-families. 20.70 percent of all households were made up of individuals and 8.40 percent had someone living alone who was 65 years of age or older. The average household size was 2.63 and the average family size was 3.06. In the county, the population was spread out with 26.70 percent under the age of 18, 5.30 percent from 18 to 24, 27.70 percent from 25 to 44, 25.10 percent from 45 to 64, and 15.20 percent who were 65 years of age or older. The median age was 40 years. For every 100 females there were 99.30 males. For every 100 females age 18 and over, there were 97.30 males.

#### Northampton County

As of the 2000 census, there were approximately 267,000 people, 101,500 households, and 71,100 families residing in the county. The population density was 714 people per square mile (276/km<sup>2</sup>). There were 106,710 housing units at an average density of 286 per square mile (110/km<sup>2</sup>). The racial makeup of the county was 91.23 percent White, 2.77 percent African American, 0.15 percent Native American, 1.37 percent Asian, 0.03 percent Pacific Islander, 3.06 percent from other races, and 1.39 percent from two or more races.

There were approximately 101,500 households out of which 31.20 percent had children under the age of 18 living with them, 56.40 percent were married couples living together,



9.80 percent had a female householder with no husband present, and 30.00 percent were non-families. 24.70 percent of all households were made up of individuals and 11.20 percent had someone living alone who was 65 years of age or older. The average household size was 2.53 and the average family size was 3.02.

In the county, the population was spread out with 23.30 percent under the age of 18, 9.20 percent from 18 to 24, 28.30 percent from 25 to 44, 23.40 percent from 45 to 64, and 15.70 percent who were 65 years of age or older. The median age was 38 years. For every 100 females there were 94.80 males. For every 100 females age 18 and over, there were 91.70 males.

#### Sussex County

As of the 2000 census, there were approximately 144,200 people, 50,800 households, and 38,800 families residing in the county. The population density was 277 people per square mile. There were over 56,500 housing units at an average density of 108 per square mile (42/km<sup>2</sup>). The racial makeup of the county was 95.70 percent White, 1.0 percent African American, 0.11 percent Native American, 1.20 percent Asian, 0.02 percent Pacific Islander, 0.74 percent from other races, and 1.14 percent from two or more races.

By 2006, 90.3 percent of the county population was non-Hispanic whites. The percentage of African-Americans was up to 1.7 percent. Asians were now 1.9 percent of the population. 5.3 percent of the population was Latino.

In 2000 there were over 50,800 households out of which 39.90 percent had children under the age of 18 living with them, 65.00 percent were married couples living together, 8.00 percent had a female householder with no husband present, and 23.70 percent were non-families. 18.90 percent of all households were made up of individuals and 6.30 percent had someone living alone who was 65 years of age or older. The average household size was 2.80 and the average family size was 3.24. In the county the population was spread out with 27.90 percent under the age of 18, 6.20 percent from 18 to 24, 31.50 percent from 25 to 44, 25.30 percent from 45 to 64, and 9.10 percent who were 65 years of age or older. The median age was 37 years. For every 100 females there were 98.00 males. For every 100 females age 18 and over, there were 95.60 males.

#### Warren County

As of the 2000 census, there were approximately 102,400 people, 38,700 households, and 27,500 families residing in the county. The population density was 286 people per square mile (111/km<sup>2</sup>). There were 41,157 housing units at an average density of 115 per square mile (44/km<sup>2</sup>). The racial makeup of the county was 94.54 percent White, 1.87 percent African American, 0.11 percent Native American, 1.21 percent Asian, 0.02 percent Pacific Islander, 1.01 percent from other races, and 1.24 percent from two or more races.

There were nearly 38,700 households out of which 34.70 percent had children under the age of 18 living with them, 58.20 percent were married couples living together, 9.20 percent had a female householder with no husband present, and 28.90 percent were non-

families. 24.00 percent of all households were made up of individuals and 10.00 percent had someone living alone who was 65 years of age or older. The average household size was 2.61 and the average family size was 3.12. In the county the population was spread out with 26.10 percent under the age of 18, 6.30 percent from 18 to 24, 31.30 percent from 25 to 44, 23.50 percent from 45 to 64, and 12.90 percent who were 65 years of age or older. The median age was 38 years. For every 100 females there were 94.90 males. For every 100 females age 18 and over, there were 91.10 males.

The median income for a household in the county was \$56,100, and the median income for a family was \$66,223. Males had a median income of \$47,331 versus \$31,790 for females. The per capita income for the county was \$25,728. About 3.60 percent of families and 5.40 percent of the population were below the poverty line, including 5.90 percent of those under age 18 and 6.70 percent of those aged 65 or over.

## **A.7 Economic Activities**

### **A.7.1 Pennsylvania**

Pennsylvania's 2006 total gross state product of \$510.31 billion ranks the state 6th in the nation. One of the largest employers is Bethlehem Steel's facility in Bethlehem, Pennsylvania. Pennsylvania is home to fifty Fortune 500 companies. Philadelphia in the southeast corner and Pittsburgh in the southwest corner are urban manufacturing centers. The remainder of the Pennsylvania is much more rural in character. Many farms in the eastern part of the Pennsylvania have been sold to land developers in the past years. This is largely caused by rising demand for land near Philadelphia, the nation's fifth largest metropolitan area. Pennsylvania draws 2.1 percent of the Gross State Product from accommodation and food services. The Pocono's attract honeymooners, golfers, and fishermen, while the Delaware Water Gap appeals to boaters, hikers, and nature lovers.

In the three counties located on the Pennsylvania side of the study area, employment opportunities are expected to increase over the next ten years. Monroe county expects the number of jobs to increase by as much as 37.3 percent by 2020 (Monroe County, 2007). Most jobs are located in the larger towns, which include Stroudsburg, East Stroudsburg, Milford, and Matamoras. Large local employers include the Tobyhanna Army Depot; Sanofi Pasteur; the Wal-Mart distribution center; East Stroudsburg University; the Pocono Medical Center; schools districts; federal, state, county, city and township governments; and numerous large box national retailers. DEWA is also an important employer.

Most businesses located close to the boundaries of DEWA are found on I-80, River Road, and US 209. Many of these businesses cater to visitors to DEWA, as there are a few concessions operating within DEWA. Typical businesses include restaurants, flea markets, country-type stores, inns, and resorts. The two largest resorts are Shawnee and Fernwood, where the vast majority of overnight visitors to DEWA stay. There are also livery operators who cater to the needs of visitors to DEWA located within the project study area.

Intuitions of higher education are found in Pennsylvanian counties. In Monroe County they include East Stroudsburg University of Pennsylvania and Northampton Community College. Four public school districts are found in Monroe County. In Northampton County higher education opportunities are offered by Lafayette College, Lehigh University, Moravian College, and Northampton County Community College (NCCC).

Public schools are organized under school districts, public charter schools, and non-public schools.

## **A.8 New Jersey**

The Bureau of Economic Analysis estimates that New Jersey's total state product in 2006 was \$434 billion. New Jersey's economy is centered on the pharmaceutical industry, chemical development, telecommunications, food processing, electric equipment, printing and publishing, and tourism. New Jersey's agricultural outputs are nursery stock, horses, vegetables, fruits and nuts, seafood, and dairy products. Some of these industries include retail sales, education and real estate. Newark Liberty International Airport is ranked seventh among the nation's busiest airports and among the top 20 busiest airports in the world. Shipping is a strong industry in New Jersey because of the state's strategic location. New Jersey hosts several business headquarters, including twenty-four Fortune 500 companies.

In the two counties located on the New Jersey side of the study area, employment opportunities are expected to increase over the next ten years. In county areas immediately adjacent to DEWA boundaries few employment opportunities exist due to the natural barrier formed by the Kittatinny Mountains and the relocation of the local population for the cancelled Tocks Dam and Reservoir project. Peters Valley provides limited employment opportunities within the boundary of DEWA. Most jobs are located in the larger towns to the south, east, and north of DEWA (i.e. Delaware Water Gap). Large local employers include Mountain Creek Intrawest; Crystal Springs Golf and Spa Resort; Newton Memorial Hospital; schools districts; federal, state, county, city and township governments; and numerous large box national retailers. DEWA is also an important employer.

Most businesses located close to the boundaries of DEWA are found on I-80, I-84, and US 206. Many of these businesses cater to visitors to DEWA, as there a few concessions operating within DEWA. Typical businesses include restaurants, country type stores, inns, and resorts. There are also livery operators who cater to the needs of visitors to DEWA located within the project study area.

Adult education opportunities are provided by Sussex County Community College, Warren County Community College, Centenary College and Blair Academy provide and the county schooling system. Students of school going age attend county schools.

## **A.9 Reference Materials**

The following represents a list of reference materials gathered and utilized for the preparation of this existing conditions report:

### General Reports

- Delaware Water Gap National Recreation Area Trails Plan and General Management Plan Amendment – Final (General Management Plan) (December 2001);
- Delaware Water Gap National Recreation Area Feasibility Analysis for Five River Sites (January 10, 2005), Prepared by Booz Allen Hamilton;
- Delaware Water Gap National Recreation Area Visitor Access Safety Study, Document # 620-D-259, PMIS# 99570 (July 2004);
- Delaware Water Gap National Recreation Area Field Report – Delaware Water Gap National Recreation Area; and
- Delaware Water Gap National Recreation Area Business Plan, National Parks Service, US Department of Interior, October 2003).

### General Information Publications

- Cultural Resource Management, Volume 25, No. 3, (2002) “Saved from the Dam”, Delaware Water Gap National Recreation Area;
- Delaware Water Gap National Recreation Area Trail Guide (Dingmans Falls Ravine) July 14, 2007;
- Delaware Water Gap National Recreation Area Woods and Water Falls – Trails on the Pennsylvania Side (July 14, 2007);
- Delaware Water Gap National Recreation Area Hunting (November 1, 2005);
- Delaware Water Gap National Recreation Area Fishing (November 6, 2006);
- Delaware Water Gap National Recreation Area Ranger-Led Programs – Summer 2008 (July 11, 2008);
- Delaware Water Gap National Recreation Area Campgrounds – Pennsylvania (November 4, 2005);
- Delaware Water Gap National Recreation Area Campgrounds – New Jersey (May 24, 2006);
- Delaware Water Gap National Recreation Area Road Bike Touring (June 15, 2008);
- Delaware Water Gap National Recreation Area Canoe Liveries (June 20, 2007);
- Delaware Water Gap National Recreation Area Crosscountry Trails – Hiking and Crosscountry Skiing (July 17, 2007);
- Delaware Water Gap National Recreation Area River Guide (November 27, 2007);
- Delaware Water Gap National Recreation Area River Campsite and Access Points (May 15, 2007);
- Delaware Water Gap National Recreation Area Millbrook Village (April 3, 2004);

- Delaware Water Gap National Recreation Area Appalachian Trail – Governing Regulations (November 22, 2006);
- Delaware Water Gap National Recreation Area Appalachian Trail Camp Locations (December 15, 2005);
- Delaware Water Gap National Recreation Area Hikes: The Gap and New Jersey (July 17, 2007);
- Delaware Water Gap National Recreation Area Delaware River Clean Up Day – July 23, 2008 (April 11, 2008);
- Delaware Water Gap National Recreation Area Pocono Environmental Education center Trails (November 22, 2005); and
- Delaware Water Gap National Recreation Area Junior Ranger Gazette – Volume Three (Summer 2008), National Park Service, National Park Foundation and Unilever, a Proud Partner of America’s National Parks.

#### Other Studies and Publications

- County and State Websites;
- Middle Smithfield Township Project Query 2008 (September 15, 2008);
- DRAFT 2008-2012 New Jersey Statewide Comprehensive Outdoors Preservation Plan, New Jersey Department of Environmental protection, Green Acres Program (August 29, 2007);
- Pike County Comprehensive Plan (Final), Pike County Planning Commission, November 2006;
- Pike County Transportation Service Evaluation Study – Draft Interim Report, Existing Public Transportation Services. Prepared for Pennsylvania Public Transportation Association (PPTA), prepared by Abrams-Cherwony & Associates (April 2007);
- Pike County Conservation District (PCCD) Programs and Services;
- Pike County Conservation District (PCCD) Spring 2008 Newsletter;
- Pike County: Where People, Land and Water Meet;
- Monroe County Transportation Authority (MCTA) - Transit Development Plan;
- Monroe County Transportation Authority (MCTA) - Interim Report: Service Area Profile (June 2007). Submitted by Abrams - Cherwony & Associates, and Mundle & Associates, Inc.;
- Monroe County Transportation Authority (MCTA) - Interim Report: Existing Transit System (November 2007). Submitted by Abrams - Cherwony & Associates, and Mundle & Associates, Inc.;
- Monroe County Transportation Authority (MCTA) - Interim Report: Service Proposals (May 2008), submitted by Abrams-Cherwony & Associates, and Mundle & Associates, Inc.;
- Monroe County Transportation Authority (MCTA) - Yellow Route Eastbound (November 2, 2008);
- United States Census Bureau;
- Water Gap Trolley Brochure; and
- Peters Valley Course Selection Guide 2008.

## Appendix B: Goals and Evaluation Criteria

This appendix is adapted from Technical Memorandum No. 1. It has four components. First, it provides an overview of the key points from the project kick-off meeting. Second, it provides an overview of the goals and evaluation criteria of the study. Third, it provides a list of available information, including reports and other data. Fourth, it provides a refined project timeline and a schedule for conducting meetings and submitting deliverables.

### B.1 Key Points from the Kick-Off Meeting

A two-day kick-off meeting was held at the Bushkill Meeting Center on July 15 and 16, 2008. The meeting was attended by 10 staff members from DEWA, 2 staff members from the NPS Northeast Region (NPS/NERO), 1 staff member from FHWA Eastern Federal Lands Division (FHWA-EFL), and 6 members of the consultant team, as shown below. Contact information for meeting participants is included in Attachment A.

#### **DEWA:**

John J. Donahue  
Bob Karotko  
Bill Leonard  
Debbie O'Leary  
Deb Nordeen  
Larry Commisso  
Patrick Lynch  
Phillip Morgan  
Susan Zoccola  
Leslie Morlock

#### **Other Participants:**

Bob Holzheimer, NPS/NERO  
John Tauscher, NPS/NERO  
Steve Suder, FHWA-EFL  
Dave Cheeney, VHB  
Phillip Shapiro, VHB  
David Anspacher, VHB  
David Baxter, Jacobs Engineering  
Steve Moore, Jacobs Engineering  
Destry Jarvis, ORAPS/Jacobs

The following key points were noted during the kick-off meeting. The meeting notes are provided in Attachment A.

- DEWA envisions an experience where visitors are dispersed throughout the park. Currently, visitation is largely focused on the Delaware River, but the park would like to evolve into a regional hiking center.
- The Pennsylvania (west) side of the park has developed rapidly over the past 15 years, with the development of residential communities and resorts on the park's boundaries. This development has added substantial traffic to park roads, particularly US 209. The New Jersey side of the park is rural and remains undeveloped, and, as a result has very low volumes of traffic.
- Commercial vehicles, with some exceptions, are not allowed on US 209 within park boundaries.

- Major visitor-use areas include: Milford Beach, Dingmans Falls, Kittatinny Point, and Smithfield Beach. The park is planning to open a swim beach on the New Jersey side of the park in the near future.
- A commuter park-and-ride is currently being constructed on Rt. 209 in Marshall's Creek, which could serve as a transit staging area into the park. A second park-and-ride has been proposed at the southern end of the park in the borough of Delaware Water Gap that could also be used as a transit staging area.
- There are over 80 entrances to the park, which makes it difficult to adequately control movements across park boundaries.
- An ongoing study being completed by an outside agency is reviewing the potential for restoring commuter rail service between Monroe County, Pennsylvania and Hoboken, New Jersey. A proposed Delaware Water Gap station would be located south of the River Road intersection near the Interstate 80 visitor center. A 900-space parking garage is proposed at the current surface parking lot. Commuter rail service would not begin until 2014 at the earliest.
- "Gateway Communities" to DEWA include Milford, Dingmans Ferry, Bushkill, Shawnee-on-Delaware, and the Borough of Delaware Water Gap in Pennsylvania and Sandyston in New Jersey.
- An ongoing safety study has identified major crash types (including road departure, animal collisions, and head-on collisions) and potential safety improvements in the park.

## **B.2 Goals and Evaluation Criteria of the Study**

After extensive discussion and careful refinement, five "high-priority" goals were established for the study based on a poll of participants at the project kick-off meeting. Two additional goals were to improve interpretation of park resources and to accommodate future growth; however, these goals were given a lower priority for this study. The five goals are:

- Enhance and diversify recreational opportunities for more people by creating a sustainable transportation system
- Address parking, safety, and congestion issues
- Improve integration of the park with surrounding resources and gateway communities
- Promote healthy parks and healthy living
- Identify opportunities for public-private partnerships

Evaluation criteria were developed as quantifiable measures of each goal and are shown below.

### **Goal 1: Enhance and diversify recreational opportunities for more people by creating a sustainable transportation system that will:**

- Criterion 1.1: Increase and disperse visitation to different park sites/resources without increasing the number of vehicles on public roadways



- Criterion 1.2: Increase awareness and use of the park's trail systems
- Criterion 1.3: Encourage and facilitate inter-modal connections among park sites and the surrounding areas
- Criterion 1.4: Evaluate the feasibility of all potential alternative transportation modes including water-based
- Criterion 1.5: Investigate and evaluate park fleet needs to reduce the number of vehicles wherever possible
- Criterion 1.6: Investigate fueling practices to incorporate fuel types that are more efficient and more environmentally sound

**Goal 2: Address parking, safety, and congestion issues to:**

- Criterion 2.1: Increase the number of visitors that are able to utilize park recreation sites that are currently limited by parking availability (keeping within individual site carrying capacities)
- Criterion 2.2: Reduce vehicle miles traveled throughout the park
- Criterion 2.3: Reduce the number of motor vehicle accidents

**Goal 3: Improve integration of park with surrounding resources and gateway communities by:**

- Criterion 3.1: Increasing the availability of alternative transportation transit routes and hiker/biker trail systems among gateway communities and the park.
- Criterion 3.2: Determining the most efficient implementation strategy for the construction of facilities for a regional alternative fuel distribution point

**Goal 4: Promote healthy parks and healthy living by:**

- Criterion 4.1: Reducing emissions of Green House Gases and Criteria Air Pollutants in the park and the surrounding communities

**Goal 5: Identify opportunities for public-private partnerships by:**

- Criterion 5.1: Identifying the possible public-private partnership opportunities
- Criterion 5.2: Examine financial benefits to surrounding communities

### B.3 List of Available Information and Data Sources

An initial list of available information and data sources associated with this study effort is provided in Table B-1. This table also indicates the person that will provide the information and an expected delivery date. The list will be expanded as information is identified and obtained from various stakeholders.

**Table B-1: Available Information and Data Source**

| <b>Document</b>  | <b>Source</b>                      | <b>Anticipated Delivery</b> |
|--|------------------------------------|-----------------------------|
| NPS/DEWA (DEWA) GIS databases  | Leslie Morlock<br>DEWA             | As needed                   |
| DEWA Trail Plans   | Debbie O'Leary/Bill Leonard, DEWA  | August 29, 2008             |
| Safety Study technical memos   | Scott Whittemore<br>CH2M-Hill      | August 29, 2008             |
| Safety Study PowerPoint presentations  | Scott Whittemore<br>CH2M-Hill      | August 29, 2008             |
| DEWA visitor information   | Debbie O'Leary<br>DEWA             | August 29, 2008             |
| Municipal plans  | Various Sources                    | September 19, 2008          |
| DEWA Multi-Year Transportation Plan Summary  | Debbie O'Leary<br>DEWA             | Obtained                    |
| FTA Field Book   | David Baxter<br>Jacobs Engineering | Obtained                    |
| <i>Pike County Transportation Service Evaluation Study – Final Report, February 2008</i> | Michael Mrozinski<br>Pike County   | Obtained                    |
| <i>Pike County Comprehensive Plan, November 2006</i>                                     | Michael Mrozinski<br>Pike County   | Obtained                    |
| PMIS 144369  | Debbie O'Leary<br>DEWA             | Obtained                    |
| NPS Director's Orders  | Tricia Wingard<br>VHB              | Obtained                    |
| <i>NPS Management Policies 2006</i>  | Tricia Wingard<br>VHB              | Obtained                    |
| Delaware Water Gap National Recreation Area Field Report                                 | David Cheeney<br>VHB               | Obtained                    |
| DO #12: Conservation Planning, Environmental Impact Analysis, and Decision-Making        | Tricia Wingard<br>VHB              | Obtained                    |
| <i>NPS Denver Service Center Editing Reference Manual, January 2005</i>                  | Tricia Wingard<br>VHB              | Obtained                    |

## **B.4 Refined Project Timeline and Schedule for Meetings and Deliverables**

Interaction with the public is a vital component of this study as a means to review ideas, gather information, and to gain community support. Table B-2 shows the schedule for four meetings, of which the kick-off meeting was completed in July 2008. At the end of August, the consultant team will conduct stakeholder interviews. In addition, there will be two public open houses: one in September 2008 to discuss potential alternative transportation options and another in November 2008 to review the feasible alternative transportation options.

**Table B-2: Meeting Schedule**

| <b>Meeting</b>                       | <b>Date</b>       |
|--------------------------------------|-------------------|
| Kickoff Meeting and Site Visit       | 07/18/08          |
| Conduct Final Stakeholder Interviews | 8/25/08 - 8/26/08 |
| Stakeholder / Public Open House #1   | 09/25/08          |
| Stakeholder / Public Open House #2   | 11/20/08          |

The consultant team will take direction from a core team responsible for reviewing deliverables and providing overall guidance for this study. The core team will consist of Bob Karatko, Debbie O'Leary, Bill Leonard, and Deb Nordeen from DEWA, and Steve Suder from FHWA-EFL. One additional team member from the Delaware Water Gap community will be identified by the park.

The consultant team will lead six conference calls with the core team between August 2008 and January 2009. The first conference call is scheduled for August 27, 2008. Future potential conference call dates are identified in Table B-3.

**Table B-3: Team Conference Call Schedule**

| <b>Conference Calls</b>                 | <b>Date</b> |
|---|-------------|
| Conference Call #1                      | 08/27/08    |
| Conference Call #2 ( <i>tentative</i> ) | 09/17/08    |
| Conference Call #3 ( <i>tentative</i> ) | 10/30/08    |
| Conference Call #4 ( <i>tentative</i> ) | 11/19/08    |
| Conference Call #5 ( <i>tentative</i> ) | 12/17/08    |
| Conference Call #6 ( <i>tentative</i> ) | 01/21/09    |

Project deliverables are an important way of ensuring that the park agrees with the direction of the project. Table B-4 shows seven deliverables for this project, including five technical memoranda, a draft report, and a final report. Completion of the final report by February 27, 2009 is contingent upon receiving comments on the draft report by January 30, 2009.

**Table B-4: Deliverable Schedule**

| <b>Deliverable</b>  | <b>Date</b> |
|---|-------------|
| Tech Memo #1: Goals, Objectives, and Project Scoping                  | 08/08/08    |
| Tech Memo #2: Existing Data and Conditions                            | 09/12/08    |
| Tech Memo #3: Stakeholder Interviews                                  | 09/19/08    |
| Tech Memo #4: Initial Options, Initial Screening, & Candidate Options | 10/17/08    |
| Tech Memo #5: Feasible Options  | 11/14/08    |
| Draft Report  | 12/19/08    |
| Final Report  | 2/27/09     |

In addition, the consultant team will provide support for the NPS Project Management Information System (PMIS) application, beginning in early January 2009.

## Appendix C: Stakeholder and Public Outreach

This appendix is adapted from Technical Memorandum No. 3.

### C.1 Introduction

Stakeholder and public involvement is beneficial for ATS planning as it helps identify opportunities for partnerships and encourages the exchange of ideas for alternative transportation systems that would be both feasible and have the support of local communities. Stakeholder and public involvement is an overall goal of DEWA, which has a stated mission to work cooperatively with surrounding communities and the public to achieve the conservation goals of the Delaware River Region. This appendix discusses the outcomes of stakeholder interviews and public meetings.

### C.2 Overview

At the project kickoff meeting, park managers expressed a desire to reach out to a wide group of stakeholders who would represent potential partners in the implementation of an alternative transportation system. The following stakeholders were identified:

- Delaware River Joint Toll Bridge Commission;
- Delaware Township;
- Dingmans Campground and River Trips;
- Fernwood Resort;
- Middle Smithfield Township;
- Monroe County Transit Authority;
- New Jersey Transit Authority;
- New Jersey Transportation Planning Authority;
- New Jersey Division of Parks and Forestry (Worthington State Forest);
- New Jersey Department of Environmental protection – Division of Parks and Forestry – State Parks Service;
- New Jersey Department of Transportation;
- Parks and Recreation for Northampton County;
- PennDOT, District 4-0;
- Peter's Valley Craft Center;
- Pike County Office of Community Planning;
- Pike County Roads Task Force;
- Lehman Township;
- Pocono Mountains Visitor's Bureau;
- Shawnee General Store;
- Shawnee Resort & Golf Course;
- Smithfield Township;
- Sussex County Planning Department;
- TransOptions, Northwest New Jersey; and
- Warren County Transportation Advisory Council.

Park managers acknowledges that this list is not exhaustive. It is expected that as the feasibility study progresses, additional stakeholders will be identified, through input from other stakeholders and the interested public, who would be invited to participate in stakeholder and public outreach meetings.

In preparation for stakeholder interviews the following actions were carried out:

- Introductory phone calls by DEWA to stakeholders;
- An informational letter requesting participation in the interviews was mailed to stakeholders by DEWA (see 0);
- Follow up calls to stakeholders to schedule interviews;
- Interviews at the Bushkill Meeting Center on August 25 and 26, 2008 (some interviews were conducted by telephone for interviewees that were unable to attend)
- An invitational letter to stakeholders as well as a press release to inform the public of an open house held at the Bushkill Meeting Center on September 25, 2008

An interview package was prepared for use during the interviews (see C.10). The interview package contained information on the purpose and need of the project, background information, and project objectives. A map was also included which was used as a tool to solicit discussions and informational exchanges. The following questions were asked during the interview sessions:

- What alternative transportation systems or infrastructure exist in the areas surrounding DEWA?
- What alternative transportation systems or infrastructure are you planning?
- What plans, reports and supporting documents (background data) do you have that would be useful for this project?
- What is your opinion of introducing alternative transportation in DEWA?
- Do you see a benefit in connecting to DEWA?
- How willing are you to partner with DEWA on an alternative transportation system?
- Are you willing to participate in a workshop/open house?

As the interviews progressed additional questions were asked based on responses to this set of questions.

Two stakeholder interviews were conducted on July 17, 2008 with the Monroe County Transit Authority and with the Pike County Office of Community Development at their offices. These were followed with 22 additional face-to-face interviews at the Bushkill Meeting Center and the Kittatinny Point Visitor Center on the afternoon of August 25, 2008, and the morning of August 26, 2008. Interview tables were set up in the meeting center and hour long face-to-face stakeholder interviews were conducted using the interview packages that were prepared. A number of telephone interviews were also held

in September with stakeholders who were unable to attend the August 2008 face-to-face stakeholder interviews.

On September 25, 2008 a Core Team Meeting with participants from DEWA and the consultant team (VHB, Inc and Jacobs Engineering, Inc) was held between 8:00 am and 11:30 am at the Bushkill Meeting Center, prior to the stakeholder and public meetings scheduled for later that day. At this meeting the consultants provided feedback on the interview outcomes and discussed organizational procedures related to the afternoon stakeholder and public open house meetings.

Later that day a stakeholder meeting was held between 1:30 pm and 3:00 pm. The purpose of the meeting was to share the interview findings with stakeholders and the national recreation area. A public open house was then held between 4:00 pm and 8:00 pm, where additional information and insights on alternative transportation options were gathered.

In addition, a second series of meetings were conducted on December 9, 2008, also conducted in the Bushkill Meeting Center, Bushkill, PA. These meetings were to update the stakeholders and general public on the progress of the study, present findings, and again gain input on the ideas and project themes presented.

Interview, stakeholder, and public meeting outcomes are presented in the following sections of this document.

### **C.3 Interview Outcomes**

The results of the face-to-face interviews and follow-up telephone interviews are provided under the following headings:

- Willingness to participate in the alternative transportation feasibility study;
- Existing alternative transportation systems or infrastructure;
- Type of alternative transportation system for DEWA; and
- Benefits of connections to a DEWA ATS.

#### **C.3.1 Willingness to Participate in the Alternative Transportation Feasibility Study**

All of the respondents were pleased that they had been invited to participate in the transportation feasibility study. Many commented that they were pleased that the National Park Service had reached out to them as they felt that they had information and insights that they could share that would help the transportation feasibility study be successful. Many of the stakeholders that were interviewed have interacted with the National Park Service previously on an informal basis. Others have formally participated in previous DEWA planning actions.

During the interview sessions some stakeholders identified others who they felt should be invited to participate in the interviews and meetings. Many also asked whether they could share their perceptions of the interviews and project information package with the organizations that they represented.

Many interviewees asked about the level of commitment required by their participation in the project. They were informed that a number of stakeholder workshop/open houses (scheduled for September and November 2008) were planned where their participation would be critical to the success of the project. In addition, interviewees were asked if they could provide any additional information that would be useful to the project. They were also asked if they would remain active participants in the process of developing alternative transportation options for DEWA.

During the interviews, stakeholders were informed of the regional importance of the alternative transportation study and that alternative transportation options outcomes could be beneficial for surrounding communities.

### **C.3.2 Existing Alternative Transportation Systems or Infrastructure**

Interviewees were asked if they were aware of any existing alternative transportation options in the project area.

Although no formal ATS exists within DEWA boundaries, there are several transportation options that operate in adjacent areas. These include:

- Monroe County Transit Authority (MCTA) to the south in the Stroudsburg area with a new extended service to Bushkill in November;
- Two private shuttle services within the Fernwood and Shawnee resorts;
- The Water Gap Trolley that runs excursions;
- The Port Jervis-New York Commuter Line to the North of the study area;
- Greyhound and taxi services (limited in rural parts of the study area);
- A handicapped/senior service in Pike County that provides transport upon request;
- School buses;
- Numerous outfitter transportation vehicles used to support recreation activities on the Delaware River; and
- The Martz bus system that runs buses to the southern end of the National Recreation Area.

A transportation study is underway to reinstate the Lackawanna Cutoff-Monroe County Rail Authority commuter rail service connecting Scranton, Pennsylvania with Hoboken, New Jersey, with a stop at Delaware Water Gap. The Lackawanna rail line operated from 1911 through the early mid-1970s and roughly parallels Interstate 80, which spans New Jersey from the George Washington Bridge in New York City to the Delaware Water gap in Pennsylvania, cutting across one of the most densely populated travel corridors in the nation. The Lackawanna Cut-Off is considered one of the great marvels of railroad



engineering and contains some of the world's largest rail embankments and two massive concrete viaducts.

For 30 years, traffic congestion has increased steadily along the 68-mile stretch of I-80 due to increasing population growth and employment centers along the corridor. Public and transportation officials agree that restoring the Lackawanna Cut-Off offers one solution to the problem. This proposed alternative transportation option will increase ATS opportunities for DEWA.

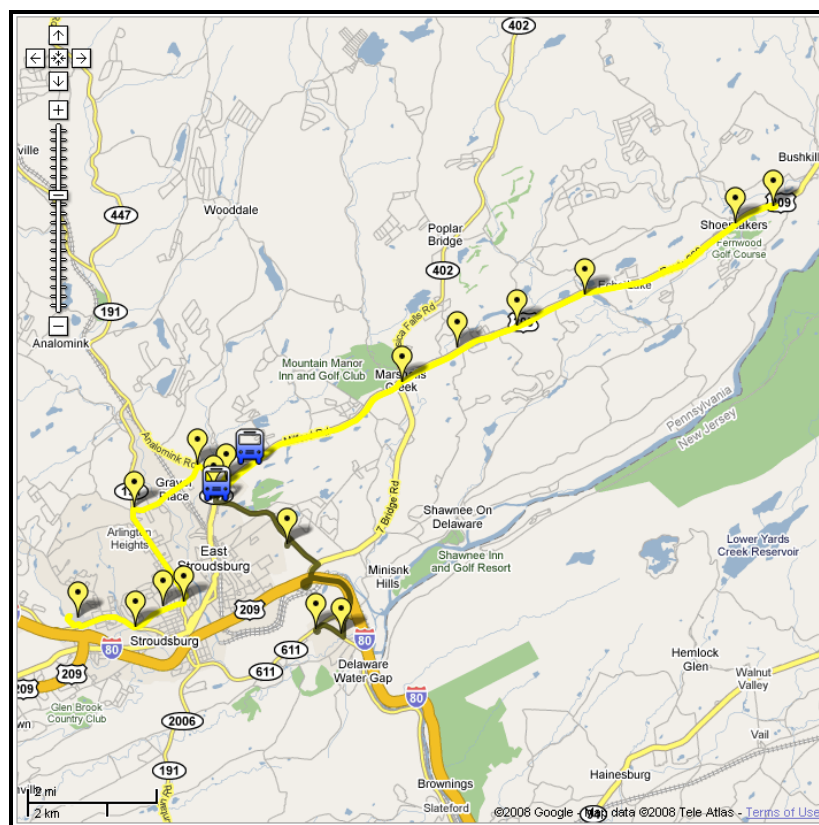
MCTA is launching a new service, the Yellow Eastbound bus route, on November 2, 2008 (Figure C-1). This route will start at Stroud Mall and end at the Delaware Water Gap South Contact Station turnaround, north of Bushkill. The route will follow US 209 once it leaves the city boundary of East Stroudsburg and will parallel the South Western boundary of DEWA. Fourteen bus stops have been identified, most of which are located near businesses. The service will operate on weekdays between 6:35 am and 5:35 pm. MCTA has indicated that the new route will operate as a pilot study and operation hours and bus frequency might be adjusted based on user demand. This new service will also provide connectivity to the Martz system through its stop at the Martz Park and Ride.

Very few interviewees indicated that they were planning new alternative transport systems in the near future. MCTA and New Jersey Transit Authority are planning expansions to their services that would make it easier for visitors to reach the boundaries of DEWA, but services within DEWA would be limited to exiting taxi and shuttle-type services.

The transit agencies indicated that they would be interested in a regionally-integrated system. However, it must be recognized that operational mandates restrict transit authorities from operating outside their jurisdictional areas. If a regionally integrated system were to be introduced, cross jurisdictional agreements will be needed. MCTA is currently negotiating an agreement to extend its service northwards into Pike County. This extension may make it possible to provide a service that will have an extended route along sections of US 209 that are located within the boundary of DEWA.

While county, township and private public transportation service operators indicated that they would be interested in a regionally integrated system, all interviewees expressed reservations about the funding of such a system. The Shawnee and Fernwood resorts also expressed concerns about the system operating within their boundaries, but could accept a service stopping at their entrances.

**Figure C-1: MCTA Yellow Route (with locations of bus stops)**



Source: Monroe County Transportation Authority, using Google Maps

### C.3.3 Type of Alternative Transportation System for DEWA

Interviewees were asked what type of alternative transportation service they would like to see. Suggestions included the following:

- Structure of system
  - ❑ An expanded shuttle bus system (region wide);
  - ❑ A service that is linked to resorts, recreation areas and businesses;
  - ❑ A regional service that would cater to the needs of tourists/recreating public as well as employees of many businesses in the area;
  - ❑ A flexible system with sufficient bus stops and service frequency to make it attractive to users;
  - ❑ An integrated system that is linked with the highway system, park-and-ride parking areas, as well as with commuter rail systems;
  - ❑ A system that would link county, state, and federal recreation areas and facilities;
  - ❑ A transportation system that would promote recreation use on the New Jersey side of DEWA; and

- ❑ A road system that provided more river crossings and which also provided additional east-west transportation options (not just focus on a north-south axis).
- Type of operation
  - ❑ A eco-friendly system that was compatible with the national recreation area;
  - ❑ A partially subsidized system;
  - ❑ A service that linked the northern and southern ends of the recreation area (running between Stroudsburg and Milford along US 209) with circular routes connecting at Dingmans Ferry;
  - ❑ A partnership-based system;
  - ❑ The use of smaller buses to accommodate the restrictions on heavy commercial vehicles using US 209; and
  - ❑ A system that would disperse recreation users of DEWA and provide solutions to New York and New Jersey commuter congestion on US 209.
- Non Motorized
  - ❑ A system that enhanced the day use of the numerous hiking trail systems (especially the McDade and Appalachian Trails) by providing connectivity between trail segments;
  - ❑ A system that would facilitate multi-use (e.g. canoeists/kayakers and bicyclists);
  - ❑ More bicycle routes; and
  - ❑ A system that enhanced access to all areas of DEWA and would not restrict general public use of the existing road system.
- Other considerations
  - ❑ Improved signage for DEWA so that recreation opportunities away from over visited areas would be dispersed to lesser known areas;
  - ❑ An expanded system that would encourage exploration of the many recreation, cultural, art and historic opportunities that the greater study area has to offer; and
  - ❑ A system that would encourage the inhabitants of gateway communities to recreate within DEWA.

During the Stakeholders and Public Open House meetings held on September 25, 2008 and December 9, 2008 at the Bushkill Meeting Center, additional input was obtained on the desired type of alternative transportation service that the community would like to see. These comments are discussed in Appendix C.3.5.

#### **C.3.4 Benefits of Connections to a DEWA ATS**

During the interviews the following benefits for the surrounding communities and stakeholders were identified:

- Increased visitations due to improved access
- Extended stays as visitors would have a means to explore DEWA recreation opportunities;
- Improved business opportunities for the surrounding communities;
- Increased access to recreation opportunities for New York residents who do not have their own cars;
- Improved transportation options for local communities (would not have to use their cars to get to work or recreation in DEWA);
- Decreased environmental impacts;
- Greater tourism marketing opportunities for the surrounding communities;
- Integration of communities and activities across the New Jersey-Pennsylvania stateline (both sides of DEWA);
- Reductions in vehicle travel times for commuters and traffic and parking congestion;
- Coalesced user groups (local community and visiting community);
- Increased stays as the visitor experience would be improved if a fully integrated transportation system with improved signage and information dissemination made it easier to recreate in a better branded destination;
- Dispersed recreation would be more feasible if new hiking and bicycling trails refocused the recreating public away from the current focus of river based recreation; and
- Potential reduction in operating costs of existing private transportation systems (shared costs).

### **C.3.5 Additional Stakeholder Comments**

Stakeholders were given the opportunity to provide any additional comments about alternative transportation in DEWA.

Currently, many of DEWA trails and roads are fragmented due to the geography of DEWA. Many of the stakeholders felt that DEWA should find ways to overcome fragmentation by improving north-south connectivity in DEWA. This included improved roads, as well as hiking and bicycling trails. The same concern was expressed for east-west connections across the Delaware River.

Most stakeholders were concerned about attempts by DEWA to close existing roads or to turn them into one-way roads. The sentiment was expressed by stakeholders that the implementation of ATS should not be tied to decreased travel options for vehicles in DEWA.

Questions were also asked about the type of service that could be provided. This included questions on the types of vehicles that would be used, regularity of service (head times) and seasonality. These are issues that should be addressed when ATS options are examined in this feasibility study.

Stakeholders also felt that DEWA should investigate ways to improve branding of DEWA as a recreation destination.

Stakeholders felt that ways should be investigated to integrate recreation opportunities across the state line. Integration would also require better communication by all interested parties in the national recreation area and surrounding communities. Increased visitation from New York and New Jersey, it was stated, would result in a more viable alternative transportation system.

A minority of stakeholders also expressed concern that DEWA would not carry the proposed ATS study forward to implementation.

Many stakeholders stressed the regional importance of implementing an ATS in DEWA and surrounding areas. This would require the identification of additional stakeholders as well as DEWA reaching out to elected officials as well.

## **C.4 Bushkill Stakeholders Meetings and Public Open Houses**

### **C.4.1 Introduction**

Three meetings were held on the September 25, 2008 at the Bushkill Meeting Center in Bushkill, PA. They were the following:

- Project Core Team meeting (8:00 am to 11:30 am) where a project progress discussion was held and procedures were discussed for the stakeholder meeting and the public open house meeting held later that day
- Stakeholder meeting (1:30 pm to 3:00 pm) where a summary interview report back was presented to stakeholders and a discussion of additional concerns was held
- Public Open House meeting (4:00 pm to 8:00 pm) where information stations and an information PowerPoint provided opportunities for meeting attendees to ask questions about the project and to provide additional insights into potential alternative transportation opportunities

There were also three additional meetings held on December 9, 2008 at the Bushkill Meeting Center. The time frames were exactly the same as the September 25, 2008 meetings and proved to be a productive tool with which to achieve further refinement for the ATS study.

### **C.4.2 Key Points from the Stakeholders Meetings and Public Open Houses**

#### **The First Stakeholder Meeting**

The Stakeholders Meeting conducted on September 25, 2008, was attended by DEWA Project Core Team and 16 stakeholder representatives who represented the following organizations:

- Delaware Township;

- Fernwood Resort;
- MCTA;
- New Jersey Transit;
- Trans Options;
- NJTPA;
- PennDOT;
- NJ State Parks and Forests;
- Smithfield Township;
- Shawnee Resort;
- Shawnee General Store; and
- Sussex County.

The agenda for the structured meeting can be found in C.11. The meeting was opened with a welcome from Bob Karotko (Deputy Superintendent) on behalf of John Donahue (Superintendent) who was unable to attend the start of the meeting. Attendees were given the chance to introduce themselves. After introductions, the purpose of the project and the schedule were reviewed. A summary of the initial trends was also presented to the stakeholders as well as an information PowerPoint slide presentation on the project. Each of the attendees was asked for comments and feedback on the presentation. These insights are provided in Section C.4.3 of this document. At the end of the meeting stakeholders were encouraged to remain engaged in the study and were also invited to attend the Public Open House later that day and the next stakeholders meeting in November.

#### **The First Public Open House**

The September 25, 2008, Public Open House was attended by DEWA project core team, the consultants, and 36 members of the general public. Most of the attendees identified themselves as residents, interested citizens, homeowners, Friends of DEWA, and business owners. Congressman Garrett's Western District Coordinator also attended the meeting on his behalf. Members of the media also attended the meeting.

The meeting started at 4:00 pm with John Donahue (Superintendent) giving a brief welcome. After the welcoming the public were given the opportunity to view an informational PowerPoint presentation on the project and then invited to visit information stations located in the meeting hall and ask questions about the project. Copies of the exhibits located at each of the stations can be found in C.12 of this document. The public was also encouraged to participate in the same interview survey that was shared with stakeholders (see C.10).

Considerable interest in the project was reflected by the lively discussions that took place during the September 25, 2008 Public Open House. The Public Open House also provided an opportunity to the project team to better inform the public about the goals and evaluation criteria of the project. One misconception that was corrected at the meeting was that the project's ultimate goal was to restrict traffic on River Road. The public were informed that it is not the purpose of this study to make a decision on the status of River Road.

### **The Second Stakeholders Meeting**

Continued interest was expressed by the level of participation in the second Stakeholders Meeting which was conducted on December 9, 2008. This meeting was also attended by DEWA project core team, the consulting team, and 10 stakeholder representatives who represented the following organizations:

- Delaware Township;
- Lehman Township;
- MCTA;
- Bushkill Group;
- Trans Options;
- PennDOT;
- NJ State Parks and Forests;
- Smithfield Township; and
- Shawnee General Store.

The agenda for this second meeting can be found in C.13. The meeting was again opened with comments from Bob Karotko (Deputy Superintendent) on behalf of John Donahue (Superintendent) who was unable to attend the start of the meeting. Attendees were given the chance to introduce themselves. After introductions, the purpose of the project and the schedule were reviewed. A review and summary of the process, findings, refinements, decisions, and future direction was presented to the stakeholders.

The overview of the process included the development of an initial project matrix containing nearly 20 conceptual ideas that were considered by the core team. Following the identification of these 20 conceptual ideas, the core team provided additional analysis to yield a refinement to six main project themes. These six project themes were also presented to the stakeholders. Finally, the three most viable themes were presented to the group and an interactive session proceeded to identify important short, medium and long termed action plans for consideration in the completion of this ATS study (C.16).

### **The Second Public Open House**

The Second Public Open House was held on December 9, 2008, at the Bushkill Meeting Center in Bushkill, Pennsylvania. Additional commentary and insights were provided by the participants that attended this Public Open House from 4:00 pm through 9:00 pm. Following progressive refinements of six study themes, the core team facilitated public participation through three specific areas of focus – Transportation Demand Management, Trails Focused Planning, and Bus System Linked themes. The public participation was valuable in exchanging opinions and ideas concerning the three main focus areas.

## **C.4.3 Additional Insights Gained during the Stakeholders Meetings and the Public Open Houses**

The following points summarize additional insights that were raised during the September 25, 2008 Stakeholders Meeting:

- The need for the interview technical memo to be released on the project website so that respondents could make provide additional informed responses and insights at the next stakeholder meeting.
- Would the proposed alternative transportation system be a seasonal system? The response to this question was that the study would determine the type of system that was feasible based on costs and ridership demand.
- There was consensus that the focus of the study should be fixing the traffic congestion on US 209, although the ability of this study to reduce congestion may be limited. Suggested potential fixes included road widening (from Country Ridge Road to the flea market located along US 209), investigation of by-pass roads, and the promotion of new park-and-ride areas.
- MCTA provided additional information on its new weekday service that it was extending up to Bushkill from Stroudsburg (Appendix C.3.2).
- New Jersey State Parks and Forests provided insights into its current recreation planning efforts to expand its hiking and bicycling trail system. Its new planning efforts include purchasing land to remedy the fragmented nature of many of its trails and recreation areas. It was also stated that they would favor finding ways to better connect their recreation facilities with those of DEWA and Appalachian Trail system and to encourage dispersed recreation across the region to ameliorate recreation congestion.
- Stakeholders felt strongly that DEWA needed better branding. It was stated that the gateways to the park are nondescript and that visual cues need to be developed that would encourage usage. Numerous stakeholders requested that they be provided with informational materials about the park that they could share with the public and also requested that any alternative transportation system include public education opportunities.
- New Jersey Transit Authority provided additional insights into the Lackawanna Cut-off project and reiterated that it represents a major initiative that would provide a connecting service for potential visitors to the national recreation area when it was completed. Currently, a number of feasibility and environmental studies are underway that would allow the project to move forward in the next few years.
- Stakeholders felt that any alternative transportation system that would provide transportation options for New York and New Jersey visitors who do not have their own vehicles would be beneficial.
- It was also stated that the local needs of the resident population should also be considered while developing an alternative transportation system.

The following additional insights were provided by the public that attended the September 25, 2008 Public Open House:

- DEWA encompasses many communities and two separate states. Consequently, US 209 and the Old Mine Road the primary North-South roadways on either sides of the Delaware River need to be kept open and accessible for health and



safety reasons and as access for people who live within or areas adjoining the park boundary.

- The access needs of privately held residential properties surrounded by the park must be respected.
- US 209 and Old Mine Road should become federally or state maintained roads. They should not be maintained by DEWA as they are a drain on their resources and funds.
- Traffic congestion occurs mainly on the southern end of DEWA due to high levels of residential development and the proximity to I-80. On the northern end of DEWA the river crossing between Montague and Milford attracts the bulk of the daily commuter and commercial traffic and contributes to traffic congestion. As a consequence, limited travel options for residents contribute to traffic problems in DEWA that are not necessarily caused by visitors.
- More information on visitation numbers is needed for this study.
- It would be nice to reintroduce historically replicated ferries that could allow tourists who wish to cross the Delaware travel options other than those restricted to the bridges near the Water Gap, at Dingmans Ferry and Milford.
- Hotel accommodation on the New Jersey side of the Delaware River is limited and as a consequence there are less visitors to the east side of DEWA.
- Historic sites in New Jersey that are open to tourists are limited to Foster-Armstrong on County Route 521 and Nelden-Roberts on Route 206, where traffic and visibility are a growing concern. This is also the same for Peters Valley, Walpack Center, the Van Campen Inn on Old Mine Road and Millbrook Village.
- There are boat or picnic pull-ins in DEWA, but these attract spontaneous, rather than scheduled visitation. The same counts for hikers, hunters, fishermen, bikers, photographers, bird watchers, etc.
- There is a need for well defined off road bicycling trails.
- Road bicyclists also need to be accommodated on US 209.
- Local residents need to have input in the alternative transportation planning project because the park is not a self-contained place and borders on residential area with resident who have specific needs.
- The use of a trolley bus type vehicle to shuttle people when events occur simultaneously such as those held at the Black Bear Festival in Milford and at the Pocono Environmental Education Center (PEEC), has been successful in the past and should be considered for future planning actions.
- Road intersections need clear and unobstructed markings and signs.
- Visibility is poor where Old Mine Road intersects with Route 206 (just off the Milford Bridge). The tree line facing Route 206 needs to be returned to its original setback when homes were located there thereby allowing greater visibility to motorists existing onto Route 206 or attempting to cross over to Deckertown or River Road.
- Small parking areas do not need paving, but should be covered in gravel and marked for use.
- There is a need for better road signs.

- DEWA boundary line tree markers are easily overlooked and do not inform visitors as to the exact location of DEWA boundary.
- There is a minimal visible NPS presence. The sporadic cell phone service affected by topography and service provider territory requires more of a patrol presence or other ways for people to get help or obtain information.
- Greater networking with existing partners should be encouraged so that events can be tied together for tours from area hotels or resorts, etc.
- Alternative energy sources should be investigated.
- Qualified and licensed private vendors who have permits from the NPS should be endorsed for alternative transportation within DEWA.
- The NPS should not get into the transportation business. This is not the time to be spending more tax dollars. The park might profit from licensing private services, like the canoe liveries.
- Access points to an alternative transportation system should be located where there is already a lot of parking available (e.g. Kittatinny, and Milford Beach) so as not to burden the park with additional costs to construct new parking spaces.

At the Stakeholders Meeting and Public Open House held on December 9, 2008, at the Bushkill Meeting Center in Bushkill, Pennsylvania, additional commentary and insights were provided by the stakeholders group and the participants. The following represents the collective interests of the participants centered around the three main focus themes:

#### Transportation Demand Management:

- More park-and-ride facilities;
- More activity “Distributors”;
- Improved bicycle connectivity;
- More traffic calming measures;
- Better information kiosks
- Wayfinding improvements;
- Variable message signs and parking monitoring;
- A need for a traffic hub/traffic circle at Route 739 intersection; and
- An improved marketing campaign.

#### Trails Planning:

- Improved information wayfinding;
- Ways to distribute uses;
- Completion of “Shaded Trails”;
- Improved on-road cycling;
- More activity centers for shuttle/jitney access;
- A need for one-way hike/bike/boat support trip support;
- Improved connections to resorts, neighboring areas, and resource areas; and
- More equestrian-use support.

Bus System Linked:

- The Pocono Pony being a willing partner with the NPS;
- The need for subsidies as the Pocono Pony is a heavily-subsidized service provider;
- The need for the ATS to operate as a “flag-down” service;
- Reaching potential agreements with Pike County that are consistent with the findings of their on-going transportation study;
- The possibility that the potential for similar services is not as feasible on the NJ side of DEWA;
- A flexible service (types and sizes of vehicles) that will accommodate various constraints such as weight limitations on Dingmans Ferry Bridge, roadway geometry, etc.; and
- The need to use smaller size vehicles on the New Jersey side of DEWA due to physical roadway typical section constraints.

In addition, follow-up information was offered by participants expressing a thorough historical understanding of the history of DEWA and a strong desire to devote attention to several DEWA uses through the final development of this ATS study. These included fishing, hiking, camping, day uses, water-oriented uses, and in particular, hunting. This includes turkey season in April/May and October/January for various other hunting seasons, all supported by the excellent quality upland habitat.

In addition, eco-tourism was also a focal point of many participants. This includes pristine opportunities for bird-watching, wildlife observations, premier foliage observations, and general woodlands education. Knowledge of and access to the numerous water-based points of interests within DEWA such as ponds, streams, magnificent waterfalls, and the Delaware River also continue to be a major interest. Better identification and access to DEWA’s waterfalls was also suggested. A full understanding of these various uses, their seasons, and a safe allowance of all to co-exist is a major local concern.

## **C.5 Summary and Conclusion**

The day following the September 25, 2008 Public Open House the core team held a debriefing meeting. It was agreed that the Stakeholder Interviews Sessions and the Public Open House proved to be very useful opportunities to gather additional insights pertinent to the alternative transportation study. In addition, following the second Public Open House on December 9, 2008, the core team conducted a conference call and to address the information obtained.

The following beneficial outcomes of the public outreach action were identified:

- The public and stakeholders are genuinely interested in finding solutions to traffic problems in the national recreation area;
- Partnerships with businesses, local and state government agencies and transit authorities must be considered if the implementation of an alternative transportation system is to prove successful;
- The needs of the visitors and residents differ and these should be considered when identifying alternative transportation options;
- Local insights shared with the project team will help in the formulation of alternative options;
- Public participation and endorsement of the progressive process refinements yielding three identified themes of Transportation Demand Management, Trails Focus Planning, and Bus System Linked;
- Further refinements of three themes based upon meaningful input from project stakeholders and interested public.

In conclusion, DEWA was successful in initiating public outreach efforts and ensured interested parties that the process is ongoing.

## C.6 National Park Service Introductory Letter



IN REPLY REFER TO:  
A38/A88

August 15, 2008

### United States Department of the Interior

NATIONAL PARK SERVICE  
Delaware Water Gap National Recreation Area  
Bushkill, Pennsylvania 18324

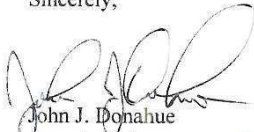
Dear :

Managers from the National Park Service and the Federal Highway Administration have contracted with the Vanasse Hangen Brustlin/ Jacobs Engineering Group team (VHB/Jacobs) to conduct an extensive alternative transportation feasibility study for the Delaware Water Gap National Recreation Area and the surrounding areas. This study will be conducted over the next several months and it will result in several options for alternative transportation within the study area.

A major component of the study includes gathering input from potential stakeholders in both Pennsylvania and New Jersey. The VHB/Jacobs team members will begin conducting on-site and telephone interviews during the last week of August. Two public open houses will be held during the course of the study to solicit comments from the public. The first public open house is scheduled for Thursday, September 25, 2008 at the Bushkill Meeting/Visitor Center in Bushkill, Pennsylvania from 4:00 pm to 8:00 PM.

Please don't hesitate to contact Management Assistant Debbie O'Leary, at 570-426-2430, if you would like more information.

Sincerely,

  
John J. Donahue  
Superintendent

**C.7 National Park Service September 25, 2008 Public Open House  
Announcement Letter**



IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE  
Delaware Water Gap National Recreation Area  
Bushkill, Pennsylvania 18324

A3821

September 5, 2008

Dear :

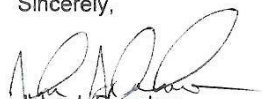
Managers from the National Park Service and the Federal Highway Administration have contracted with the Vanasse Hangen Brustlin/ Jacobs Engineering Group team (VHB/Jacobs) to conduct an extensive Alternative Transportation Feasibility Study for the Delaware Water Gap National Recreation Area and the surrounding areas in Pennsylvania and New Jersey. This study will be conducted over the next several months and it will result in several options for alternative transportation within the study area.

A major component of the study includes gathering feedback from potential stakeholders and the public in both states. Two public open houses will be held during the course of the study to solicit input. The first public open house is scheduled for **Thursday, September 25, 2008 at the Bushkill Meeting/Visitor Center** in Bushkill, Pennsylvania from **4:00 PM to 8:00 PM**.

We are hopeful that you will be able to attend this open house and share your thoughts and comments with the VHB/Jacobs team. The second public meeting will be held later this year.

If you are unable to attend this meeting but would like to submit written comments, or if you need additional information, please contact, Management Assistant, Debbie O'Leary, at 570-426-2430.

Sincerely,

  
John J. Donahue  
Superintendent

## C.8 National Park Service Stakeholder August 25 & 26, 2008 Interview Invitation Letter



IN REPLY REFER TO:

### United States Department of the Interior

NATIONAL PARK SERVICE  
Delaware Water Gap National Recreation Area  
Bushkill, Pennsylvania 18324

A38/A88

August 15, 2008

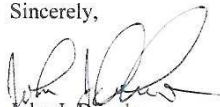
Dear :

Managers from the National Park Service and the Federal Highway Administration have contracted with the Vanasse Hangen Brustlin/Jacobs Engineering Group team (VHB/Jacobs) to conduct an extensive alternative transportation feasibility study for the Delaware Water Gap National Recreation Area and the surrounding areas. This study will be conducted over the next several months and will result in several options to address alternative transportation within the study area.

A key component of the study includes gathering input from interested stakeholders in both Pennsylvania and New Jersey. The VHB/Jacobs team members are very excited about this study and want to contact and work with as many people as possible. VHB/Jacobs staff will be in the area on August 25<sup>th</sup> (from 1:00 PM until 8:00 PM) and the 26<sup>th</sup> (from 8:00 AM until noon) to conduct in-person interviews. Because of time restrictions and the large study area, they would like to conduct as many interviews as possible at the Bushkill Meeting/Visitor Center in Bushkill, Pennsylvania. If this is not a convenient time for you, they will attempt to make arrangements to meet with you at your office. If neither of these options is feasible, they would like to arrange a telephone interview with you. A VHB/Jacobs representative will be contacting you shortly to establish a place and schedule a time with you.

Thank you very much for your cooperation. If you have any questions, please do not hesitate to contact Management Assistant Debbie O'Leary at 570-426-2430.

Sincerely,



John J. Donahue  
Superintendent

## C.9 National Park Service September 25, 2008 Stakeholders Meeting Letter



IN REPLY REFER TO:

A3821

September 5, 2008

### United States Department of the Interior

NATIONAL PARK SERVICE  
Delaware Water Gap National Recreation Area  
Bushkill, Pennsylvania 18324

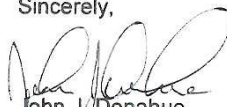
Dear :

I want to extend my sincere appreciation for your enthusiastic interest in participating in our Alternative Transportation Feasibility Study. I would particularly like to thank you for your willingness to take time out of your busy schedule to attend the interview last week. Exploring alternative transportation options is a major step to further maintain park resources and increase the visitor experience not only in Delaware Water Gap National Recreation Area but also to connect with the many adjacent towns and communities. Working together on this important initiative can only benefit our residents and our visitors.

The VHB/Jacobs team will be here in September to begin the next phase of the study. You are invited to attend a group meeting on 1:30 PM, Thursday, September 25, at the Bushkill Meeting/Visitor Center to discuss the results of the interviews and to discuss the planning process. The first Public Open House is scheduled for later that day from 4:00 PM to 8:00 PM, also at the Bushkill Meeting/Visitor Center.

Please contact Management Assistant, Debbie O'Leary, at 570-426-2430 to let her know if you will be able to attend the 1:30 meeting or to respond to any questions.

Sincerely,

  
John J. Donahue  
Superintendent



## C.10 Interview Package



### DELAWARE WATER GAP NATIONAL RE-CREATION AREA (DEWA) ALTERNATIVE TRANSPORTATION FEASIBILITY STUDY

**PROJECT PURPOSE:** The purpose of the project is to prepare a transportation feasibility study and recommendations that are consistent with the Delaware Water Gap National Recreation Area (DEWA) goals and resolve transportation and transit issues commensurate with the need to improve visitor access within DEWA.

**BACKGROUND:** The Delaware Water Gap National Recreation Area (DEWA) is a linear park consisting of 67,210 acres in northern New Jersey and northeastern Pennsylvania. Congress designated the site as an NRA in 1965 and in 1978 designated the section of the Delaware River within the NRA part of the National Wild and Scenic River System. The park is one of the most visited in the National Park System. Approximately 5 million people visit the site each year to participate in a range of recreation activities, including hiking, biking, fishing hunting, camping, picnicking, water sports and winter sports. The vast majority of the visitors (89 percent) are from New Jersey, Pennsylvania, and New York.

The Delaware Water Gap NRA access is served by several major Interstate and Federal highways. Interstate 84 runs east-west just to the north of the NRA. Interstate 80, runs parallel to I-84, cutting across the southernmost tip of the park. U.S. 209 runs north-south through the park. The gateway communities near the park have expressed concern over the growing congestion problems in the region. Many visitors travel to and within the NRA by private automobiles due to limited opportunities for crossing the Delaware River, the lack of connections to the NRA by rail or bus, and the NRA emphasis on dispersed recreation. Also, the character of the surrounding community has changed significantly over the last 15 years due to the increasing development of residential and resort units along major corridors bordering the park. Three of the five counties in which the NRA is located are among the fastest growing counties in their respective states.

The NRA relies primarily on its 1987 General Management Plan (GMP) and a Trails Plan (June 1999) completed recently, which amends the GM. Also, a Strategic Plan for the park was completed in 1998.

A report entitled *Field Report Delaware Water Gap National Recreation Area* recently prepared by the Federal Highway Administration and Federal Transit Administration, identifies several Feasible strategies for alternative transportation systems at DEWA including, tourist shuttles within the NRA, commuter rail, shuttle to rail, biking, equestrian, park and ride, improved signage and livery services. An additional strategy may, in some cases, involve access or user fees.

The study will accomplish the following:

1. Evaluate the existing public road system connecting New Jersey and Pennsylvania with DEWA to determine if the existing road system supports integrating a mass transportation system between off and on- visitor attraction and service areas.
2. Inventory existing DEWA visitor recreation areas, attractions, facilities, services, etc. to define service routes that would integrate the most opportunities for visitors to utilize public transportation to visit sites without compromising personal convenience.
3. Evaluate the nature and extent of current public transportation service areas and cost effectiveness of extending the systems.

4. Determine the extent to which transportation improvements could enhance the visitor experience.
5. Document the relative potential cost, benefit, and environmental consequences of transportation alternatives, which may include roadway improvements, access management, water, pedestrian, bicycle and public transportation, or a combination of these modes.
6. Investigate and document applicable features and experiences from other similar, transportation systems in operation in other parks and wildlife refuges.
7. Evaluate cost (construction, equipment and maintenance) and general environmental impact of satellite parking, user waiting areas, trails, service/storage areas, fee collection, information/ signage systems and maintenance facility requirements.
8. Evaluate the opportunities, constraints and potential benefits and costs of concessionaire vs. government operated systems.
9. Determine expected user utilization (including expected seasonal variations) of the different transportation systems identified as reasonable and feasible modes/systems as identified in previous numbered items above.
10. Evaluate the feasibility of transportation improvements that comply with NPS Management Policies. Information and experiences gained by other parks and wildlife refuges regarding the planning, implementation, operation and maintenance of systems currently in use will be reviewed and be considered for inclusion as alternatives.
11. Identify and obtain information and experiences related to implementation, operation, and maintenance of recommended systems/modes/ interconnections in other parks and wildlife refuges and related settings will be utilized and adjusted to the specific circumstances at this Park.

#### INTERVIEW QUESTIONS:

1. What alternative transportation systems or infrastructure exist in the areas surrounding the Delaware Water Gap NRA?
2. What alternative transportation systems or infrastructure are you planning?
3. What plans, reports and supporting documents (background data) do you have that would be useful for this project?
4. What is your opinion of introducing alternative transportation in the Delaware Water Gap NRA?
5. Do you see a benefit in connecting to the Delaware Water Gap NRA?
6. How willing are you to partner with the Delaware Water Gap NRA on an alternative transportation system?
7. Are you willing to participate in a workshop/open house?

**Interview Location:** \_\_\_\_\_ **Interviewer:** \_\_\_\_\_

**Interview Session:**

**Interviewee:**

**INTERVIEW QUESTIONS**

1. What alternative transportation systems or infrastructure exist in the areas surrounding the Delaware Water Gap NRA?

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2. What alternative transportation systems or infrastructure are you planning?

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3. What plans, reports and supporting documents (background data) do you have that would be useful for this project?

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4. What is your opinion of introducing alternative transportation in the Delaware Water Gap NRA?

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5. Do you see a benefit in connecting to the Delaware Water Gap NRA?

6. How willing are you to partner with the Delaware Water Gap NRA on an alternative transportation system?

7. Are you willing to participate in a workshop/open house?

**ADDITIONAL COMMENTS**

**C.11 September 25, 2008 Stakeholders Meeting Agenda**



**Delaware Water Gap National Recreation Area  
Alternative Transportation Feasibility Study  
Stakeholders Meeting**

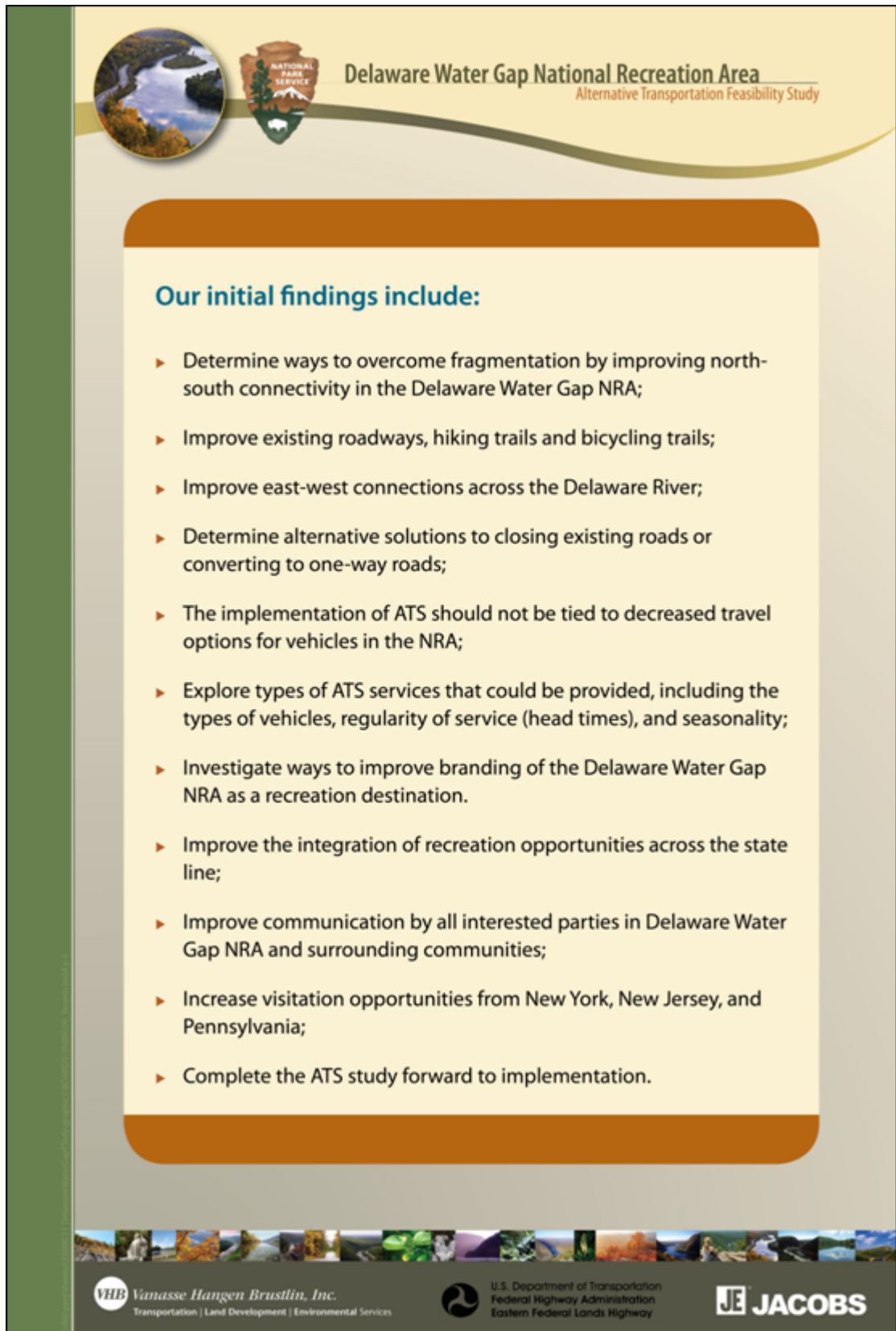
**September 25, 2008  
1.30pm-3.00pm**

**Agenda**

- |   |   |
|---|---|
| <b>1. Welcome<br/>(5 min.)</b>                        | <b>John Donahue, DEWA Superintendent</b>  |
| <b>2. Self Introductions<br/>(5 min.)</b>             | <b>Group</b>  |
| <b>3. Purpose of Meeting<br/>(5 min.)</b>             | <b>David Cheeney, VHB, Inc.<br/>Steve Moore, Jacobs Engineering Group, Inc.</b> |
| <b>4. Process and Schedule Overview<br/>(10 min.)</b> | <b>David Baxter, Jacobs Engineering Group, Inc.</b>                             |
| <b>5. Initial Interview Trends<br/>(10 min.)</b>      | <b>David Baxter</b>   |
| <b>6. Slide Presentation Review<br/>(10 min.)</b>     | <b>Steve Moore</b>  |
| <b>7. Commentary and Feedback<br/>(35 min.)</b>       | <b>Group</b>  |
| <b>8. Next Steps<br/>(10 min.)</b>                    | <b>Steve Moore</b>  |
| <b>9. Adjournment</b>                                 |   |



**C.12 September 25, 2008 Open House Exhibits**



The exhibit is a vertical poster with a light beige background and a green vertical bar on the left. At the top, there is a circular image of a river and a National Park Service arrowhead logo. To the right of the logo, the text reads "Delaware Water Gap National Recreation Area" in a large, bold, black font, with "Alternative Transportation Feasibility Study" in a smaller, red font below it. The main content is a list of findings under the heading "Our initial findings include:". The list contains 12 items, each preceded by a blue arrowhead. At the bottom, there is a horizontal strip of small images showing various outdoor activities. Below this strip are three logos: VHB Vanasse Hangen Brustlin, Inc., the U.S. Department of Transportation Federal Highway Administration Eastern Federal Lands Highway logo, and JE JACOBS.

**Delaware Water Gap National Recreation Area**  
Alternative Transportation Feasibility Study



**Our initial findings include:**

- ▶ Determine ways to overcome fragmentation by improving north-south connectivity in the Delaware Water Gap NRA;
- ▶ Improve existing roadways, hiking trails and bicycling trails;
- ▶ Improve east-west connections across the Delaware River;
- ▶ Determine alternative solutions to closing existing roads or converting to one-way roads;
- ▶ The implementation of ATS should not be tied to decreased travel options for vehicles in the NRA;
- ▶ Explore types of ATS services that could be provided, including the types of vehicles, regularity of service (head times), and seasonality;
- ▶ Investigate ways to improve branding of the Delaware Water Gap NRA as a recreation destination.
- ▶ Improve the integration of recreation opportunities across the state line;
- ▶ Improve communication by all interested parties in Delaware Water Gap NRA and surrounding communities;
- ▶ Increase visitation opportunities from New York, New Jersey, and Pennsylvania;
- ▶ Complete the ATS study forward to implementation.

**VHB** Vanasse Hangen Brustlin, Inc.  
Transportation | Land Development | Environmental Services

U.S. Department of Transportation  
Federal Highway Administration  
Eastern Federal Lands Highway

**JE JACOBS**

## Delaware Water Gap National Recreation Area

Alternative Transportation Feasibility Study

### PROJECT PURPOSE

The purpose of this project is to conduct an alternative transportation feasibility study that will gather data about existing conditions and develop several sustainable options for the future. The study will accomplish the following:

- ▶ Determine how alternative transportation can enhance the visitor experience.
- ▶ Document the potential cost, benefit, and environmental impact of transportation options.
- ▶ Determine expected utilization of alternative transportation systems.
- ▶ Evaluate existing public transportation systems and cost-effectiveness of extending existing transit systems.
- ▶ Evaluate National Park Service operated systems vs. privately operated systems.
- ▶ Investigate transportation systems operated in other parks and wildlife refuges.
- ▶ Define potential transit service routes.

### PARK HISTORY

- ▶ Delaware Water Gap NRA was designated as a National Recreation Area by Congress in 1965.
- ▶ Congress designated the Middle Delaware National Scenic River in 1978 as a component of the Wild and Scenic Rivers System.

### REGIONAL CONTEXT


- ▶ Character of the surrounding community has changed significantly over the past 15 years due to the increasing development of residential and resort units along major corridors bordering the park.
- ▶ Three of the five counties in which the NRA is located are among the fastest growing counties in their respective states.
- ▶ The gateway communities near the park have expressed concern over the growing congestion problems in the region.


### PARK FACTS

- ▶ A linear park consisting of 69,269 acres in northern New Jersey and northeastern Pennsylvania.
- ▶ Approximately 5 million people visit the Delaware Water Gap NRA each year to participate in a range of recreation activities, including hiking, biking, fishing hunting, camping, picnicking, water sports and winter sports.
- ▶ The vast majority of the visitors (89 percent) are from New Jersey, Pennsylvania, and New York.
- ▶ Approximately 60 million people live within a six-hour drive of the Delaware Water Gap NRA.

### PARK INFRASTRUCTURE


- ▶ Interstate 84 runs east-west just to the north of the park.
- ▶ Interstate 80 runs east-west through New Jersey and Pennsylvania, cutting across the southernmost tip of the park.
- ▶ US 209 runs north-south through the park on the Pennsylvania side.
- ▶ US 206 and Route 521 provide access to the park from the New Jersey side.






**VHB Vanasse Hangen Brustlin, Inc.**

Transportation | Land Development | Environmental Services




U.S. Department of Transportation  
Federal Highway Administration  
Eastern Federal Lands Highway



**JACOBS**









**Delaware Water Gap National Recreation Area**  
Alternative Transportation Feasibility Study

### Survey Questions

- ▶ What alternative transportation systems or infrastructure exist in the areas surrounding Delaware Water Gap NRA?
- ▶ What alternative transportation systems or infrastructure are you planning?
- ▶ What plans, reports and supporting documents (background data) do you have that would be useful for this project?
- ▶ What is your opinion of introducing alternative transportation in Delaware Water Gap NRA?
- ▶ Do you see a benefit in connecting to Delaware Water Gap NRA?
- ▶ How willing are you to partner with Delaware Water Gap NRA on an alternative transportation system?
- ▶ Are you willing to participate in a second open house on November 20, 2008?

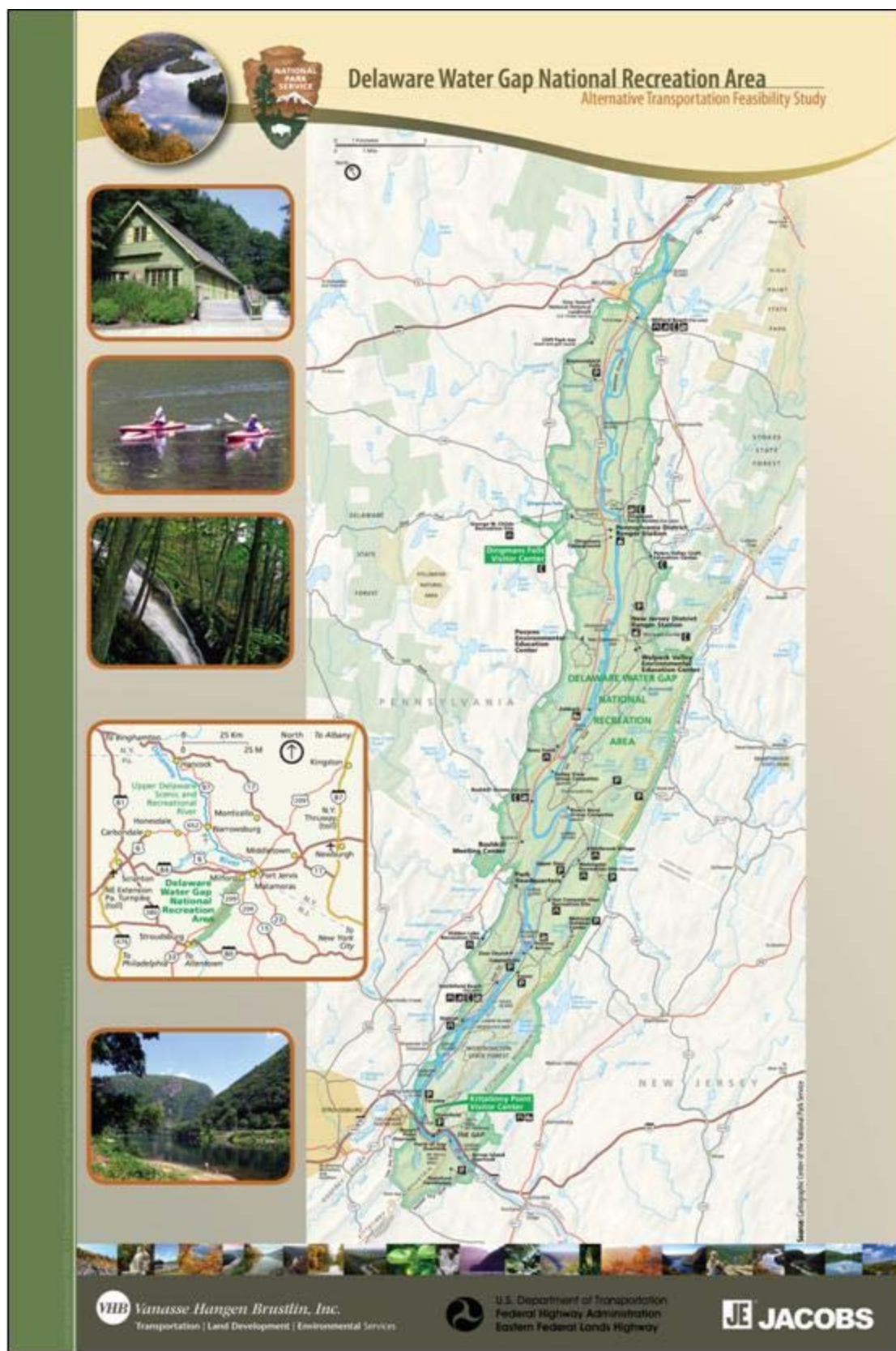


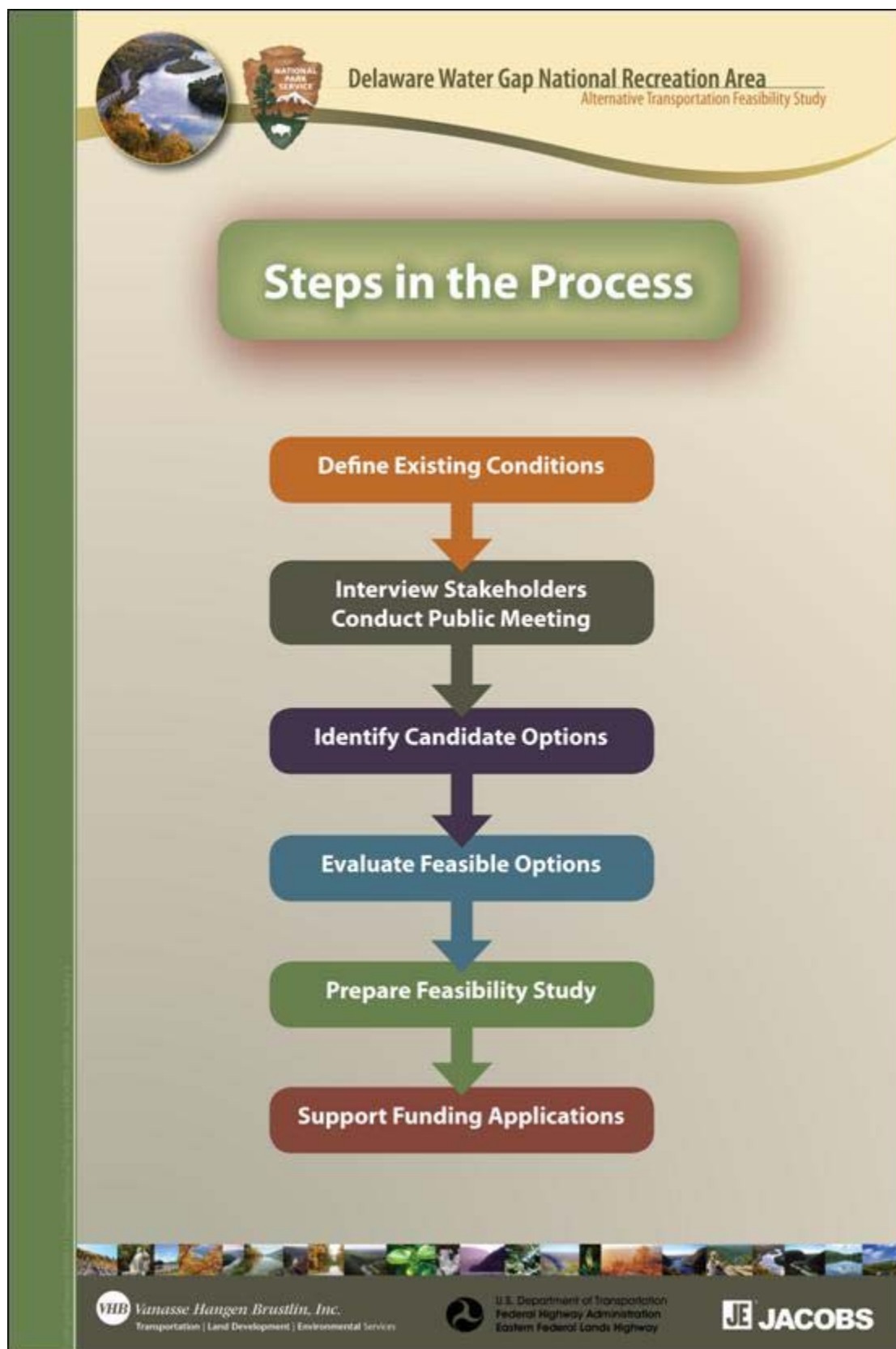
**VHB** Vannasse Hangen Brustlin, Inc.  
Transportation | Land Development | Environmental Services

U.S. Department of Transportation  
Federal Highway Administration  
Eastern Federal Lands Highway

**JE JACOBS**







**C.13 December 9, 2008 Stakeholders Meeting Agenda**



**Delaware Water Gap National Recreation Area  
Alternative Transportation Feasibility Study  
Stakeholders Meeting**

**December 9, 2008  
1.30pm-3.00pm**

**Agenda**

- |   |   |
|---|---|
| <b>1. Welcome<br/>(5 min.)</b>                  | <b>Bob Karotko, Deputy Superintendent</b>           |
| <b>2. Self Introductions<br/>(5 min.)</b>       | <b>Group</b>  |
| <b>3. Purpose of Meeting<br/>(5 min.)</b>       | <b>Steve Moore, Jacobs Engineering Group, Inc.</b>  |
| <b>4. Process Overview<br/>(10 min.)</b>        | <b>Steve Moore</b>                                  |
| <b>5. Summary of Feedback<br/>(10 min.)</b>     | <b>David Baxter, Jacobs Engineering Group, Inc.</b> |
| <b>6. Resulting ATS Themes<br/>(10 min.)</b>    | <b>David Baxter</b>                                 |
| <b>7. Commentary and Feedback<br/>(35 min.)</b> | <b>Group</b>  |
| <b>8. Next Steps<br/>(10 min.)</b>              | <b>Steve Moore</b>                                  |
| <b>9. Adjournment</b>                           |   |



**C.14 December 9, 2008 NPS News Release**



National Park Service  
U.S. Department of the Interior

Delaware Water Gap  
National Recreation Area

Bushkill, PA 18324-9999

570-426-2418 phone  
570-426-2407 fax  
www.nps.gov/dewa

## Delaware Water Gap NRA News Release

**Release date:** Tuesday, December 2, 2008

**Contact(s):** Deb Nordeen, 570-426-2447 (office), 570-460-1822 (cell)

### Alternative Transportation Study Open House to be Held on December 9

Superintendent John J. Donahue announced today that an open house will be held on Tuesday, December 9, 2008 to present several alternative transportation options to improve public access to and within Delaware Water Gap National Recreation Area. The open house will be held from 4 p.m. to 8 p.m. at the Bushkill Meeting Center on Route 209 in Bushkill, Pennsylvania.

During the open house, participants will be asked to participate in small groups and to provide comments on an array of alternative transportation options prepared by the consulting team of Vanasse Hangen Brustlin/ Jacobs Engineering Group team (VHB/Jacobs). The options were developed over the last several months from comments received from the public, businesses, local communities, and National Park Service staff.

"Public participation is very important to the overall success of this project," said Superintendent Donahue. "The timing is right to create a sustainable alternative transportation system that will allow more people to visit the park without adding more cars and pollution. It is also an opportunity for businesses, local communities, and the National Park Service to work cooperatively to resolve transportation and transit issues that affect all of us," said Donahue.

This is the second open house to be held as part of the Alternative Transportation Feasibility Study undertaken by the National Park Service and the Federal Highway Administration. The first was held in late September.

For more information about the open house and the Alternative Transportation Feasibility Study, please contact Management Assistant Debbie O'Leary at 570-426-2430.

-NPS-

#### EXPERIENCE YOUR AMERICA

The National Park Service cares for special places saved by the American people so that all may experience our heritage.



**C.15 December 9, 2008 Stakeholders Invitation Letter**

A3821

November 26, 2008

Dear \_\_\_\_\_ :

I want to extend my sincere appreciation for your continued interest in participating in our Alternative Transportation Feasibility Study. Exploring alternative transportation options is a major step to further maintain park resources and increase the visitor experience not only in Delaware Water Gap National Recreation Area but also to connect with the many adjacent towns and communities. Working together on this important initiative can only benefit our residents and our visitors.

The VHB/Jacobs team will be here on Tuesday, December 9 to present several options that have been developed from all the interviews conducted and comments received. You are invited to attend a group meeting on 1:30 PM at the Bushkill Meeting/Visitor Center to review and discuss these preliminary options. A public Open House is scheduled for later that day from 4:00 PM to 8:00 PM, also at the Bushkill Meeting/Visitor Center.

Please contact Management Assistant, Debbie O'Leary, at 570-426-2430 to let her know if you will be able to attend the 1:30 meeting or to respond to any questions.

Sincerely,

John J. Donahue  
Superintendent

## C.16 Three Final Themes

### C.16.1 Bus System Linked Theme

#### Bus System Linked Theme

**Summary:** Transit service would be introduced within the NRA to reduce personal vehicle use and to disperse visitors to various resource areas. The service would either be operated by the NRA, private operator, or governmental transit operator and would be integrated with existing transit services, such as the MCTA Yellow Route. Possible northern and southern loop routes may be considered and/or evaluated.



#### Transportation System Characteristics

|                                  |  |
|----------------------------------|--|
| Transit Services                 | A NRA, private, or other governmental operated transit system would link to existing or proposed transit systems outside of the NRA, including the possibility of separate loop routes and a combination of providers.   |
| Transportation Infrastructure    | Roadway improvements would be necessary (bus pull-outs, turning lanes, transfer stations, etc.) and be made in collaboration with the transportation providers/DOTs.   |
| Connectivity                     | Designated bus stops would be provided at various NRA resources, commercial areas, hotels, and park-and-ride lots. Passenger exchanges will occur at other NRA resource areas upon request or on a published schedule.   |
| Parking Areas/Trailheads         | Bus stops located at trailheads, swim beaches, waterfalls and other resource areas.  |
| Access Restrictions              | Access restrictions will include existing narrow roadway typical sections, lack of available right-of-way or lack of available width for shoulders, and/or other possible safety and environmental concerns. In addition, ADA compatibility needs to be incorporated into each bus-related facility. |
| Transportation Demand Management | Other measures will encourage visitors to use alternative transportation and reduce personal vehicle travel. This could include parking fees, subsidized fares, ride sharing programs, bus fleet accommodations for recreation equipment and ADA.  |

#### Integration with Other Transportation Modes

|                   |   |
|-------------------|---|
| Personal Vehicles | Carefully planned and located park-and-ride areas and improved wayfinding and integrated signage would be provided to encourage visitors to use the transit system.   |
| Trails/Paths      |   |
| • Walking/Hiking  | Bus stops located at trailheads and other visitor-use areas.  |
| • Bicycling       | Bus stops located at trailheads and other visitor-use areas. Accommodations for bicycle transport onboard these modes needs to be considered.                         |
| • Equestrian      | Limited linkages. Safety measures to be incorporated into each modal interface.   |
| • Multi-Use       | Bus stops located at trailheads and other visitor-use areas.  |
| Bus               | NRA, private operator, or other governmental transit operator bus transit service will be integrated with existing MCTA routes or any future service extensions, such |



|   |  |
|---|--|
|   | as joint bus stops, timed transfers, and an integrated fare collection system with possible compatibility with other transit providers.  |
| Water   | Bus stops located at swim beaches and boat launch areas.   |
| Private Transportation  | Co-exist easily with existing or future private transportation (liveries and taxis).   |
| Rail  | Connect to existing commuter rail connections at Port Jervis and the commuter rail extension planned for the Lackawanna Cut-off.   |
| <b>Transportation/Recreation Systems Integrated with Delaware Water Gap NRA</b> |  |
| Park Systems  | Opportunities should be investigated to enhance agreements with New Jersey, Pennsylvania, the Appalachian Trail, and county-related recreation providers for connectivity.   |
| Transit Authorities   | Formal agreements will need to be created with transit authorities to provide integrated transit services.   |
| Communities/Businesses  | Work with communities and businesses to determine appropriate bus routes, service spans, schedules, and bus stop locations.  |
| <b>Other</b>  |  |
| Interpretation  | May include recorded audio or live interpretation on buses. Informational kiosks may be provided at some bus stops and connections to trail systems.   |
| Orientation   | Bus schedules and route maps will be provided at all bus stops, trail system connections, and visitor centers. Bus operators will be trained to answer questions.  |
| Partnerships  | Existing partnerships with transit providers will be developed and agreements made on service collaboration.   |
| Organizational Changes  | Possible organizational changes will be those driven by the NRA's annual planning processes and management plans to cover capital improvements. Operation costs could be carried by partners or a concessionaire who could operate a NRA bus system. |
| <b>Costs &amp; Agreements</b>   |  |
| Capital Costs   | Bus service requires substantial capital improvements to purchase vehicles and make roadway improvements. If the bus service is operated by the NRA, a maintenance and storage facility would be needed.   |
| Operating & Maint. Costs  | Requires sustained operating funding each year.  |
| Concessions/Operators   | Required if a vendor will operate the bus service.   |
| <b>Planning Implementation/Phasing</b>  |  |
| Short term (0-2 years)  | Develop a transit operations plan. Implement a pilot study.  |
| Medium term (0-5 years)   | System would be expanded in phases if use warranted an expansion.  |
| Long term (0-20 years)  | A NRA wide system could be introduced based on ridership.  |
| Potential Implications  | Traffic congestion will be reduced, especially in parking areas and trailheads, and should result in an improved visitor experience. Environmental degradation will be reduced.  |

## C.16.2 Transportation Demand Management Theme

### Transportation Demand Management (TDM) Theme

Summary: This theme is intended to reduce personal vehicle travel and encourage alternative transportation by:

- Improving alternative transportation themes;
- Creating incentives to use alternative modes and reduce driving; and
- Managing parking demand.



#### Transportation System Characteristics

|                                  |  |
|----------------------------------|--|
| Transit System Services          | Encourage transit agencies to provide additional transit service to the NRA.   |
| Transportation Infrastructure    | Install park-and-ride lots in conjunction with transit services. Install transit stop amenities. Construct additional trails/paths.  |
| Connectivity                     | Work with transit providers to improve modal connections at NRA. Provide access from transit stops to NRA resources.   |
| Parking Areas/Trailheads         | Consider parking fees in conjunction with improve alternative transportation themes.   |
| Access Restrictions              | Context-sensitive barriers separating trail/paths and roadways could be constructed.   |
| Transportation Demand Management | Transportation demand management may include: <ul style="list-style-type: none"> <li>• Improved alternative transportation services: trail enhancements, transit services and amenities, park and ride lots, bicycle/transit integration, etc.;</li> <li>• Incentives to use alternative modes and reduce driving: subsidized transit fares, flextime, ride sharing, and carpool/vanpools, etc.; and</li> <li>• Parking demand management: parking fees, reservation policies, etc.</li> </ul> |

#### Integration with Other Transportation Modes

|                   |  |
|-------------------|--|
| Personal Vehicles | TDM strategies such as park-and-ride lots, ride-sharing, flextime, signalization optimization, and traffic calming measures may be applicable. |
| Trails/Paths      |  |
| • Walking/Hiking  | Provide additional trails to create an integrated trail system.  |
| • Bicycling       | Provide additional trails to create an integrated trail system.  |
| • Equestrian      | Provide additional trails to create an integrated trail system.  |
| • Multi-Use       | Provide additional trails to create an integrated trail system.  |



### C.16.3 Trails Planning Focus Theme

#### Trails Planning Focus Theme

**Summary:** Upgrade, expand, and improve existing hiking, bicycling, equestrian, and multi-use trails. Provide information about the proximity of the Appalachian Trail, and provide better connections to Pennsylvania and New Jersey state forests and trails, adjacent counties' recreational trails, transit services, and the roadway network. This theme is intended to disperse visitors throughout the NRA and reduce some trips made by personal vehicles.



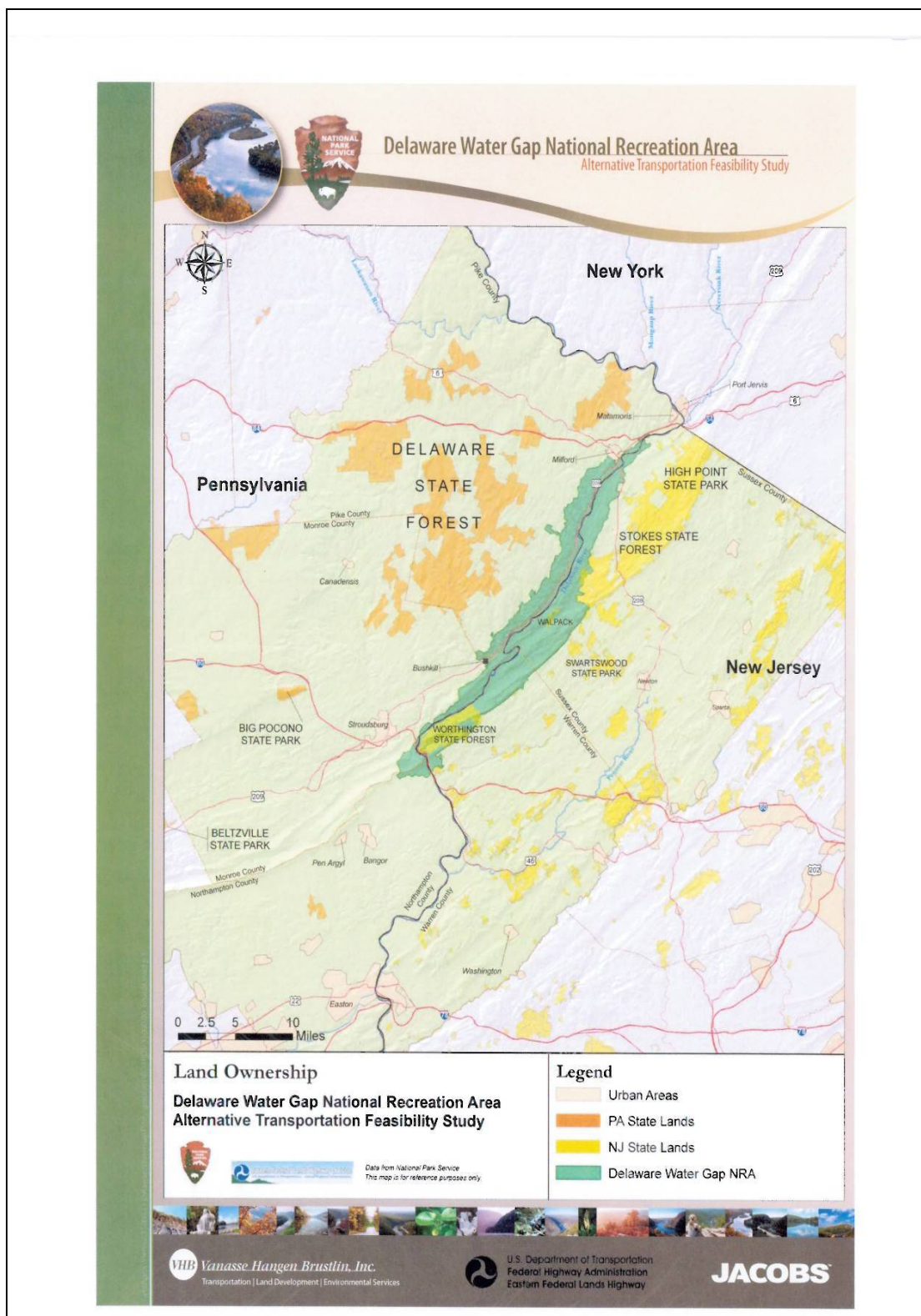
#### Transportation System Characteristics

|                                  |  |
|----------------------------------|--|
| Transit Services                 | Link expanded and proposed trail system to transit services. Accommodate any service expansions by providing additional trailheads and connectivity opportunities.   |
| Transportation Infrastructure    | Enhance and extend hiking trail network. Provide additional accommodations for bicycles or horseback riders on hiking trails, where appropriate. Upgrade roadway network to accommodate bicycle lanes and equestrian pathways.   |
| Connectivity                     | Incorporate connections between trail network, bus stops, parking areas, and NRA resources. Encourage transit providers to install bicycle racks on transit fleet vehicles.  |
| Parking Areas/Trailheads         | Improvements would be driven by existing road and trail network plans and transit expansions. Additional trailheads and parking areas would be planned and constructed to accommodate expanded trail network. Incorporate additional parking on popular bicycle and equestrian trails. Parking areas should include accommodations for horse trailers and bicycle racks. |
| Access Restrictions              | Access restrictions may apply to modal intersections for safety reasons.   |
| Transportation Demand Management | Based on existing and future management guidelines and decisions.  |

#### Integration with Other Transportation Modes

|                   |   |
|-------------------|---|
| Personal Vehicles | Will use existing road network with no major improvements other than those pertaining to maintenance and safety considerations. |
| Trails/Paths      |   |
| • Walking/Hiking  | Construct new walking/hiking paths.   |
| • Bicycling       | Construct new bicycle paths (on and off road).  |
| • Equestrian      | Construct additional equestrian trails.   |
| • Multi-Use       | Convert existing single-use trails to multi-use, except the Appalachian Trail. Construct new multi-use trails                   |
| Bus               | Connect hiking and bicycling trails to existing transit services (such as MCTA  |

## C.17 DEWA Land Ownership Map



### **C.18 Third Stakeholder and Public Outreach Meetings**

A third set of meetings was conducted with the stakeholder group and the public on May 18, 2009. The stakeholder meeting was conducted from 1:00 pm to 2:30 pm. It began with a presentation summarizing the study process and the draft recommendations. Stakeholders were provided the opportunity to comment on the recommendations. A public open house was conducted between 4:00 pm and 7:00 pm. The open house began with a short presentation that described the recommendations of the study. Attendees were then encouraged to participate in conversations at three stations: process, recommendations, and funding options.

The following comments were recorded from the stakeholder meeting and public open house:

- Need to identify commuter facilities (park and ride lots) that can be used on weekends.
- DEWA may want to use smaller vehicles at first.
- Extend the transit service to Camp Akenac
- The key to making the transit service work is to understand the trip generators, types of facilities that are needed, and the potential ridership. DEWA will have to survey visitors to get an idea of the likely demand.
- Milford Community House has potential for Milford Visitor Center.
- The feasibility of Water Gap Trolley extension into park should be studied.
- Link to McDade Trail beyond park boundaries.
- The River Road routes acts as a loop route, which this will result in longer trips for some passengers than if service was operated in both directions.
- Consider whether buses or vans should operate on River Road.
- The Toll Bridge commission appears to be amenable to accommodate pedestrians/trail users on DRJTBC bridges. Perhaps we should push for connection of Rt 206 bridge to McDade Trail.
- Road through Worthington State Forest is critical to DEWA transportation. This road needs significant repair.
- How do the recommendations affect the park carrying capacity?
- Connect to Steamtown National Historic Site.
- What are the next steps? Are additional studies, such as NEPA, surveys, operating characteristics, required?
- Provide a copy of the draft or final report to stakeholders.

## Appendix D: Initial Feasible Option Summaries

This appendix includes summaries of the 19 initial transportation options. These summaries include an overview of the proposed options, discuss the transit, trails, and transportation demand management components of each option, and evaluate their estimated capital, operating, and maintenance costs based on a low, medium, and high rating. The 19 initial transportation options are:

- No Action
- Option 1: Trails Focus
  - Option 1A: Trails Focus – Hiking
  - Option 1B: Trails Focus – Biking
  - Option 1C: Trails Focus – Multi-Use
- Option 2: Transportation System Management (TSM) / Transportation Demand Management (TDM)
  - Option 2A: TSM/TDM – Traffic Control
  - Option 2B: TSM/TDM – Road Modifications
  - Option 2C: TSM/TDM – Permitted Use
  - Option 2D: TSM/TDM – Combined
- Option 3: Commercial Vehicles
  - Option 3A: Commercial Vehicles – Taxi Service
  - Option 3B: Commercial Vehicles – Livery Services
- Option 4: Bus System
  - Option 4A: Bus System – Southern Loop
  - Option 4B: Bus System – Northern Loop
  - Option 4C: Bus System – Northern and Southern Loops
  - Option 4D: Bus System – PA/NJ Loops
  - Option 4E: Bus System – Northern & Southern Routes & PA/NJ Loops
  - Option 4F: Bus System – Central Distribution
- Option 5: East-West Water Taxi
- Option 6: Trolley
  - Option 6A: Trolley – North-South (Pennsylvania Side)
  - Option 6B: Trolley – North-South (New Jersey Side)
- Option 7: East-West Integration
  - Option 7A: East-West Integration – Non-Motor Bridge
  - Option 7B: East-West Integration – Road Bridge



# No Action

The No Action option maintains the existing transportation system and incorporates previously identified planned improvements and maintenance.



## Transit

|                           | Short-Term   | Medium-Term        | Long-Term          |
|---------------------------|--|--------------------|--------------------|
| Bus/Auto/Rail Route       | MCTA Yellow Route  | Same as Short-Term | Same as Short-Term |
| Transit Stops             | Based on MCTA Yellow Route.                                | Same as Short-Term | Same as Short-Term |
| Vehicles (size)           | Medium size bus  | Same as Short-Term | Same as Short-Term |
| Vehicles (fuel)           | Diesel   | Same as Short-Term | Same as Short-Term |
| Number of Vehicles        | One  | Same as Short-Term | Same as Short-Term |
| Fare Policy/Fee Structure | Base Fare: \$1.25; Students \$0.75; Children/Seniors: Free | Same as Short-Term | Same as Short-Term |
| Service Frequency         | 2 hours  | Same as Short-Term | Same as Short-Term |
| Trips per Day             | 2 morning & 2 afternoon runs along US 209                  | Same as Short-Term | Same as Short-Term |
| Operations & Maintenance  | MCTA   | Same as Short-Term | Same as Short-Term |
| Year Round / Seasonal     | Year round   | Same as Short-Term | Same as Short-Term |

## Trails

|             | Short-Term            | Medium-Term          | Long-Term                   |
|-------------|-----------------------|----------------------|-----------------------------|
| New Trails  | Complete McDade Trail | Expand trail network | Complete Country Road Trail |
| Connections | No Changes            | No Changes           | No Changes                  |

## Transportation System Management / Transportation Demand Management

|         | Short-Term | Medium-Term | Long-Term  |
|---------|------------|-------------|------------|
| Trails  | No Changes | No Changes  | No Changes |
| Transit | No Changes | No Changes  | No Changes |
| Other   | No Changes | No Changes  | No Changes |

## Other

|                          |   |
|--------------------------|---|
| Orientation & Wayfinding | Improved signs at entrances to park, trailheads, etc. |
|--------------------------|---|

|                                       |            |
|---------------------------------------|------------|
| Interpretation                        | No Changes |
| Parking Areas                         | No changes |
| Partnerships                          | MCTA       |
| Staffing Changes                      | No changes |
| Roadways                              | No changes |
| <b>Costs of Transportation System</b> |            |
| Capital                               | No changes |
| Operating & Maintenance               | No changes |
| Annual Lifecycle                      | No changes |

## Option 1A: Trails Focus – Hiking

Option 1A features a hiking trail-focused transportation system to disperse visitation from a traditional river focus to underutilized resources. In the short-term, proposed improvements include completing the McDade Trail and enhanced trailhead connections. In the medium-term, the Country Road Trail would be completed and the trail network would feature better connectivity with other parks and the surrounding areas. Long-term plans include further expanding the trail network and trailhead connections. This option includes improved trailhead signs, installation of interpretation kiosks, and additional trailhead parking. There would be no changes to the existing transit and roadway systems.



### Transit

No Changes

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | Complete McDade Trail.                                 | Expand trail network.  | Complete Country Road Trail.                           |
| Connections | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns. | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailheads connections (parking & picnic areas)         | Expand trailheads connections (parking & picnic areas) |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.                                       | Update signs, maps, etc.                               |

### Transportation System Management / Transportation Demand Management

|         | Short-Term        | Medium-Term       | Long-Term         |
|---------|-------------------|-------------------|-------------------|
| Trails  | Encourage hiking. | Encourage hiking. | Encourage hiking. |
| Transit | No changes.       | No changes.       | No changes.       |
| Other   | No changes.       | No changes.       | No changes.       |

### Other

|                          |   |
|--------------------------|---|
| Orientation & Wayfinding | Improved signs at entrances to park, trailheads, etc.                                     |
| Interpretation           | Kiosks at trailheads.   |
| Parking Areas            | Additional trailhead parking.   |
| Partnerships             | Partnerships with federal, state, county, Friends of the park, hiking associations, MCTA. |
| Staffing Changes         | New maintenance staff and Rangers.  |
| Roadways                 | No Changes  |

### Costs of Transportation System

|                         |     |
|-------------------------|-----|
| Capital                 | Low |
| Operating & Maintenance | Low |
| Annual Lifecycle        | Low |



## Option 1B: Trails Focus – Biking

Option 1B features a bicycle trail-focused transportation system to disperse visitation from a traditional river focus to underutilized resources. In the short-term, proposed improvements include completing the McDade Trail and enhanced trailhead connections. In the medium-term, the Country Road Trail would be completed and some trails would feature paved, bicycle lanes. The bicycle trail network would be connected to other parks and surrounding areas. Long-term plans include further expanding the bicycle trail network and trailhead connections. This option includes improved trailhead signs, installation of interpretation kiosks, and additional trailhead parking. There would be no changes to the existing transit and roadway systems.



### Transit

No Changes

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | Complete McDade Trail.                                 | Construct bicycle trails, lanes. Expanded bicycle network. | Complete Country Road Trail.                           |
| Connections | No changes.  | Connect park trails to PA/NJ parks, and surrounding towns. | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailheads connections (parking & picnic areas)     | Expand trailheads connections (parking & picnic areas) |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.                                   | Update signs, maps, etc.                               |

### Transportation System Management / Transportation Demand Management

|         | Short-Term                    | Medium-Term                   | Long-Term                     |
|---------|-------------------------------|-------------------------------|-------------------------------|
| Trails  | Encourage hiking / bicycling. | Encourage hiking / bicycling. | Encourage hiking / bicycling. |
| Transit | No changes.                   | No changes.                   | No changes.                   |
| Other   | No changes.                   | No changes.                   | No changes.                   |

### Other

|                          |   |
|--------------------------|---|
| Orientation & Wayfinding | Improved signs at entrances to park, trailheads, etc.   |
| Interpretation           | Kiosks at trailheads.   |
| Parking Areas            | Additional trailhead parking.   |
| Partnerships             | Partnerships with federal, state, county, Friends of the park, hiking associations, bicycling associations, MCTA. |
| Staffing Changes         | New maintenance staff and Rangers.  |
| Roadways                 | Improvements to existing road system for road cyclists (shoulders, lanes).  |

### Costs of Transportation System

|                         |     |
|-------------------------|-----|
| Capital                 | Low |
| Operating & Maintenance | Low |
| Annual Lifecycle        | Low |

## Option 1C: Trails Focus – Multi-Use

Option 1C features a multi-use trail-focused transportation system to disperse visitation from a traditional river focus to underutilized resources. This option is a combination of Option 1A and 1B. In the short-term, proposed improvements include completing the McDade Trail and enhanced trailhead connections. In the medium-term, the Country Road Trail would be completed and some trails would feature paved, bicycle lanes. The multi-use trail network would be connected to other parks and surrounding areas. Long-term plans include further expanding the trail network and trailhead connections. This option includes improved trailhead signs, installation of interpretation kiosks, and additional trailhead parking. There would be no changes to the existing transit and roadway systems.



### Transit

No Changes

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | Complete McDade Trail.                                 | Construct bicycle trails, lanes.                           | Complete Country Road Trail.                           |
| Connections | No changes.  | Connect park trails to PA/NJ parks, and surrounding towns. | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailheads connections (parking & picnic areas)     | Expand trailheads connections (parking & picnic areas) |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.                                   | Update signs, maps, etc.                               |

### Transportation System Management / Transportation Demand Management

|         | Short-Term                    | Medium-Term                   | Long-Term                     |
|---------|-------------------------------|-------------------------------|-------------------------------|
| Trails  | Encourage hiking / bicycling. | Encourage hiking / bicycling. | Encourage hiking / bicycling. |
| Transit | No changes                    | No changes                    | No changes                    |
| Other   | No changes                    | No changes                    | No changes                    |

### Other

|                          |   |
|--------------------------|---|
| Orientation & Wayfinding | Improved signs at entrances to park, trailheads, etc.   |
| Interpretation           | Kiosks at trailheads.   |
| Parking Areas            | Additional trailhead parking.   |
| Partnerships             | Partnerships with federal, state, county, Friends of the park, hiking associations, bicycling associations, MCTA. |
| Staffing Changes         | New maintenance staff and Rangers.  |
| Roadways                 | Improvements to existing road system for road cyclists (shoulders, lanes).  |

### Costs of Transportation System

|         |     |
|---------|-----|
| Capital | Low |
|---------|-----|

|                         |     |
|-------------------------|-----|
| Operating & Maintenance | Low |
|-------------------------|-----|

|                  |     |
|------------------|-----|
| Annual Lifecycle | Low |
|------------------|-----|

## Option 2A: TSM/TDM – Traffic Control

Option 2A employs transportation systems management (TSM) and transportation demand management (TDM) for controlling vehicular traffic to and within DEWA. In the short-term, proposed improvements include better trailhead connections. The medium-term and long-term plans implement TSM/TDM measures such as road closures, single-lane roads, and access restrictions for discouraging personal vehicle approaches to DEWA. In the medium-term, the park trails would be connected to nearby parks and surrounding towns. This option includes improved trailhead signs and limited interpretation kiosks. There would be no changes to the existing transit system.



### Transit

No Changes

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | No Changes   | No Changes   | No Changes   |
| Connections | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns. | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailheads connections (parking & picnic areas)         | Expand trailheads connections (parking & picnic areas) |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.                                       | Update signs, maps, etc.                               |

### Transportation System Management / Transportation Demand Management

|         | Short-Term | Medium-Term  | Long-Term  |
|---------|------------|--|--|
| Trails  | No changes | No changes   | No changes   |
| Transit | No changes | No changes   | No changes   |
| Other   | No changes | Closing roads, turning roads into single way, access restrictions. | Closing roads, turning roads into single way, access restrictions. |

### Other

|                          |  |
|--------------------------|--|
| Orientation & Wayfinding | Improved signs at entrances to park, trailheads, etc.              |
| Interpretation           | Limited  |
| Parking Areas            | No changes   |
| Partnerships             | MCTA, County, State  |
| Staffing Changes         | No changes   |
| Roadways                 | Closing roads, turning roads into single way, access restrictions. |

### Costs of Transportation System

|                         |     |
|-------------------------|-----|
| Capital                 | Low |
| Operating & Maintenance | Low |
| Annual Lifecycle        | Low |

## Option 2B: TSM/TDM – Road Modifications

Option 2A employs transportation system management (TSM) and transportation demand management (TDM) for encouraging vehicular traffic to and within DEWA. In the short-term, proposed improvements include better trailhead connections. The medium-term and long-term plans implement TSM/TDM measures such as road widening, parking expansion, pullouts, and trailhead parking for encouraging personal vehicle travel to DEWA. This option includes improved trailhead connections, trailhead signs, and limited interpretation kiosks. There would be no changes to the existing transit system.



### Transit

No Changes

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | No changes   | No changes   | No changes   |
| Connections | No changes   | Connect park trails to PA/NJ parks, AT, and surrounding towns. | No changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailheads connections (parking & picnic areas)         | Expand trailheads connections (parking & picnic areas) |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.                                       | Update signs, maps, etc.                               |

### Transportation System Management / Transportation Demand Management

|         | Short-Term | Medium-Term                                  | Long-Term                                    |
|---------|------------|--|--|
| Trails  | No changes | No changes                                   | No changes                                   |
| Transit | No changes | No changes                                   | No changes                                   |
| Other   | Pullouts   | Road widenings, parking expansion, pullouts. | Road widenings, parking expansion, pullouts. |

### Other

|                          |  |
|--------------------------|--|
| Orientation & Wayfinding | Improved signs at entrances to park, trailheads, etc.            |
| Interpretation           | Limited  |
| Parking Areas            | Expand trailhead parking.  |
| Partnerships             | MCTA, Federal, County, State                                     |
| Staffing Changes         | No changes   |
| Roadways                 | Road widenings, parking expansion, pullouts, trail head parking. |

|                                       |          |
|---------------------------------------|----------|
| <b>Costs of Transportation System</b> |          |
| Capital                               | Moderate |
| Operating & Maintenance               | Low      |
| Annual Lifecycle                      | Moderate |



## Option 2C: TSM/TDM – Permitted Use

Option 2A employs transportation system management (TSM) and transportation demand management (TDM) for controlling vehicular traffic to and within DEWA. In the short-term, proposed improvements include better trailhead connections. The medium-term and long-term plans implement a fee structure that discourages personal vehicle trips to and within DEWA. Potential fee could include parking or other transportation fees levied on personal vehicles. This option includes improved trailhead connections, trailhead signs, and limited interpretation kiosks. There would be no changes to the existing transit system.



### Transit

No Changes

### Trails

|   | Short-Term   | Medium-Term  | Long-Term   |
|---|--|--|---|
| New Trails  | No Changes   | No Changes   | No Changes  |
| Connections   | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns. | No Changes  |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailheads connections (parking & picnic areas)         | Expand trailheads connections (parking & picnic areas)      |
| Information   | Update signs, maps, etc.                               | Update signs, maps, etc.                                       | Update signs, maps, etc.                                    |
| Transportation System Management / Transportation Demand Management |  |  |   |
|   | Short-Term   | Medium-Term  | Long-Term   |
| Trails  | No changes   | No changes   | No changes  |
| Transit   | No changes   | No changes   | No changes  |
| Other   | Pullouts   | Fee policies designed to reduce traffic and parking demand.    | Fee policies designed to reduce traffic and parking demand. |
| Other   |  |  |   |

|                                       |   |
|---------------------------------------|---|
| Orientation & Wayfinding              | Improved signs at entrances to park, trailheads, etc. |
| Interpretation                        | Limited   |
| Parking Areas                         | Focused parking areas.                                |
| Partnerships                          | MCTA, Federal, County, State                          |
| Staffing Changes                      | Minimal   |
| Roadways                              | No changes  |
| <b>Costs of Transportation System</b> |   |
| Capital                               | Low   |
| Operating & Maintenance               | Low   |
| Annual Lifecycle                      | Low   |

## Option 2D: TSM/TDM – Combined

Option 2D employs transportation system management (TSM) and transportation demand management (TDM) for controlling vehicular traffic approaches to and within DEWA. This option is a combination of Option 2A, Option 2B, and Option 2C. In the short-term, proposed improvements include better trailhead connections. The medium-term and long-term plans implement road closures, single-lane roads, access restrictions, road widening, parking expansions, pullouts, trail head parking, and fee policies. Trailhead connections would also be improved. This option includes improved trailhead connections, trailhead signs, and limited interpretation kiosks. There would be no changes to the existing transit system.



### Transit

No Changes

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | No Changes   | No Changes   | No Changes   |
| Connections | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns. | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailheads connections (parking & picnic areas)         | Expand trailheads connections (parking & picnic areas) |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.                                       | Update signs, maps, etc.                               |

### Transportation System Management / Transportation Demand Management

|         | Short-Term | Medium-Term  | Long-Term  |
|---------|------------|--|--|
| Trails  | No changes | No changes   | No changes   |
| Transit | No changes | No changes   | No changes   |
| Other   | Pullouts   | Closing roads, turning roads into single way, access restrictions<br><br>Road widenings, parking expansion, pullouts, trail head parking.<br><br>Fee policies designed to reduce traffic and parking demand. | Closing roads, turning roads into single way, access restrictions<br><br>Road widenings, parking expansion, pullouts, trail head parking.<br><br>Fee policies designed to reduce traffic and parking demand. |

### Other

|                          |   |
|--------------------------|---|
| Orientation & Wayfinding | Improved signs at entrances to park, trailheads, etc. |
| Interpretation           | Limited   |

|                                       |   |
|---------------------------------------|---|
| Parking Areas                         | Focused parking areas and trailhead parking.  |
| Partnerships                          | MCTA, Federal, County, State  |
| Staffing Changes                      | Minimal   |
| Roadways                              | Closing roads, turning roads into single way, access restrictions. Road widenings, parking expansion, pullouts, trail head parking. |
| <b>Costs of Transportation System</b> |   |
| Capital                               | Moderate  |
| Operating & Maintenance               | Low   |
| Annual Lifecycle                      | Low   |

## Option 3A: Commercial Vehicles – Taxi Service

Option 3A employs commercial vehicles to provide on-demand taxi services to visitors, such as one-way day hikers who hire a taxi to return them to their vehicles. In the short-term, DEWA would develop a partnership with a taxi service provider and coordinate on-demand visitor services for visitors. The taxi services would include interpretation, and DEWA would construct designated taxi waiting areas. This option also includes improved trailhead connections and trailhead signs. There would be no changes to the existing transit system.



### Transit

|                           | Short-Term                 | Medium-Term                | Long-Term                  |
|---------------------------|----------------------------|----------------------------|----------------------------|
| Bus/Auto/Rail Route       | No changes                 | No changes                 | No changes                 |
| Transit Stops             | No changes                 | No changes                 | No changes                 |
| Vehicles (size)           | Vans                       | Vans                       | Vans                       |
| Vehicles (fuel)           | Gasoline                   | Gasoline                   | Gasoline                   |
| Number of Vehicles        | Concessioner's discretion. | Concessioner's discretion. | Concessioner's discretion. |
| Fare Policy/Fee Structure | Concessioner's discretion. | Concessioner's discretion. | Concessioner's discretion. |
| Service Frequency         | On demand                  | On demand                  | On demand                  |
| Trips per Day             | On demand                  | On demand                  | On demand                  |
| Operations & Maintenance  | Concessioner               | Concessioner               | Concessioner               |
| Year Round / Seasonal     | Year round                 | Year round                 | Year round                 |

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | No Changes   | No Changes   | No Changes   |
| Connections | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns. | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailheads connections (parking & picnic areas)         | Expand trailheads connections (parking & picnic areas) |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.                                       | Update signs, maps, etc.                               |

### Transportation System Management / Transportation Demand Management

|        | Short-Term | Medium-Term | Long-Term  |
|--------|------------|-------------|------------|
| Trails | No changes | No changes  | No changes |

|  |  |            |            |
|--|--|------------|------------|
| INTEL Internal Use - Transportation Feasibility Study Appendix |  |            |            |
| Transit  | Coordinate with taxi/van services to provide on demand services to visitors. | No changes | No changes |
| Other  | No changes   | No changes | No changes |
| Other  |  |            |            |
| Orientation & Wayfinding                                       | Improved signs at entrances to park, trailheads, etc.                        |            |            |
| Interpretation   | Service provider   |            |            |
| Parking Areas  | Taxi stands at designated areas.   |            |            |
| Partnerships   | Commercial taxi/van companies  |            |            |
| Staffing Changes   | Minimal  |            |            |
| Roadways   | No Changes   |            |            |
| Costs of Transportation System                                 |  |            |            |
| Capital  | Low  |            |            |
| Operating & Maintenance  | Low  |            |            |
| Annual Lifecycle   | Low  |            |            |

## Option 3B: Commercial Vehicles – Livery Services

Option 3B employs commercial vehicles for providing livery services to visitors. In the short-term, DEWA would expand the livery service to other visitors, in addition to existing clients. The livery services would focus on bicycling and river uses. Under the concessioner partnership, the service provider would include interpretation, and DEWA would construct designated taxi areas in the parking areas. This option includes improved trailhead connections and trailhead signs. There would be no changes to the existing transit system.



### Transit

|                           | Short-Term                 | Medium-Term                | Long-Term                  |
|---------------------------|----------------------------|----------------------------|----------------------------|
| Bus/Auto/Rail Route       | No changes                 | No changes                 | No changes                 |
| Transit Stops             | No changes                 | No changes                 | No changes                 |
| Vehicles (size)           | Vans                       | Vans                       | Vans                       |
| Vehicles (fuel)           | Gasoline                   | Gasoline                   | Gasoline                   |
| Number of Vehicles        | Concessioner's discretion. | Concessioner's discretion. | Concessioner's discretion. |
| Fare Policy/Fee Structure | Concessioner's discretion. | Concessioner's discretion. | Concessioner's discretion. |
| Service Frequency         | On demand                  | On demand                  | On demand                  |
| Trips per Day             | On demand                  | On demand                  | On demand                  |
| Operations & Maintenance  | Concessioner               | Concessioner               | Concessioner               |
| Year Round / Seasonal     | Year round                 | Year round                 | Year round                 |

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | No Changes   | No Changes   | No Changes   |
| Connections | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns. | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailheads connections (parking & picnic areas)         | Expand trailheads connections (parking & picnic areas) |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.                                       | Update signs, maps, etc.                               |

### Transportation System Management / Transportation Demand Management

|         | Short-Term   | Medium-Term | Long-Term  |
|---------|--|-------------|------------|
| Trails  | No changes   | No changes  | No changes |
| Transit | Expand livery system to other user (not just their clients). | No changes  | No changes |

|                                |   |            |            |
|--------------------------------|---|------------|------------|
|                                | Focus on bicycling and river uses.                    |            |            |
| Other                          | No changes  | No changes | No changes |
| Other                          |   |            |            |
| Orientation & Wayfinding       | Improved signs at entrances to park, trailheads, etc. |            |            |
| Interpretation                 | Service provider                                      |            |            |
| Parking Areas                  | Taxi stands at designated areas.                      |            |            |
| Partnerships                   | Commercial taxi/van companies                         |            |            |
| Staffing Changes               | Minimal   |            |            |
| Roadways                       | No Changes  |            |            |
| Costs of Transportation System |   |            |            |
| Capital                        | Low   |            |            |
| Operating & Maintenance        | Low   |            |            |
| Annual Lifecycle               | Low   |            |            |



## Option 4A: Bus System – Southern Loop

Option 4A features a transit system that extends the MCTA Yellow Route into the southern portion of DEWA. In the short-term, DEWA would establish a partnership with the MCTA and extend the Yellow Route north to Dingmans Ferry. This route would be further extended to the Lackawana Cutoff in the long-term. This option features plans for improving the trail network and connectivity with surrounding parks and towns. Other improvements include improving signs, reopening the Bushkill Visitor Center, improving park and ride lots, and improving roadway connectivity.



### Transit

|                           | Short-Term  | Medium-Term  | Long-Term  |
|---------------------------|---|--|--|
| Bus/Auto/Rail Route       | Expand Yellow Route north to Dingmans Ferry.                    | Expand Yellow Route north to Dingmans Ferry.                   | Yellow Route connected to Lackawana Cutoff.                    |
| Transit Stops             | Based on MCTA Yellow Route. Flagging system at other locations. | Based on MCTA Yellow Route. Flagging system at other locations | Based on MCTA Yellow Route. Flagging system at other locations |
| Vehicles (size)           | Medium size bus   | Medium size bus  | Medium size bus  |
| Vehicles (fuel)           | Diesel  | Diesel   | Diesel   |
| Number of Vehicles        | Two (including one spare)                                       | Three (including one spare)                                    | Five (including one spare)                                     |
| Fare Policy/Fee Structure | Base Fare: \$1.25; Students \$0.75; Children/Seniors: Free      | Base Fare: \$1.25; Students \$0.75; Children/Seniors: Free     | Base Fare: \$1.25; Students \$0.75; Children/Seniors: Free     |
| Service Frequency         | 2 hours   | 60 minutes   | 30 minutes   |
| Trips per Day             | 7   | 14   | 28   |
| Operations & Maintenance  | MCTA  | MCTA   | MCTA   |
| Year Round / Seasonal     | Year round  | Year round   | Year round   |

### Trails

|             | Short-Term  | Medium-Term  | Long-Term  |
|-------------|---|--|--|
| New Trails  | Complete McDade Trail.                                  | Complete Country Road Trail.   | Expanded trail network.  |
| Connections | No changes.   | Connect park trails to PA/NJ parks, AT, and surrounding towns.   | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas). | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. |
| Information | Update signs, maps, etc.                                | Update signs, maps, etc.   | Update signs, maps, etc.   |

| Transportation System Management / Transportation Demand Management |  |   |   |
|---|--|---|---|
|   | Short-Term   | Medium-Term   | Long-Term   |
| Trails  | No changes   | No changes  | No changes  |
| Transit   | No changes   | No changes  | No changes  |
| Other   | Fare as an incentive to reduce auto trips (includes beach fees, etc).                                | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). |
| Other   |  |   |   |
| Orientation & Wayfinding  | Improved signs at entrances to park, trailheads, etc. Build additional kiosks at bus stops.          |   |   |
| Interpretation  | Reopen Bushkill Visitor Center   |   |   |
| Parking Areas   | Park & ride lots at: Lackawana rail stop, flea market area, Dingmans Ferry                           |   |   |
| Partnerships  | With MCTA  |   |   |
| Staffing Changes  | No changes   |   |   |
| Roadways  | Complete Marshall Creek Bypass. Work with Worthington State Forest to improve access on Old Mine Rd. |   |   |
| Costs of Transportation System                                      |  |   |   |
| Capital   | Moderate   |   |   |
| Operating & Maintenance   | Moderate   |   |   |
| Annual Lifecycle  | Moderate   |   |   |

## Option 4B: Bus System – Northern Loop

Option 4B features a new transit system in the northern portion of DEWA, potentially in partnership with a new Pike County transportation authority. In the short-term, the transit system would extend from Port Jervis to Milford. The route would be extended south to Dingmans Ferry in the medium-term. This option features plans for improving the trail network and connectivity with surrounding parks and towns. Other improvements include improving signs, reopening the Bushkill Visitor Center, improving park and ride lots, and improving roadway connectivity.



### Transit

|                           | Short-Term                | Medium-Term                    | Long-Term                      |
|---------------------------|---------------------------|--------------------------------|--------------------------------|
| Bus/Auto/Rail Route       | Port Jervis to Milford.   | Port Jervis to Dingmans Ferry. | Port Jervis to Dingmans Ferry. |
| Transit Stops             | Flagging system.          | Flagging system                | Flagging system                |
| Vehicles (size)           | Van                       | Medium size bus                | Medium size bus                |
| Vehicles (fuel)           | Gasoline                  | Gasoline                       | Gasoline                       |
| Number of Vehicles        | Two (including one spare) | Three (including one spare)    | Five (including one spare)     |
| Fare Policy/Fee Structure | Cost minus park subsidy   | Cost minus park subsidy        | Cost minus park subsidy        |
| Service Frequency         | 2 hours                   | 60 minutes                     | 30 minutes                     |
| Trips per Day             | 7                         | 14                             | 28                             |
| Operations & Maintenance  | Pike County               | Pike County                    | Pike County                    |
| Year Round / Seasonal     | Year round                | Year round                     | Year round                     |

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | Complete McDade Trail.                                 | Complete Country Road Trail.   | Expanded trail network.  |
| Connections | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns.   | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.   | Update signs, maps, etc.   |

### Transportation System Management / Transportation Demand Management

|                                | Short-Term  | Medium-Term   | Long-Term   |
|--------------------------------|---|---|---|
| Trails                         | No changes  | No changes  | No changes  |
| Transit                        | No changes  | No changes  | No changes  |
| Other                          | Fare as an incentive to reduce auto trips (includes beach fees, etc).                       | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). |
| Other                          |   |   |   |
| Orientation & Wayfinding       | Improved signs at entrances to park, trailheads, etc. Build additional kiosks at bus stops. |   |   |
| Interpretation                 | Reopen Bushkill Visitor Center  |   |   |
| Parking Areas                  | Park & ride lots at: Port Jervis, Matamoras, Milford, Dingmans Ferry                        |   |   |
| Partnerships                   | Pike County   |   |   |
| Staffing Changes               | No changes  |   |   |
| Roadways                       | Complete Marshall Creek Bypass.   |   |   |
| Costs of Transportation System |   |   |   |
| Capital                        | Moderate  |   |   |
| Operating & Maintenance        | Moderate  |   |   |
| Annual Lifecycle               | Moderate  |   |   |

## Option 4C: Bus System – Northern & Southern Loops

Option 4C features a transit system with full coverage of DEWA and partnerships with the MCTA and a new Pike County transportation authority. This option is a combination of Option 4A and Option 4B. The full transit system would extend from Port Jervis to the Delaware Water Gap route. The route would be extended south to Dingmans Ferry in the medium-term. This option features plans for improving the trail network and connectivity with surrounding parks and towns. Other improvements include improving signs, reopening the Bushkill Visitor Center, improving park and ride lots, and improving roadway connectivity.



### Transit

|                           | Short-Term   | Medium-Term                        | Long-Term                          |
|---------------------------|--|------------------------------------|------------------------------------|
| Bus/Auto/Rail Route       | Port Jervis to Milford.<br>Yellow Route to Dingmans Ferry. | Port Jervis to Delaware Water Gap. | Port Jervis to Delaware Water Gap. |
| Transit Stops             | Flagging system.   | Flagging system                    | Flagging system                    |
| Vehicles (size)           | Van  | Medium size bus                    | Medium size bus                    |
| Vehicles (fuel)           | Gasoline   | Gasoline                           | Gasoline                           |
| Number of Vehicles        | Two (including one spare)                                  | Three (including one spare)        | Five (including one spare)         |
| Fare Policy/Fee Structure | Cost minus park subsidy                                    | Cost minus park subsidy            | Cost minus park subsidy            |
| Service Frequency         | 2 hours  | 60 minutes                         | 30 minutes                         |
| Trips per Day             | 7  | 14                                 | 28                                 |
| Operations & Maintenance  | MCTA/Pike County   | MCTA/Pike County                   | MCTA/Pike County                   |
| Year Round / Seasonal     | Year round   | Year round                         | Year round                         |

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | Complete McDade Trail.                                 | Complete Country Road Trail.   | Expanded trail network.  |
| Connections | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns.   | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.   | Update signs, maps, etc.   |

### Transportation System Management / Transportation Demand Management

|  | Short-Term | Medium-Term | Long-Term |
|--|------------|-------------|-----------|
|--|------------|-------------|-----------|

|                                |   |   |   |
|--------------------------------|---|---|---|
| Trails                         | No changes  | No changes  | No changes  |
| Transit                        | No changes  | No changes  | No changes  |
| Other                          | Fare as an incentive to reduce auto trips (includes beach fees, etc).                                       | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). |
| Other                          |   |   |   |
| Orientation & Wayfinding       | Improved signs at entrances to park, trailheads, etc. Build additional kiosks at bus stops.                 |   |   |
| Interpretation                 | Reopen Bushkill Visitor Center  |   |   |
| Parking Areas                  | Park & ride lots at: Lackawana rail stop, flea market area, Dingmans Ferry, Port Jervis, Matamoras, Milford |   |   |
| Partnerships                   | MCTA/Pike County  |   |   |
| Staffing Changes               | No changes  |   |   |
| Roadways                       | Complete Marshall Creek Bypass. Work with Worthington State Forest to improve access on Old Mine Rd.        |   |   |
| Costs of Transportation System |   |   |   |
| Capital                        | Moderate  |   |   |
| Operating & Maintenance        | Moderate  |   |   |
| Annual Lifecycle               | Moderate  |   |   |

## Option 4D: Bus System – PA/NJ Loops

Option 4D features a transit system operated through partnerships with Pike County and Sussex County. In the short-term, the transit system would extend from Port Jervis to Dingmans Ferry. The route would be extended south to the Peter's Valley loop and Branchville in the medium-term and long-term, respectively. This option features plans for improving the trail network and connectivity with surrounding parks and towns. Other improvements include improving signs, reopening the Bushkill Visitor Center, improving park and ride lots, and improving roadway connectivity.



### Transit

|                           | Short-Term                     | Medium-Term   | Long-Term   |
|---------------------------|--------------------------------|---|---|
| Bus/Auto/Rail Route       | Port Jervis to Dingmans Ferry. | Port Jervis to Dingmans Ferry to Peter's Valley loop. | Port Jervis to Dingmans Ferry to Peter's Valley loop, extension to Branchville. |
| Transit Stops             | Flagging system.               | Flagging system                                       | Flagging system   |
| Vehicles (size)           | Van                            | Van   | Van   |
| Vehicles (fuel)           | Gasoline                       | Gasoline  | Gasoline  |
| Number of Vehicles        | Two (including one spare)      | Three (including one spare)                           | Five (including one spare)  |
| Fare Policy/Fee Structure | Cost minus park subsidy        | Cost minus park subsidy                               | Cost minus park subsidy   |
| Service Frequency         | 2 hours                        | 60 minutes  | 30 minutes  |
| Trips per Day             | 7                              | 14  | 28  |
| Operations & Maintenance  | Pike County/Sussex County      | Pike County/Sussex County                             | Pike County/Sussex County   |
| Year Round / Seasonal     | Year round                     | Year round  | Year round  |

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | Complete McDade Trail.                                 | Complete Country Road Trail.   | Expanded trail network.  |
| Connections | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns.   | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.   | Update signs, maps, etc.   |

### Transportation System Management / Transportation Demand Management

|                                | Short-Term  | Medium-Term   | Long-Term   |
|--------------------------------|---|---|---|
| Trails                         | No changes  | No changes  | No changes  |
| Transit                        | No changes  | No changes  | No changes  |
| Other                          | Fare as an incentive to reduce auto trips (includes beach fees, etc).                       | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). |
| Other                          |   |   |   |
| Orientation & Wayfinding       | Improved signs at entrances to park, trailheads, etc. Build additional kiosks at bus stops. |   |   |
| Interpretation                 | Reopen Bushkill Visitor Center  |   |   |
| Parking Areas                  | Park & ride lots at: Port Jervis, Matamoras, Milford, Dingmans Ferry, Branchville           |   |   |
| Partnerships                   | Pike County/Sussex County   |   |   |
| Staffing Changes               | No changes  |   |   |
| Roadways                       | Complete Marshall Creek Bypass.   |   |   |
| Costs of Transportation System |   |   |   |
| Capital                        | Moderate  |   |   |
| Operating & Maintenance        | Moderate  |   |   |
| Annual Lifecycle               | Moderate  |   |   |



## Option 4E: Northern & Southern Loops & PA/NJ Loops

Option 4E features a transit system operated through partnerships with MCTA, a new Pike County transportation authority, and Sussex County. This option is a combination of Option 4C and Option 4D. In the short-term, the transit system would extend from Port Jervis to the Delaware Water Gap route. In the medium-term, the transit system would incorporate a Peter's Valley loop and a Dingmans Ferry loop. This system would be extended to Branchville in the long-term. This option features plans for improving the trail network and connectivity with surrounding parks and towns. Other improvements include improving signs, reopening the Bushkill Visitor Center, improving park and ride lots, and improving roadway connectivity.



### Transit

|                           | Short-Term                               | Medium-Term  | Long-Term  |
|---------------------------|--|--|--|
| Bus/Auto/Rail Route       | Port Jervis to Delaware Water Gap route. | Port Jervis to Dingmans Ferry to Peter's Valley loop. Delaware Water Gap to Dingmans Ferry loop. | Port Jervis to Dingmans Ferry to Peter's Valley loop. Delaware Water Gap to Dingmans Ferry loop. Extension to Branchville. |
| Transit Stops             | Flagging system.                         | Flagging system  | Flagging system  |
| Vehicles (size)           | Van                                      | Van  | Van  |
| Vehicles (fuel)           | Gasoline                                 | Gasoline   | Gasoline   |
| Number of Vehicles        | Two (including one spare)                | Three (including one spare)  | Five (including one spare)   |
| Fare Policy/Fee Structure | Cost minus park subsidy                  | Cost minus park subsidy  | Cost minus park subsidy  |
| Service Frequency         | 2 hours                                  | 60 minutes   | 30 minutes   |
| Trips per Day             | 7  | 14   | 28   |
| Operations & Maintenance  | Pike County/Sussex County                | Pike County/Sussex County  | Pike County/Sussex County  |
| Year Round / Seasonal     | Year round                               | Year round   | Year round   |

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | Complete McDade Trail.                                 | Complete Country Road Trail.   | Expanded trail network.  |
| Connections | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns.   | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.   | Update signs, maps, etc.   |

| Transportation System Management / Transportation Demand Management |   |   |   |
|---|---|---|---|
|   | Short-Term  | Medium-Term   | Long-Term   |
| Trails  | No changes  | No changes  | No changes  |
| Transit   | No changes  | No changes  | No changes  |
| Other   | Fare as an incentive to reduce auto trips (includes beach fees, etc).                       | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). |
| Other   |   |   |   |
| Orientation & Wayfinding  | Improved signs at entrances to park, trailheads, etc. Build additional kiosks at bus stops. |   |   |
| Interpretation  | Reopen Bushkill Visitor Center  |   |   |
| Parking Areas   | Park & ride lots at: Port Jervis, Matamoras, Milford, Dingmans Ferry, Branchville           |   |   |
| Partnerships  | Pike County/Sussex County   |   |   |
| Staffing Changes  | No changes  |   |   |
| Roadways  | Complete Marshall Creek Bypass.   |   |   |
| Costs of Transportation System                                      |   |   |   |
| Capital   | Moderate  |   |   |
| Operating & Maintenance   | Moderate  |   |   |
| Annual Lifecycle  | Moderate  |   |   |

## Option 4F: Bus System – Central Distribution

Option 4F features a transit system with a central hub at Dingmans Ferry. It would be operated through partnerships with MCTA and a Pike County transportation authority. In the short-term, DEWA would partner with MCTA to extend the Yellow Route to Dingmans Ferry. In the medium term, a route between Dingmans Ferry and Port Jervis would be initiated by Pike County. In the long term a route would originate from Dingmans Ferry and circulate through the Peter's Valley area. Other improvements include improving signs, reopening the Bushkill Visitor Center, improving park and ride lots, and improving roadway connectivity.



### Transit

|                           | Short-Term                                  | Medium-Term                    | Long-Term                         |
|---------------------------|---|--------------------------------|-----------------------------------|
| Bus/Auto/Rail Route       | Dingmans Ferry to Delaware Water Gap route. | Dingmans Ferry to Port Jervis. | Dingmans Ferry to Peter's Valley. |
| Transit Stops             | Flagging system.                            | Flagging system                | Flagging system                   |
| Vehicles (size)           | Van   | Medium size bus                | Medium size bus                   |
| Vehicles (fuel)           | Gasoline                                    | Gasoline                       | Gasoline                          |
| Number of Vehicles        | Two (including one spare)                   | Three (including one spare)    | Five (including one spare)        |
| Fare Policy/Fee Structure | Cost minus park subsidy                     | Cost minus park subsidy        | Cost minus park subsidy           |
| Service Frequency         | 2 hours                                     | 60 minutes                     | 30 minutes                        |
| Trips per Day             | 7   | 14                             | 28                                |
| Operations & Maintenance  | MCTA/Pike County                            | MCTA/Pike County               | MCTA/Pike County                  |
| Year Round / Seasonal     | Year round                                  | Year round                     | Year round                        |

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | Complete McDade Trail.                                 | Complete Country Road Trail.   | Expanded trail network.  |
| Connections | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns.   | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.   | Update signs, maps, etc.   |

### Transportation System Management / Transportation Demand Management

|  | Short-Term | Medium-Term | Long-Term |
|--|------------|-------------|-----------|
|--|------------|-------------|-----------|

|                                |   |   |   |
|--------------------------------|---|---|---|
| Trails                         | No changes  | No changes  | No changes  |
| Transit                        | No changes  | No changes  | No changes  |
| Other                          | Fare as an incentive to reduce auto trips (includes beach fees, etc).                               | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). |
| Other                          |   |   |   |
| Orientation & Wayfinding       | Improved signs at entrances to park, trailheads, etc. Build additional kiosks at bus stops.         |   |   |
| Interpretation                 | Reopen Bushkill Visitor Center  |   |   |
| Parking Areas                  | Park & ride lots at: Lackawana Cutoff, Dingmans Ferry   |   |   |
| Partnerships                   | MCTA/Pike County  |   |   |
| Staffing Changes               | No changes  |   |   |
| Roadways                       | Complete Marshall Creek Bypass. Work with Worthington State Fores to improve access on Old Mine Rd. |   |   |
| Costs of Transportation System |   |   |   |
| Capital                        | Moderate  |   |   |
| Operating & Maintenance        | Moderate  |   |   |
| Annual Lifecycle               | Moderate  |   |   |

## Option 5: East-West Water Taxi

Option 5 features water taxi service from Smithfield Beach to Turtle Beach. DEWA would own the ferries, and a private concessioner would operate and maintain the water taxi service. This option also features plans for improving the trail network and connectivity with surrounding parks and towns. Other improvements include improving signs, reopening the Bushkill Visitor Center, improving park and ride lots, and improving roadway connectivity. There would be changes to the existing bus transit system.



### Transit

|                           | Short-Term   | Medium-Term  | Long-Term  |
|---------------------------|--|--|--|
| Bus/Auto/Rail Route       | No changes   | No changes   | No changes   |
| Transit Stops             | Smithfield Beach and Coppermine Beach                        | Smithfield Beach and Turtle Beach.                           | Smithfield Beach and Turtle Beach                            |
| Vehicles (size)           | Small ferries (~20 person).                                  | Small ferries (~20 person).                                  | Small ferries (~20 person).                                  |
| Vehicles (fuel)           | Diesel   | Diesel   | Diesel   |
| Number of Vehicles        | 1+1 spare  | 1+1 spare  | 1+1 spare  |
| Fare Policy/Fee Structure | Fee based  | Fee based  | Fee based  |
| Service Frequency         | 15 minutes   | 15 minutes   | 15 minutes   |
| Trips per Day             | 49 trips   | 49 trips   | 49 trips   |
| Operations & Maintenance  | DEWA owns vehicles. Operated and maintained by concessioner. | DEWA owns vehicles. Operated and maintained by concessioner. | DEWA owns vehicles. Operated and maintained by concessioner. |
| Year Round / Seasonal     | Seasonal   | Seasonal   | Seasonal   |

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | Complete McDade Trail.                                 | Complete Country Road Trail.                                   | Expanded trail network.                                |
| Connections | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns. | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailheads connections (parking & picnic areas)         | Expand trailheads connections (parking & picnic areas) |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.                                       | Update signs, maps, etc.                               |

### Transportation System Management / Transportation Demand Management

|                                | Short-Term  | Medium-Term   | Long-Term   |
|--------------------------------|---|---|---|
| Trails                         | No changes  | No changes  | No changes  |
| Transit                        | No changes  | No changes  | No changes  |
| Other                          | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). |
| Other                          |   |   |   |
| Orientation & Wayfinding       | Improved signs at entrances to park, trailheads, etc.                 |   |   |
| Interpretation                 | Limited (possible audio records/signs on bus).                        |   |   |
| Parking Areas                  | Existing swim-beach parking   |   |   |
| Partnerships                   | Concessioner and DEWA   |   |   |
| Staffing Changes               | Minimal staff for operations oversight and interpretation.            |   |   |
| Roadways                       | No changes  |   |   |
| Costs of Transportation System |   |   |   |
| Capital                        | Moderate  |   |   |
| Operating & Maintenance        | Moderate  |   |   |
| Annual Lifecycle               | Moderate  |   |   |

## Option 6A: Rail Trolley – North-South (PA Side)

Option 6A features a rail trolley system on the Pennsylvania side of DEWA. The trolley would connect the planned Lackawana Cutoff Route with the existing Port Jervis rail connection to New York City. The trolley system would be planned for long-term implementation and full integration with the existing transportation network. This option also features plans for improving the trail network and connectivity with surrounding parks and towns. Other improvements include improving signs, reopening the Bushkill Visitor Center, improving park and ride lots, and improving roadway connectivity. There would be changes and additions to the existing bus transit system to support the trolley.

| Transit                   |  |  |  |
|---------------------------|--|--|--|
|                           | Short-Term   | Medium-Term  | Long-Term  |
| Bus/Auto/Rail Route       | No changes   | No changes   | Fully integrated with existing transportation network.   |
| Transit Stops             | No changes   | No changes   | North and south connections to existing/planned rail providers, other stops.                               |
| Vehicles (size)           | No changes   | No changes   | TBD  |
| Vehicles (fuel)           | No changes   | No changes   | Electric/diesel  |
| Number of Vehicles        | No changes   | No changes   | Five (including one spare)   |
| Fare Policy/Fee Structure | No changes   | No changes   | Fee based  |
| Service Frequency         | No changes   | No changes   | 30 minutes   |
| Trips per Day             | No changes   | No changes   | 28 trips   |
| Operations & Maintenance  | No changes   | No changes   | Offsite by operator  |
| Year Round / Seasonal     | No changes   | No changes   | Year round   |
| Trails                    |  |  |  |
|                           | Short-Term   | Medium-Term  | Long-Term  |
| New Trails                | Complete McDade Trail.                                 | Complete Country Road Trail.   | Expanded trail network.  |
| Connections               | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns.   | No Changes   |
| Trailheads                | Improve trailhead connections (parking & picnic areas) | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. |
| Information               | Update signs, maps, etc.                               | Update signs, maps, etc.   | Update signs, maps, etc.   |

| Transportation System Management / Transportation Demand Management |   |   |   |
|---|---|---|---|
|   | Short-Term  | Medium-Term   | Long-Term   |
| Trails  | No changes  | No changes  | No changes  |
| Transit   | No changes  | No changes  | No changes  |
| Other   | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). |
| Other   |   |   |   |
| Orientation & Wayfinding  | Improved signs at entrances to park, trailheads, etc.                 |   |   |
| Interpretation  | Fully interpretive by audio signs                                     |   |   |
| Parking Areas   | Port Jervis, Lackawana Cutoff park and rides, others                  |   |   |
| Partnerships  | With regional transit authorities                                     |   |   |
| Staffing Changes  | Minimal   |   |   |
| Roadways  | Uses existing ROW   |   |   |
| Costs of Transportation System                                      |   |   |   |
| Capital   | High  |   |   |
| Operating & Maintenance   | High  |   |   |
| Annual Lifecycle  | High  |   |   |



## Option 6B: Rail Trolley – North-South (New Jersey Side)

Option 6B features a rail trolley system on the New Jersey side of DEWA. The trolley would connect the planned Lackawana Cutoff Route with the existing Port Jervis rail connection to New York City. The trolley system would be planned for long-term implementation and full integration with the existing transportation network. This option also features plans for improving the trail network and connectivity with surrounding parks and towns. Other improvements include improving signs, reopening the Bushkill Visitor Center, improving park and ride lots, and improving roadway connectivity. There would be changes and additions to the existing bus transit system to support the trolley.

| Transit                   |  |  |  |
|---------------------------|--|--|--|
|                           | Short-Term   | Medium-Term  | Long-Term  |
| Bus/Auto/Rail Route       | No changes   | No changes   | Fully integrated with existing transportation network.   |
| Transit Stops             | No changes   | No changes   | North and south connections to existing/planned rail providers, other stops.                               |
| Vehicles (size)           | No changes   | No changes   | TBD  |
| Vehicles (fuel)           | No changes   | No changes   | Electric/diesel  |
| Number of Vehicles        | No changes   | No changes   | Five (including one spare)   |
| Fare Policy/Fee Structure | No changes   | No changes   | Fee-based  |
| Service Frequency         | No changes   | No changes   | 30 minutes   |
| Trips per Day             | No changes   | No changes   | 28 trips   |
| Operations & Maintenance  | No changes   | No changes   | Offsite by operator  |
| Year Round / Seasonal     | No changes   | No changes   | Year round   |
| Trails                    |  |  |  |
|                           | Short-Term   | Medium-Term  | Long-Term  |
| New Trails                | Complete McDade Trail.                                 | Complete Country Road Trail.   | Expanded trail network.  |
| Connections               | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns.   | No Changes   |
| Trailheads                | Improve trailhead connections (parking & picnic areas) | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. | Expand trailhead connections (parking & picnic areas). Build new trails and trailheads tied to bus system. |
| Information               | Update signs, maps, etc.                               | Update signs, maps, etc.   | Update signs, maps, etc.   |

| Transportation System Management / Transportation Demand Management |   |   |   |
|---|---|---|---|
|   | Short-Term  | Medium-Term   | Long-Term   |
| Trails  | No changes  | No changes  | No changes  |
| Transit   | No changes  | No changes  | No changes  |
| Other   | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). |
| Other   |   |   |   |
| Orientation & Wayfinding  | Improved signs at entrances to park, trailheads, etc.                 |   |   |
| Interpretation  | Fully interpretive by audio signs                                     |   |   |
| Parking Areas   | Port Jervis, Lackawana Cutoff park and rides, others                  |   |   |
| Partnerships  | With regional transit authorities                                     |   |   |
| Staffing Changes  | Minimal   |   |   |
| Roadways  | Uses existing ROW   |   |   |
| Costs of Transportation System                                      |   |   |   |
| Capital   | High  |   |   |
| Operating & Maintenance   | High  |   |   |
| Annual Lifecycle  | High  |   |   |

## Option 7A: East-West Integration – Non-Motor Bridge

Option 7A features a multi-use, non-motorized bridge connecting Smithfield Beach with Turtle Beach. The bridge would improve connectivity between the beach recreation areas and encourage non-motor transportation within DEWA. This option also features plans for improving the trail network and connectivity with surrounding parks and towns. Other improvements include improving signs, reopening the Bushkill Visitor Center, improving park and ride lots, and improving roadway connectivity. There would be changes to the existing bus transit system.



### Transit

No Changes

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | Complete McDade Trail.                                 | Complete Country Road Trail.                                   | Expanded trail network.                                |
| Connections | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns. | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailheads connections (parking & picnic areas)         | Expand trailheads connections (parking & picnic areas) |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.                                       | Update signs, maps, etc.                               |

### Transportation System Management / Transportation Demand Management

|         | Short-Term  | Medium-Term   | Long-Term   |
|---------|---|---|---|
| Trails  | No changes  | No changes  | No changes  |
| Transit | No changes  | No changes  | No changes  |
| Other   | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). |

### Other

Orientation & Wayfinding      Improved signs at entrances to park, trailheads, etc.

|                                       |   |
|---------------------------------------|---|
| Interpretation                        | Kiosks  |
| Parking Areas                         | Limited   |
| Partnerships                          | No changes  |
| Staffing Changes                      | Minimal   |
| Roadways                              | Long term: New river crossing will connect with existing hiking/cycling facilities. |
| <b>Costs of Transportation System</b> |   |
| Capital                               | High  |
| Operating & Maintenance               | Low   |
| Annual Lifecycle                      | High  |

## Option 7B: East-West Integration – Road Bridge

Option 7A features a multi-modal bridge in the Bushkill vicinity. The bridge would improve connectivity between recreation areas within DEWA. This option also features plans for improving the trail network and connectivity with surrounding parks and towns. Other improvements include improving signs, reopening the Bushkill Visitor Center, improving park and ride lots, and improving roadway connectivity. There would be changes to the existing bus transit system.



### Transit

No Changes

### Trails

|             | Short-Term   | Medium-Term  | Long-Term  |
|-------------|--|--|--|
| New Trails  | Complete McDade Trail.                                 | Complete Country Road Trail.                                   | Expanded trail network.                                |
| Connections | No changes.  | Connect park trails to PA/NJ parks, AT, and surrounding towns. | No Changes   |
| Trailheads  | Improve trailhead connections (parking & picnic areas) | Expand trailheads connections (parking & picnic areas)         | Expand trailheads connections (parking & picnic areas) |
| Information | Update signs, maps, etc.                               | Update signs, maps, etc.                                       | Update signs, maps, etc.                               |

### Transportation System Management / Transportation Demand Management

|         | Short-Term  | Medium-Term   | Long-Term   |
|---------|---|---|---|
| Trails  | No changes  | No changes  | No changes  |
| Transit | No changes  | No changes  | No changes  |
| Other   | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). | Fare as an incentive to reduce auto trips (includes beach fees, etc). |

### Other

|                          |  |
|--------------------------|--|
| Orientation & Wayfinding | Improved signs at entrances to park, trailheads, etc.                            |
| Interpretation           | Kiosks   |
| Parking Areas            | Limited  |
| Partnerships             | Concessioner   |
| Staffing Changes         | Concessioner   |
| Roadways                 | Long term: New river crossing will connect with existing transportation network. |

|                                       |          |
|---------------------------------------|----------|
| <b>Costs of Transportation System</b> |          |
| Capital                               | High     |
| Operating & Maintenance               | Moderate |
| Annual Lifecycle                      | High     |

## Appendix E: Transportation Theme Summaries

This appendix includes summaries of six transportation themes. The summaries provide an overview of each theme, discuss their transportation characteristics, integration with other transportation modes, and the short term, medium term, and long term phasing of each option. The six transportation themes are:

- No Build
- Wayfinding/Integrated Signage.
- Transportation Demand Management
- Trails Planning Focus
- Bus System Linked
- Light Rail, Bus Rapid Transit, and Water (high-capacity transit)

## No Build Theme

Summary: No changes to existing system other than previously identified planned improvements, scheduled maintenance, and changes made by other jurisdictions and organizations.



### Transportation System Characteristics

|                                  |  |
|----------------------------------|--|
| Transit Services                 | Existing Monroe County Transportation Authority (MCTA) Yellow Route.     |
| Transportation Infrastructure    | Existing or planned infrastructure improvements.                         |
| Connectivity                     | Limited to existing roadway network and transportation providers.        |
| Parking Areas/Trailheads         | Improvements will be driven by existing roadway and trail network plans. |
| Access Restrictions              | No changes to existing restrictions.                                     |
| Transportation Demand Management | Based on existing management guidelines and decisions.                   |

### Integration with Other Transportation Modes

|                        |   |
|------------------------|---|
| Personal Vehicles      | No changes except planned improvements and maintenance.                                   |
| Trails/Paths           |   |
| • Walking/Hiking       | No changes. Integrated with existing trail/path network.                                  |
| • Bicycling            | No changes. Integrated with existing bike trails.   |
| • Equestrian           | No changes. Integrated with existing equestrian trails.                                   |
| • Multi-Use            | No changes. Integrated with existing multi-use trails.                                    |
| Bus                    | No changes. Integrated with existing MCTA Yellow Route or any future service extensions.  |
| Water                  | No changes. Integrated with existing river liveries, etc.                                 |
| Private Transportation | No changes. Integrated with existing private transportation or future service extensions. |
| Rail                   | No changes. Relies on existing rail connections to Port Jervis.                           |

### Transportation/Recreation Systems Integrated with DEWA

|              |   |
|--------------|---|
| Park Systems | Maintain existing agreements with New Jersey, Pennsylvania, the Appalachian Trail, and county recreation providers. |
|--------------|---|



|  |  |
|--|--|
| Transit Authorities                    | No formal agreements exist with transit authorities. Transit service expansions will be addressed when they occur.   |
| Communities/Businesses                 | Maintain ties to existing businesses and business organizations.   |
| <b>Other</b>                           |  |
| Interpretation                         | No change. Limited interpretation provided within DEWA.  |
| Orientation                            | No change. Limited orientation provided within DEWA.   |
| Partnerships                           | No change. Existing partnerships with state, federal and local governments will be maintained, as well as working relationships with public and commercial entities.   |
| Organizational Changes                 | Organizational changes will be those driven by DEWA's annual planning processes and management plans.  |
| <b>Costs &amp; Agreements</b>          |  |
| Capital Costs                          | Changes will be driven by DEWA's annual budget.  |
| Operating & Maint. Costs               | Changes will be driven by DEWA's annual budget.  |
| Concessions/Operators                  | Agreements with Dingmans Ferry Campground, livery companies and organizations using DEWA facilities (i.e. Peters Valley) will continue according to existing agreements.   |
| <b>Planning Implementation/Phasing</b> |  |
| Short term (0-5 years)                 | Existing General Management Plans.   |
| Medium term (0-10 years)               | Existing General Management Plans and future amendments.   |
| Long term (0 – 20 years)               | General Management Plan revisions.   |
| Potential Implications                 | Increased development pressures and increased visitation will cause traffic congestion to worsen, exacerbate parking shortages, diminish the visitor experience, and cause degradation to air and sound quality (noise). |

## Wayfinding/Integrated Signage Theme

**Summary:** A combination of Context-Sensitive signs in and around DEWA to improve visitor orientation and interpretation combined with additional informational infrastructure to link the available transportation opportunities for DEWA visitors and transit operators within the study area would improve connections with DEWA's numerous resources, including informing visitors about less-visited resources.



### Transportation System Characteristics

|                                  |  |
|----------------------------------|--|
| Transit Services                 | A DEWA-operated system or partnership to provide signs to enhance the visibility of existing transit services and stops including existing MCTA Routes and commuter rail connects planned or in existence in the study area.   |
| Transportation Infrastructure    | Improved roadway "points of interest" signage may be installed in DEWA and the surrounding areas. Signage improvements on roadways outside of DEWA would be developed in collaboration with transportation providers/DOTs.   |
| Connectivity                     | Connectivity would be improved through better wayfinding resource linkages to the existing roadway network, DEWA resources and public transportation opportunities. In addition, provide information about the adjacency to the Appalachian Trail and other state and local parks. |
| Parking Areas/Trailheads         | Trailhead signs will be provided on the roadway to mark the location of trailheads. Signs will be provided at trailheads to orient visitors to trail network.  |
| Access Restrictions              | Any modal access restrictions should be clearly indicated by improved wayfinding and informational kiosks throughout the many opportunities throughout DEWA.   |
| Transportation Demand Management | Improved signage can reduce travel in single-occupant vehicle by better directing visitors.  |

### Integration with Other Transportation Modes

|                   |   |
|-------------------|---|
| Personal Vehicles | Additional and more visible roadway signs would inform travelers when they enter DEWA and direct visitors to various resources. Park-and-ride areas would be enhanced by informational signs and wayfinding features. |
| Trails/Paths      |   |
| • Walking/Hiking  | Improved trail network signs.   |
| • Bicycling       | Improved trail network signs.   |
| • Equestrian      | Improved trail network signs.   |
| • Multi-Use       | Improved trail network signs.   |
| Bus               | Provide bus service information, such as route maps and schedules, at bus stops.  |

|   |   |
|---|---|
| Water   | Provides numerous opportunities for wayfinding resources to be planned and implemented such as along the river banks, integrated into boat launch and swim beach areas, and on commercial vessels, etc.   |
| Private Transportation  | Provide contact information for taxis and other private transportation at visitor centers, trailheads, beaches, and other sites.  |
| Rail  | Encourage rail stations to offer/post information about DEWA, including private transportation providers that provide transportation for visitors from rail stations to DEWA.   |
| <b>Transportation/Recreation Systems Integrated with DEWA</b> |   |
| Park Systems  | Improved information to improve orientation, interpretation, and to disperse visitation to the various resources within DEWA, as well as coordinating transfers to other parks in the immediate study area, in order to attract daily visitors and longer stay vacationers. |
| Transit Authorities   | Formal agreements will need to be created with transit authorities. Integration into the transit authorities' stations and fleets are possible and will be addressed in future planning efforts.  |
| Communities/Businesses  | Improved signage and information tools concerning the resources of DEWA integrated within the existing businesses and business organizations (i.e. Pocono Chamber, regional tourism bodies, hotels, etc.) would be enhanced.  |
| <b>Other</b>  |   |
| Interpretation  | Informational kiosks will be provided at historical and cultural locations.   |
| Orientation   | Additional and more visible roadway signs would inform travelers when they enter DEWA and direct visitors to various natural and cultural resources. Bus schedules and route maps at bus stops. Improved trail network signs at trailheads and along trails.                |
| Partnerships  | Develop partnerships with transit agencies and DOTs to develop and install wayfinding signs.  |
| Organizational Changes  | Not applicable.   |
| <b>Selection Criteria</b>                                     |   |
| Capital Costs   | Minimal increase.   |
| Operating & Maint. Costs                                      | Minimal increase.   |
| Concessions/Operators   | Not applicable.   |
| <b>Planning Implementation/Phasing</b>                        |   |
| Short term (0-5 years)  | Develop and implement a comprehensive Wayfinding/Signage plan.  |
| Medium term (0-10 years)                                      | Adjust and repair Wayfinding/Signage components as necessary.   |
| Long term (0 – 20 years)                                      | Make improvements to signs as conditions require, such as adding new trails, parking areas, and beaches.  |
| Potential Implications  | Minor reduction in traffic and improvements in air and noise quality.   |

# Transportation Demand Management (TDM) Theme

Summary: This theme is intended to reduce personal vehicle travel and encourage alternative transportation by:

- Improving alternative transportation themes;
- Creating incentives to use alternative modes and reduce driving; and
- Managing parking demand.



## Transportation System Characteristics

|                                  |  |
|----------------------------------|--|
| Transit System Services          | Encourage transit agencies to provide additional transit service to DEWA.  |
| Transportation Infrastructure    | Install park-and-ride lots in conjunction with transit services. Install transit stop amenities. Construct additional trails/paths.  |
| Connectivity                     | Work with transit providers to improve modal connections at DEWA. Provide access from transit stops to DEWA resources.   |
| Parking Areas/Trailheads         | Consider parking fees in conjunction with improve alternative transportation themes.   |
| Access Restrictions              | Access restrictions such as physical cautionary barriers between trail systems and roadways could be implemented.  |
| Transportation Demand Management | Transportation demand management may include incentive programs, enhanced parking and land management practices, bicycle/transit integration, flextime, park-and-ride opportunities, ride-sharing, shuttle services, telecommuting, traffic calming, and transit improvements. |

## Integration with Other Transportation Modes

|                   |  |
|-------------------|--|
| Personal Vehicles | TDM strategies such as park-and-ride lots, ride-sharing, flextime, signalization optimization, and traffic calming measures may be applicable. |
| Trails/Paths      |  |
| • Walking/Hiking  | Provide additional trails to create an integrated trail system.  |
| • Bicycling       | Provide additional trails to create an integrated trail system.  |
| • Equestrian      | Provide additional trails to create an integrated trail system.  |
| • Multi-Use       | Provide additional trails to create an integrated trail system.  |
| Bus               | Encourage transit agencies to provide additional transit service to DEWA.  |
| Water             | No changes. Integrated with existing river liveries, etc.  |

|   |  |
|---|--|
| Private Transportation  | No changes. Integrated with existing private transportation or any future service extensions.  |
| Rail  | No changes. Relies on current commuter rail connections to Port Jervis.  |
| <b>Transportation/Recreation Systems Integrated with DEWA</b> |  |
| Park Systems  | Existing agreements with New Jersey, Pennsylvania, the Appalachian Trail, and county recreation providers will be maintained.  |
| Transit Authorities   | No formal agreements exist with transit authorities. Encourage transit agencies to provide additional transit service to DEWA.   |
| Communities/Businesses  | Maintain ties to existing businesses and business organizations.   |
| <b>Other</b>  |  |
| Interpretation  | Not applicable.  |
| Orientation   | Improved orientation provided within DEWA.   |
| Partnerships  | Existing partnerships with state, federal and local governments will be maintained, as well as working relationships with public and business organizations, etc.                |
| Organizational Changes  | Organizational changes will be driven by DEWA's annual planning processes and management plans.  |
| <b>Costs &amp; Agreements</b>                                 |  |
| Capital Costs   | Increased capital costs would be incurred and would impact DEWA's annual budget.   |
| Operating & Maint. Costs                                      | Increased O & M costs will be driven by changed maintenance costs.   |
| Concessions/Operators   | Agreements with Dingmans Ferry Campground, livery companies and organizations making use of DEWA facilities (i.e. Peters Valley) will continue according to existing agreements. |
| <b>Planning Implementation/Phasing</b>                        |  |
| Short term (0-5 years)  | Develop TDM plan.  |
| Medium term (0-10 years)                                      | Implement low-cost components of TDM plan.   |
| Long term (0 – 20 years)                                      | Implement high-cost components of TDM plan.  |
| Potential Implications  | Improved alternative transportation themes and incentives to reduce travel by personal vehicle will reduce congestion and environmental degradation.                             |

## Trails Planning Focus Theme

Summary: Upgrade, expand, and improve existing hiking, bicycling, equestrian, and multi-use trails. Provide information about the adjacency to the Appalachian Trail, and provide better connections to Pennsylvania and New Jersey state forests and trails, adjacent county's recreational trails, transit services, and roadway network.



### Transportation System Characteristics

|                                  |  |
|----------------------------------|--|
| Transit Services                 | Tie expanded and proposed trail system to transit services. Accommodate any service expansions by providing additional trailheads and connectivity opportunities.  |
| Transportation Infrastructure    | Improve hiking trails. Roadway network would be upgraded to accommodate bicycle lanes and equestrian pathways while hiking trails may be improved to accommodate bicycles or horseback riders, where appropriate.  |
| Connectivity                     | Limited to existing roadway network and transportation providers. Encourage transit providers to install bicycle racks on transit fleet vehicles.  |
| Parking Areas/Trailheads         | Improvements would be driven by existing road and trail network plans and transit expansions. Additional trailheads and parking areas would be planned and constructed to accommodate expanded trail network. Incorporate additional parking on popular bicycle and equestrian trails. Parking areas should include accommodations for horse trailers and bicycle racks. |
| Access Restrictions              | Access restrictions may apply to modal intersections for safety reasons.   |
| Transportation Demand Management | Based on existing and future management guidelines and decisions.  |

### Integration with Other Transportation Modes

|                   |   |
|-------------------|---|
| Personal Vehicles | Will use existing road network with no major improvements other than those pertaining to maintenance and safety considerations.                                 |
| Trails/Paths      |   |
| • Walking/Hiking  | Construct new walking/hiking paths.   |
| • Bicycling       | Construct new bicycle paths (on and off road).  |
| • Equestrian      | Construct additional equestrian trails.   |
| • Multi-Use       | Convert existing single-use trails to multi-use. Construct new multi-use trails.  |
| Bus               | Connect hiking and bicycling trails to existing transit services (such as MCTA Yellow Route). Encourage transit providers to install bicycle racks on vehicles. |
| Water             | Provide incentives for river livery companies to transport bicycles. Link equestrian trails to swim beaches and waterfalls.                                     |

|   |   |
|---|---|
| Private Transportation  | No changes. Integrated with existing or planned private transportation.   |
| Rail  | Limited integration with hiking. Improved opportunities within DEWA if provisions for transporting bicycles are allowed onboard the existing commuter rail connections in Port Jervis.  |
| <b>Transportation/Recreation Systems Integrated with DEWA</b> |   |
| Park Systems  | Existing agreements with New Jersey, Pennsylvania, the Appalachian Trail, and county recreation providers will be expanded through collaborative opportunities.   |
| Transit Authorities   | No formal agreements exist with transit authorities. Transit service expansions should be linked to hiking trails where feasible.   |
| Communities/Businesses  | Ties to existing businesses and business organizations (i.e. Pocono Chamber, regional tourism bodies, hotels, etc.) will be expanded through collaboration with bicycling and equestrian organizations.   |
| <b>Other</b>  |   |
| Interpretation  | Improved interpretation provided within DEWA.   |
| Orientation   | Improved orientation provided within DEWA.  |
| Partnerships  | Existing partnerships with state, federal and local governments will be maintained, as well as working relationships with public and commercial entities. Opportunities will be sought to form stronger ties with hiking, bicycling, and equestrian groups and educational organizations.   |
| Organizational Changes  | Organizational changes will be driven by changes to DEWA's trails plan.   |
| <b>Costs &amp; Agreements</b>                                 |   |
| Capital Costs   | Changes driven by revised trails plan.  |
| Operating & Maint. Costs                                      | Changes driven by revised trails plan.  |
| Concessions/Operators   | Agreements with Dingmans Ferry Campground, livery companies and organizations making use of DEWA facilities (i.e. Peters Valley) will continue according to existing agreements.  |
| <b>Planning Implementation/Phasing</b>                        |   |
| Short term (0-5 years)  | Revised trails plan.  |
| Medium term (0-10 years)                                      | Revised trails plan and General Management Plans.   |
| Long term (0 – 20 years)                                      | General Management Plan revisions.  |
| Potential Implications  | Increased development pressures and increased visitation will continue to cause traffic congestion. Some parking lot congestion and potential back-ups along main roadways could be reduced if parking areas at trailheads are provided or improved. Minor reduction in environmental degradation due to reduced traffic. Dispersion of visitation. Use conflicts between hikers, bicyclists, and horseback riders will require management. |



## Bus System Linked Theme

Summary: Transit service would be introduced within DEWA to reduce personal vehicle use and to disperse visitors to various resource areas. The service would either be operated by DEWA, private operator, or governmental transit operator and would be integrated with existing transit services, such as the MCTA Yellow Route. Possible northern and southern loop routes may be considered and/or evaluated.



### Transportation System Characteristics

|                                  |   |
|----------------------------------|---|
| Transit Services                 | A DEWA, private, or other governmental operated transit system would link to existing or proposed transit systems outside of DEWA, including the possibility of separate loop routes and a combination of providers.  |
| Transportation Infrastructure    | Roadway improvements would be necessary (bus pull-outs, turning lanes, transfer stations, etc.) and be made in collaboration with the transportation providers/DOTs.  |
| Connectivity                     | Designated bus stops would be provided at various DEWA resources, commercial areas, hotels, and park-and-ride lots. Passenger exchanges will occur at other DEWA resource areas upon request or on a published schedule.  |
| Parking Areas/Trailheads         | Bus stops will be located at trailheads, swim beaches, waterfalls and other resource areas.   |
| Access Restrictions              | Access restrictions will include existing narrow roadway typical sections, lack of available Right-of-Way or lack of available width for shoulders, and/or other possible safety and environmental concerns. In addition ADA compatibility needs to be incorporated into each bus-related facility. |
| Transportation Demand Management | Other measures will encourage visitors to use alternative transportation and reduce personal vehicle travel. This could include parking fees, subsidized fares, ride sharing programs, bus fleet accommodations for recreation equipment and ADA.   |

### Integration with Other Transportation Modes

|                   |   |
|-------------------|---|
| Personal Vehicles | Carefully planned and located park-and-ride areas and improved wayfinding and integrated signage would be provided to encourage visitors to use the transit system. |
| Trails/Paths      |   |
| • Walking/Hiking  | Tied to trail/path network and designated pick-up points.   |
| • Bicycling       | Tied to bike trails and designated pick-up points.  |
| • Equestrian      | Limited linkages. Safety measures to be incorporated into each modal interface.   |



|   |  |
|---|--|
| • Multi-Use   | Tied to multi-use trails by published schedules and designated pick-up points.   |
| Bus   | DEWA, private operator, or other governmental transit operator bus transit service will be integrated with existing MCTA routes or any future service extensions, such as joint bus stops, timed transfers, and an integrated fare collection system with possible compatibility with other transit providers. |
| Water   | Linked to identified swim beaches and boat launch areas.   |
| Private Transportation  | Co-exist easily with existing or future private transportation (liveries and taxis).   |
| Rail  | Connect to existing commuter rail connections at Port Jervis and the commuter rail extension planned for the Lackawanna Cut-off.   |
| <b>Transportation/Recreation Systems Integrated with DEWA</b> |  |
| Park Systems  | Opportunities should be investigated to enhance agreements with New Jersey, Pennsylvania, the Appalachian Trail, and county-related recreation providers for connectivity.   |
| Transit Authorities   | Formal agreements will need to be created with transit authorities to provide integrated transit services.   |
| Communities/Businesses  | Work with communities and businesses to determine appropriate identification, schedules, and bus stop locations.   |
| <b>Other</b>  |  |
| Interpretation  | May include recorded audio or live interpretation on buses. Informational kiosks may also be provided at some bus stops and connections to trail systems.  |
| Orientation   | Bus schedules and route maps will be provided at all bus stops, trail system connections, and visitor centers. Bus operators will be trained to answer questions.  |
| Partnerships  | Existing partnerships with transit providers will be developed and agreements made on service collaboration.   |
| Organizational Changes  | Possible organizational changes will be those driven by DEWA's annual planning processes and management plans to cover capital improvements. Operation costs could be carried by partners or a concessionaire who could operate a DEWA bus system.   |
| <b>Costs &amp; Agreements</b>                                 |  |
| Capital Costs   | Bus service requires substantial capital improvements to purchase vehicles and make roadway improvements. If the bus service is operated by DEWA, a maintenance and storage facility would be needed.  |
| Operating & Maint. Costs                                      | Requires sustained operating funding each year.  |
| Concessions/Operators   | Required if a vendor will operate the bus service.   |
| <b>Planning Implementation/Phasing</b>                        |  |
| Short term (0-5 years)  | Develop a transit operations plan. Implement a pilot study.  |

|                          |   |
|--------------------------|---|
| Medium term (0-10 years) | System would be expanded in phases if use warranted an expansion.   |
| Long term (0 – 20 years) | A DEWA wide system could be introduced based on ridership.  |
| Potential Implications   | Traffic congestion will be reduced, especially in parking areas and trailheads, and should result in an improved visitor experience. Environmental degradation will be reduced. |

## Appendix F: Unit Cost Assumptions

This appendix provides an overview of the unit cost assumptions for each infrastructure component recommended as part of the five candidate transportation options in the main report and is used to calculate infrastructure costs for these options in Appendix G. It identifies the contents of each item, as well as their costs. For example, the cost of constructing a transit center was estimated to be \$569,000. This includes site preparation on 1.5 acres (\$29,000), 100 lighted parking spaces (\$400,000), two major bus stops (\$71,000), wayfinding for vehicles, pedestrians, and bicycles (\$9,000), and landscaping (\$60,000). The cost of these items is discussed in Table F-1 and Table F-2.

**Table F-1: Unit Cost Assumptions**

| Definitions     | Contents                                   | Units | Unit Cost | Cost      |
|-----------------|--|-------|-----------|-----------|
| Visitor Center: | Site Prep (per acre)                       | 1     | \$19,125  | \$19,125  |
|                 | 2500 sf building w/restroom (per building) | 1     | \$250,000 | \$250,000 |
|                 | Lighted parking spaces (per space)         | 50    | \$4,000   | \$200,000 |
|                 | Major Bus Stop (defined below)             | 2     | \$35,765  | \$71,530  |
|                 | Site Finishes/Landscaping (allowance)      | 1     | \$40,000  | \$40,000  |
|                 | Vehicular wayfinding signs (per sign)      | 4     | \$1,000   | \$4,000   |
|                 | Ped/Bike wayfinding signs (per sign)       | 10    | \$500     | \$5,000   |
| Subtotal        |  |       |           | \$589,655 |
| Transit Center: | Site Prep (acres)                          | 1.5   | \$19,125  | \$28,688  |
|                 | Lighted parking spaces (per space)         | 100   | \$4,000   | \$400,000 |
|                 | Major bus stop (defined below)             | 2     | \$35,765  | \$71,530  |
|                 | Vehicular wayfinding signs (per sign)      | 4     | \$1,000   | \$4,000   |
|                 | Ped/Bike wayfinding signs (per sign)       | 10    | \$500     | \$5,000   |
|                 | Site Finishes/Landscaping (allowance)      | 1     | \$60,000  | \$60,000  |
| Subtotal        |  |       |           | \$569,218 |
| Major Bus Stop: | Site prep (per acre)                       | 0.03  | \$19,125  | \$574     |
|                 | Basic bus stop (defined below)             | 1     | \$12,191  | \$12,191  |
|                 | Bus pull out (sf full depth paving)        | 1     | \$10,000  | \$10,000  |
|                 | 5.5 X 13 shelter (per shelter)             | 1     | \$10,000  | \$10,000  |
|                 | Site Finishes/Landscaping (allowance)      | 1     | \$3,000   | \$3,000   |
| Subtotal        |  |       |           | \$35,765  |
| Basic Bus Stop: | Site prep (per acre)                       | 0.01  | \$19,125  | \$191     |
|                 | 5.5 X 8 foot concrete pad                  | 1     | \$4,000   | \$4,000   |
|                 | Kiosk                                      | 1     | \$8,000   | \$8,000   |
| Subtotal        |  |       |           | \$12,191  |

**Table F-2: Unit Cost Assumptions (continued)**

| <b>Definitions</b> | <b>Content</b>   | <b>Units</b> | <b>Unit Cost</b> | <b>Cost</b> |
|--------------------|--|--------------|------------------|-------------|
| Trailhead:         | Gravel Parking Spaces (per space)                            | 15           | \$1,500          | \$22,500    |
|                    | Basic Bus Stop   | 1            | \$12,191         | \$12,191    |
|                    | Crosswalk/Traffic Calming Measure allowance                  | 1            | \$20,000         | \$20,000    |
|                    | Trail signs  | 4            | \$500            | \$2,000     |
|                    | Vehicular signs  | 4            | \$1,000          | \$4,000     |
| Subtotal           |  |              |                  | \$60,691    |
| Auto Signs:        | Per Sign   | 1            | \$1,000          | \$1,000     |
| Subtotal           |  |              |                  | \$1,000     |
| Biking/Hiking      | 10 feet wide, 2 foot shoulders, compacted stone dust (mile)  | 1            | \$871,200        | \$871,200   |
| Trail              | Signs per mile allowance (\$1000)                            | 1            | \$10,000         | \$10,000    |
| Subtotal           |  |              |                  | \$881,200   |
| Walking Trail:     | 6 feet wide, 2 foot shoulders, 3/4 inch crushed stone (mile) | 1            | \$522,720        | \$522,720   |
|                    | Signs per mile allowance (\$10,000)                          | 1            | \$10,000         | \$10,000    |
| Subtotal           |  |              |                  | \$532,720   |
| Hiking Trail:      | Rustic footpath preparation (per mile)                       | 1            | \$10,000         | \$10,000    |
|                    | Signs per mile allowance (\$500)                             | 1            | \$500            | \$500       |
| Subtotal           |  |              |                  | \$10,500    |
| Trail Bridges      | Per Bridge (unspecified location)                            | 1            | \$60,000         | \$60,000    |
| Subtotal           |  |              |                  | \$60,000    |

## Appendix G: Supporting Transit and Trail Infrastructure Assumptions

This appendix identifies the supporting transit and trail infrastructure recommended for the five candidate transportation options identified in the main report, which were used to calculate infrastructure costs in Appendix H. It organizes those roads that would support transit service into 14 segments, as shown in Figure G-1. These are:

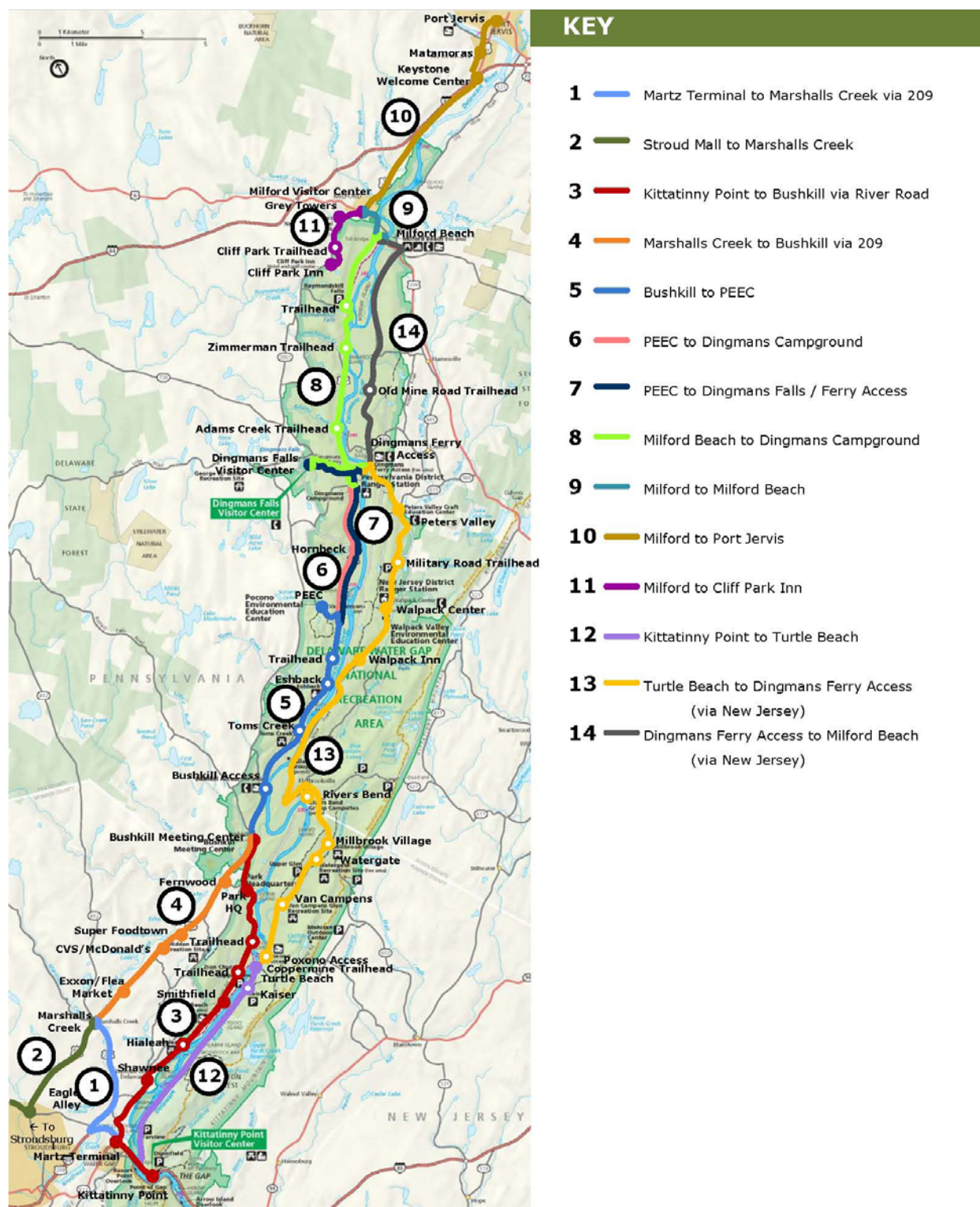
1. Martz Terminal to Marshalls Creek via 209
2. Stroud Mall to Marshalls Creek
3. Kittatinny Point to Bushkill Meeting Center via River Road
4. Marshalls Creek to Bushkill Meeting Center via 209
5. Bushkill Meeting Center to PEEC via 209
6. PEEC to Dingmans Campground via 209
7. PEEC to Dingmans Falls / Dingmans Ferry Access via 209
8. Dingmans Campground to Milford Beach via 209
9. Milford to Milford Beach
10. Milford to Port Jervis
11. Milford to Cliff Park Inn
12. Kittatinny Point to Turtle Beach
13. Turtle Beach to Dingmans Ferry Access
14. Dingmans Ferry Access to Milford Beach

For each segment, the infrastructure improvement and location is identified, and is associated with a number of units to be constructed (Appendix F), the capital cost (Appendix F), and the annual maintenance cost. Annual maintenance costs were assumed to be 10% of capital costs.

For example, the road segment between Kittatinny Point and Bushkill Meeting Center via River Road is identified as Segment #3 in Figure G-1. For this road segment, Table G-1 shows that four major bus stops, one basic bus stop, two trailheads, and a renovated visitor center are recommended at a cost of approximately \$571,000 and annual maintenance of approximately \$57,000 per year. Table G-4 shows that one mile of biker/hiker trails and two miles of hiking trails are also recommended in this road segment, at a cost of approximately \$902,000 and annual maintenance of approximately \$90,000 per year.

Table G-1, Table G-2, and Table G-3 provide transit improvement costs for each road segment. Table G-4, Table G-5, and Table G-6 provide trail improvement costs for each road segment.

Figure G-1: Road Segments



**Table G-1: Transit Infrastructure Assumptions (by road segment)**

| <b>1 Martz Terminal to Marshalls Creek via 209</b>                  |                              |       |                   |                      |
|---|------------------------------|-------|-------------------|----------------------|
| None  |                              |       |                   |                      |
| <b>2 Stroud Mall to Marshalls Creek</b>                             |                              |       |                   |                      |
| None  |                              |       |                   |                      |
| <b>3 Kittatinny Point to Bushkill Meeting Center via River Road</b> |                              |       |                   |                      |
| Transit Support   | Location                     | Units | Capital Cost      | Annual Maintenance** |
| Major bus stop  | Kittatinny Point             | 1     | \$ 35,765         | \$ 3,577             |
| Major bus stop  | Shawnee Resort / Store       | 1     | \$ 35,765         | \$ 3,577             |
| Basic bus stop  | Hialeah Picnic Area          | 1     | \$ 12,191         | \$ 1,219             |
| Major bus stop  | Smithfield Beach             | 1     | \$ 35,765         | \$ 3,577             |
| Trailhead   | Additional Trailheads        | 2     | \$ 121,383        | \$ 12,138            |
| Major bus stop  | Park Headquarters            | 1     | \$ 35,765         | \$ 3,577             |
| Visitor Center  | Bushkill Upgrade             | 0.5   | \$ 294,828        | \$ 29,483            |
| <b>Subtotal Transit Support</b>                                     |                              |       | <b>\$ 571,461</b> | <b>\$ 57,146</b>     |
| <b>4 Marshalls Creek to Bushkill Meeting Center via 209</b>         |                              |       |                   |                      |
| Transit Support   | Location                     | Units | Capital Cost      | Annual Maintenance** |
| Major bus stop  | Marshalls Creek              | 1     | \$ 35,765         | \$ 3,577             |
| Basic bus stop  | Exxon/Flea Market            | 1     | \$ 12,191         | \$ 1,219             |
| Basic bus stop  | CVS/McDonalds                | 1     | \$ 12,191         | \$ 1,219             |
| Basic bus stop  | Super Foodtown               | 1     | \$ 12,191         | \$ 1,219             |
| Major bus stop  | Fernwood Resort / Petrizzo's | 1     | \$ 35,765         | \$ 3,577             |
| Visitor Center  | Bushkill Upgrade             | 0.5   | \$ 294,828        | \$ 29,483            |
| <b>Subtotal Transit Support</b>                                     |                              |       | <b>\$ 402,931</b> | <b>\$ 40,293</b>     |
| <b>5 Bushkill Meeting Center to PEEC via 209</b>                    |                              |       |                   |                      |
| Transit Support   | Location                     | Units | Capital Cost      | Annual Maintenance** |
| Basic bus stop  | Bushkill Launch              | 1     | \$ 12,191         | \$ 1,219             |
| Trailhead   | Toms Creek                   | 1     | \$ 60,691         | \$ 6,069             |
| Trailhead   | Eshback                      | 1     | \$ 60,691         | \$ 6,069             |
| Trailhead   | Additional Trailhead         | 1     | \$ 60,691         | \$ 6,069             |
| Major bus stop  | PEEC                         | 1     | \$ 35,765         | \$ 3,577             |
| <b>Subtotal Transit Support</b>                                     |                              |       | <b>\$ 230,030</b> | <b>\$ 23,003</b>     |
| <b>6 PEEC to Dingmans Campground via 209</b>                        |                              |       |                   |                      |
| Transit Support   | Location                     | Units | Capital Cost      | Annual Maintenance** |
| Trailhead   | Hornbeck                     | 1     | \$ 60,691         | \$ 6,069             |
| <b>Subtotal Transit Support</b>                                     |                              |       | <b>\$ 60,691</b>  | <b>\$ 6,069</b>      |

**Table G-2: Transit Infrastructure Assumptions (by road segment)**

| <b>7 PEEC to Dingmans Falls / Dingmans Ferry Access via 209</b> |                                |       |                   |                      |
|---|--------------------------------|-------|-------------------|----------------------|
| Transit Support   | Location                       | Units | Capital Cost      | Annual Maintenance** |
| Trailhead   | Hornbeck                       | 1     | \$ 60,691         | \$ 6,069             |
| Major bus stop  | Dingmans Campground            | 1     | \$ 35,765         | \$ 3,577             |
| Transit Center  | Dingmans Transit Center        | 1     | \$ 569,218        | \$ 56,922            |
| Major bus stop  | Dingmans Falls Visitors Center | 1     | \$ 35,765         | \$ 3,577             |
| Major bus stop  | Dingmans Ferry Access          | 1     | \$ 35,765         | \$ 3,577             |
| <b>Subtotal Transit Support</b>                                 |                                |       | <b>\$ 737,204</b> | <b>\$ 73,720</b>     |

| <b>8 Milford Beach to Dingmans Campground</b> |                               |       |                   |                      |
|---|-------------------------------|-------|-------------------|----------------------|
| Transit Support                               | Location                      | Units | Capital Cost      | Annual Maintenance** |
| Major bus stop                                | Dingmans Campground           | 1     | \$ 35,765         | \$ 3,577             |
| Major bus stop                                | Dingmans Falls Visitor Center | 1     | \$ 35,765         | \$ 3,577             |
| Major bus stop                                | Dingmans Ferry Access         | 1     | \$ 35,765         | \$ 3,577             |
| Transit Center                                | Dingmans Transit Center       | 1     | \$ 569,218        | \$ 56,922            |
| Trailhead                                     | Adams Creek Trailhead         | 1     | \$ 60,691         | \$ 6,069             |
| Trailhead                                     | Zimmerman Trailhead           | 1     | \$ 60,691         | \$ 6,069             |
| Trailhead                                     | Additional Trailhead          | 1     | \$ 60,691         | \$ 6,069             |
| <b>Subtotal Transit Support</b>               |                               |       | <b>\$ 858,586</b> | <b>\$ 85,859</b>     |

| <b>9 Milford Beach to Milford</b> |               |       |                  |                      |
|-----------------------------------|---------------|-------|------------------|----------------------|
| Transit Support                   | Location      | Units | Capital Cost     | Annual Maintenance** |
| Major bus stop                    | Milford       | 1     | \$ 35,765        | \$ 3,577             |
| Major bus stop                    | Milford Beach | 1     | \$ 35,765        | \$ 3,577             |
| <b>Subtotal Transit Support</b>   |               |       | <b>\$ 35,765</b> | <b>\$ 3,577</b>      |

| <b>10 Milford to Port Jervis</b> |                         |       |                   |                      |
|----------------------------------|-------------------------|-------|-------------------|----------------------|
| Transit Support                  | Location                | Units | Capital Cost      | Annual Maintenance** |
| Major bus stop                   | Keystone Welcome Center | 1     | \$ 35,765         | \$ 3,577             |
| Major bus stop                   | Matamoras               | 1     | \$ 35,765         | \$ 3,577             |
| Major bus stop                   | Port Jervis             | 1     | \$ 35,765         | \$ 3,577             |
| <b>Subtotal Transit Support</b>  |                         |       | <b>\$ 107,295</b> | <b>\$ 10,730</b>     |

| <b>11 Milford to Cliff Park Inn</b> |                      |       |                   |                      |
|-------------------------------------|----------------------|-------|-------------------|----------------------|
| Transit Support                     | Location             | Units | Capital Cost      | Annual Maintenance** |
| Major bus stop                      | Grey Towers          | 1     | \$ 35,765         | \$ 3,577             |
| Trailhead                           | Cliff Park Trailhead | 1     | \$ 60,691         | \$ 6,069             |
| Major bus stop                      | Cliff Park Inn       | 1     | \$ 35,765         | \$ 3,577             |
| <b>Subtotal Transit Support</b>     |                      |       | <b>\$ 132,221</b> | <b>\$ 13,222</b>     |



**Table G-3: Transit Infrastructure Assumptions (by road segment)**

| <b>12 Kittatinny Point to Turtle Beach</b> |              |       |                  |                      |
|--|--------------|-------|------------------|----------------------|
| Transit Support                            | Location     | Units | Capital Cost     | Annual Maintenance** |
| Trailhead                                  | Kaiser Trail | 1     | \$ 60,691        | \$ 6,069             |
| Major bus stop                             | Turtle Beach | 1     | \$ 35,765        | \$ 3,577             |
| <b>Subtotal Transit Support</b>            |              |       | <b>\$ 96,456</b> | <b>\$ 9,646</b>      |

| <b>13 Turtle Beach to Dingmans Ferry Access</b> |                                 |       |                     |                      |
|---|---------------------------------|-------|---------------------|----------------------|
| Transit Support                                 | Location                        | Units | Capital Cost        | Annual Maintenance** |
| Trailhead                                       | Coppermine Trailhead            | 1     | \$ 60,691           | \$ 6,069             |
| Basic bus stop                                  | Poxono Access                   | 1     | \$ 12,191           | \$ 1,219             |
| Trailhead                                       | Van Campen Glen Picnic Area     | 1     | \$ 60,691           | \$ 6,069             |
| Trailhead                                       | Watergate                       | 1     | \$ 60,691           | \$ 6,069             |
| Trailhead                                       | Millbrook Village               | 1     | \$ 60,691           | \$ 6,069             |
| Trailhead                                       | Rivers Bend                     | 1     | \$ 60,691           | \$ 6,069             |
| Major bus stop                                  | Walpack Inn                     | 1     | \$ 35,765           | \$ 3,577             |
| Major bus stop                                  | Walpack Center                  | 1     | \$ 35,765           | \$ 3,577             |
| Trailhead                                       | Military Road Trail             | 1     | \$ 60,691           | \$ 6,069             |
| Major bus stop                                  | Peters Valley                   | 1     | \$ 35,765           | \$ 3,577             |
| Visitor Center                                  | New Jersey (existing structure) | 1     | \$ 589,655          | \$ 58,966            |
| <b>Subtotal Transit Support</b>                 |                                 |       | <b>\$ 1,073,289</b> | <b>\$ 107,329</b>    |

| <b>14 Dingmans Ferry Access to Milford Beach (via Old Mine Road)</b> |               |       |                  |                      |
|--|---------------|-------|------------------|----------------------|
| Transit Support  | Location      | Units | Capital Cost     | Annual Maintenance** |
| Basic bus stop   | Old Mine Road | 1     | \$ 12,191        | \$ 1,219             |
| <b>Subtotal Transit Support</b>                                      |               |       | <b>\$ 12,191</b> | <b>\$ 1,219</b>      |

\*Assume upgrade of Bushkill Meeting Center is 50% of estimated cost for Visitor Center.

\*\*Assume maintenance cost is 10% of capital cost.

**Table G-4: Trail Improvement Assumptions (by road segment)**

| <b>1 Martz Terminal to Marshalls Creek via 209</b>                  |                              |       |                   |                      |
|---|------------------------------|-------|-------------------|----------------------|
| None  |                              |       |                   |                      |
| <b>2 Stroud Mall to Marshalls Creek</b>                             |                              |       |                   |                      |
| None  |                              |       |                   |                      |
| <b>3 Kittatinny Point to Bushkill Meeting Center via River Road</b> |                              |       |                   |                      |
| Trail Improvements  | Location                     | Miles | Capital Cost      | Annual Maintenance** |
| Biking/Hiking Trail   | Shawnee Resort / Store       | 1.00  | \$ 881,200        | \$ 88,120            |
| Hiking Trail  | Additional Trailhead         | 2.00  | \$ 21,000         | \$ 2,100             |
| <b>Subtotal Other Trail Improvements</b>                            |                              |       | <b>\$ 902,200</b> | <b>\$ 90,220</b>     |
| <b>4 Marshalls Creek to Bushkill Meeting Center via 209</b>         |                              |       |                   |                      |
| Trail Improvements  | Location                     | Miles | Capital Cost      | Annual Maintenance** |
| Biking/Hiking Trail   | Fernwood Resort / Petrizzo's | 1.00  | \$ 881,200        | \$ 88,120            |
| <b>Subtotal Other Trail Improvements</b>                            |                              |       | <b>\$ 881,200</b> | <b>\$ 88,120</b>     |
| <b>5 Bushkill Meeting Center to PEEC via 209</b>                    |                              |       |                   |                      |
| Trail Improvements  | Location                     | Miles | Capital Cost      | Annual Maintenance** |
| Hiking Trail  | Toms Creek                   | 2.00  | \$ 21,000         | \$ 2,100             |
| Hiking Trail  | Eshback                      | 2.00  | \$ 21,000         | \$ 2,100             |
| <b>Subtotal Other Trail Improvements</b>                            |                              |       | <b>\$ 42,000</b>  | <b>\$ 4,200</b>      |
| <b>6 PEEC to Dingmans Campground via 209</b>                        |                              |       |                   |                      |
| Trail Improvements  | Location                     | Miles | Capital Cost      | Annual Maintenance** |
| Hiking Trail  | Hornbeck                     | 2.00  | \$ 21,000         | \$ 2,100             |
| <b>Subtotal Other Trail Improvements</b>                            |                              |       | <b>\$ 21,000</b>  | <b>\$ 2,100</b>      |

**Table G-5: Trail Improvement Assumptions (by road segment)**

| <b>7 PEEC to Dingmans Falls / Dingmans Ferry Access via 209</b> |          |       |              |                      |
|---|----------|-------|--------------|----------------------|
| Trail Improvements  | Location | Miles | Capital Cost | Annual Maintenance** |
| None  |          |       |              |                      |
| <b>Subtotal Other Trail Improvements</b>                        |          |       | <b>\$ -</b>  | <b>\$ -</b>          |

| <b>8 Dingmans Campground to Milford Beach via 209</b> |                       |       |                 |                      |
|---|-----------------------|-------|-----------------|----------------------|
| Trail Improvements                                    | Location              | Miles | Capital Cost    | Annual Maintenance** |
| Hiking Trail  | Additional Trailhead  | 0.25  | \$ 2,625        | \$ 263               |
| Hiking Trail  | Zimmerman Trailhead   | 0.25  | \$ 2,625        | \$ 263               |
| Hiking Trail  | Adams Creek Trailhead | 0.25  | \$ 2,625        | \$ 263               |
| <b>Subtotal Other Trail Improvements</b>              |                       |       | <b>\$ 7,875</b> | <b>\$ 788</b>        |

| <b>9 Milford to Milford Beach</b>        |          |       |              |                      |
|--|----------|-------|--------------|----------------------|
| Trail Improvements                       | Location | Miles | Capital Cost | Annual Maintenance** |
| None                                     |          |       |              |                      |
| <b>Subtotal Other Trail Improvements</b> |          |       | <b>\$ -</b>  | <b>\$ -</b>          |

| <b>10 Milford to Port Jervis</b>         |          |       |              |                      |
|--|----------|-------|--------------|----------------------|
| Trail Improvements                       | Location | Miles | Capital Cost | Annual Maintenance** |
| None                                     |          |       |              |                      |
| <b>Subtotal Other Trail Improvements</b> |          |       | <b>\$ -</b>  | <b>\$ -</b>          |

| <b>11 Milford to Cliff Park Inn</b>      |             |       |                 |                      |
|--|-------------|-------|-----------------|----------------------|
| Trail Improvements                       | Location    | Miles | Capital Cost    | Annual Maintenance** |
| Hiking Trail                             | Grey Towers | 0.50  | \$ 2,000        | \$ 200               |
| <b>Subtotal Other Trail Improvements</b> |             |       | <b>\$ 2,000</b> | <b>\$ 200</b>        |

**Table G-6: Trail Improvement Assumptions (by road segment)**

|  |          |       |              |                      |
|--|----------|-------|--------------|----------------------|
| <b>12 Kittatinny Point to Turtle Beach</b> |          |       |              |                      |
| Trail Improvements                         | Location | Miles | Capital Cost | Annual Maintenance** |
| None                                       |          |       |              |                      |
| <b>Subtotal Other Trail Improvements</b>   |          |       | <b>\$ -</b>  | <b>\$ -</b>          |

|   |          |       |              |                      |
|---|----------|-------|--------------|----------------------|
| <b>13 Turtle Beach to Dingmans Ferry Access</b> |          |       |              |                      |
| Trail Improvements                              | Location | Miles | Capital Cost | Annual Maintenance** |
| None  |          |       |              |                      |
| <b>Subtotal Other Trail Improvements</b>        |          |       | <b>\$ -</b>  | <b>\$ -</b>          |

|  |          |       |              |                      |
|--|----------|-------|--------------|----------------------|
| <b>14 Dingmans Ferry Access to Milford Beach (via Old Mine Road)</b> |          |       |              |                      |
| Trail Improvements   | Location | Miles | Capital Cost | Annual Maintenance** |
| None   |          |       |              |                      |
| <b>Subtotal Other Trail Improvements</b>                             |          |       | <b>\$ -</b>  | <b>\$ -</b>          |

\*Assume upgrade of Bushkill Meeting Center is 50% of estimated cost for Visitor Center.

\*\*Assume maintenance cost is 10% of capital cost.

## Appendix H: Infrastructure Costs

This appendix provides details on the supporting infrastructure costs for each transportation option. For each option, capital and annual maintenance costs are identified for the short term (0-2 years), medium term (0-5 years), and long term (0-20 years) and are organized in the road segments laid out in Appendix G. The capital costs are determined using unit cost assumptions estimated in Appendix F and assumptions about the number of units required for each candidate option provided in Appendix G. Annual maintenance costs were assumed to be 10% of capital costs. Costs are provided incrementally; costs in the medium and long term do not reflect expenditures in earlier phases.

### H.1 Infrastructure Costs for Option A1

For Option A1, infrastructure improvements are recommended for the short term (Table H-1) and the long term (Table H-2). There are no improvements recommended for the medium term.

**Table H-1: Option A1 – Short-Term Infrastructure Costs (0-2 years)**

| Segment                                | Transit Infrastructure       | Location                     | Units | Capital Cost        | Annual Maintenance |
|--|------------------------------|------------------------------|-------|---------------------|--------------------|
| 3                                      | Major bus stop               | Kittatinny Point             | 1     | \$ 35,765           | \$ 3,577           |
|  | Major bus stop               | Shawnee Resort / Store       | 1     | \$ 35,765           | \$ 3,577           |
|  | Basic bus stop               | Hialeah Picnic Area          | 1     | \$ 12,191           | \$ 1,219           |
|  | Major bus stop               | Smithfield Beach             | 1     | \$ 35,765           | \$ 3,577           |
|  | Trailhead                    | Additional Trailheads        | 2     | \$ 121,383          | \$ 12,138          |
|  | Major bus stop               | Park Headquarters            | 1     | \$ 35,765           | \$ 3,577           |
|  | Visitor Center               | Bushkill Upgrade             | 0.5   | \$ 294,828          | \$ 29,483          |
| 4                                      | Major bus stop               | Marshall's Creek             | 1     | \$ 35,765           | \$ 3,577           |
|  | Basic bus stop               | Exxon/Flea Market            | 1     | \$ 12,191           | \$ 1,219           |
|  | Basic bus stop               | CVS/McDonalds                | 1     | \$ 12,191           | \$ 1,219           |
|  | Basic bus stop               | Super Foodtown               | 1     | \$ 12,191           | \$ 1,219           |
|  | Major bus stop               | Fernwood Resort / Petrizzo's | 1     | \$ 35,765           | \$ 3,577           |
| 5                                      | Basic bus stop               | Bushkill Launch              | 1     | \$ 12,191           | \$ 1,219           |
|  | Trailhead                    | Toms Creek                   | 1     | \$ 60,691           | \$ 6,069           |
|  | Trailhead                    | Eshback                      | 1     | \$ 60,691           | \$ 6,069           |
|  | Trailhead                    | Additional Trailhead         | 1     | \$ 60,691           | \$ 6,069           |
|  | Major bus stop               | PEEC                         | 1     | \$ 35,765           | \$ 3,577           |
| <b>Subtotal Transit Infrastructure</b> |                              |                              |       | <b>\$ 909,595</b>   | <b>\$ 90,960</b>   |
| Segment                                | Trail Infrastructure (miles) |                              |       |                     |                    |
| 3                                      | Biking/Hiking Trail          | Shawnee Resort / Store       | 1.00  | \$ 881,200          | \$ 88,120          |
|  | Hiking Trail                 | Additional Trailhead         | 2.00  | \$ 21,000           | \$ 2,100           |
| 4                                      | Biking/Hiking Trail          | Fernwood Resort / Petrizzo's | 1.00  | \$ 881,200          | \$ 88,120          |
| <b>Subtotal Trail Infrastructure</b>   |                              |                              |       | <b>\$ 1,783,400</b> | <b>\$ 178,340</b>  |
| <b>Complete McDade Trail</b>           |                              |                              |       | <b>\$ 3,500,000</b> | <b>\$ 350,000</b>  |
| <b>Complete Country Road Trail</b>     |                              |                              |       | <b>\$ -</b>         | <b>\$ -</b>        |
| <b>Total Supporting Infrastructure</b> |                              |                              |       | <b>\$ 6,193,000</b> | <b>\$ 619,000</b>  |

**Table H-2: Option A1 – Long-Term Infrastructure Costs (0-20 years)**

| <b>Segment</b>                         | <b>Transit Infrastructure</b>       | <b>Location</b>                | <b>Units</b> | <b>Capital Cost</b> | <b>Annual Maintenance</b> |
|--|-------------------------------------|--------------------------------|--------------|---------------------|---------------------------|
| 7                                      | Trailhead                           | Hornbeck                       | 1            | \$ 60,691           | \$ 6,069                  |
|  | Major bus stop                      | Dingmans Campground            | 1            | \$ 35,765           | \$ 3,577                  |
|  | Transit Center                      | Dingmans Transit Center        | 1            | \$ 569,218          | \$ 56,922                 |
|  | Major bus stop                      | Dingmans Falls Visitors Center | 1            | \$ 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Dingmans Ferry Access          | 1            | \$ 35,765           | \$ 3,577                  |
| <b>Subtotal Transit Infrastructure</b> |                                     |                                |              | <b>\$ 737,204</b>   | <b>\$ 73,720</b>          |
| <b>Segment</b>                         | <b>Trail Infrastructure (miles)</b> |                                |              |                     |                           |
| 7                                      | Hiking Trail                        | Hornbeck                       | 2.00         | \$ 21,000           | \$ 2,100                  |
| <b>Subtotal Trail Infrastructure</b>   |                                     |                                |              | <b>\$ 21,000</b>    | <b>\$ 2,100</b>           |
| <b>Complete McDade Trail</b>           |                                     |                                |              | <b>\$ -</b>         | <b>\$ -</b>               |
| <b>Complete Country Road Trail</b>     |                                     |                                |              | <b>\$ 5,000,000</b> | <b>\$ 500,000</b>         |
| <b>Total Supporting Infrastructure</b> |                                     |                                |              | <b>\$ 5,758,000</b> | <b>\$ 576,000</b>         |

## H.2 Infrastructure Costs for Option A2

For Option A2, infrastructure improvements are recommended for the short term (Table H-3), medium term (see Table H-4), and long term (Table H-5).

**Table H-3: Option A2 – Short-Term Infrastructure Costs (0-2 years)**

| <b>Segment</b>                         | <b>Transit Infrastructure</b>       | <b>Location</b>         | <b>Units</b> | <b>Capital Cost</b> | <b>Annual Maintenance</b> |
|--|-------------------------------------|-------------------------|--------------|---------------------|---------------------------|
| 9                                      | Major bus stop                      | Milford                 | 1            | \$ 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Milford Beach           | 1            | \$ 35,765           | \$ 3,577                  |
| 10                                     | Major bus stop                      | Keystone Welcome Center | 1            | \$ 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Matamoras               | 1            | \$ 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Port Jervis             | 1            | \$ 35,765           | \$ 3,577                  |
| 11                                     | Major bus stop                      | Grey Towers             | 1            | \$ 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Cliff Park Inn          | 1            | \$ 35,765           | \$ 3,577                  |
| <b>Subtotal Transit Infrastructure</b> |                                     |                         |              | <b>\$ 250,355</b>   | <b>\$ 25,036</b>          |
| <b>Segment</b>                         | <b>Trail Infrastructure (miles)</b> |                         |              |                     |                           |
| 11                                     | Hiking Trail                        | Grey Towers             | 0.50         | \$ 2,000            | \$ 200                    |
| <b>Subtotal Trail Infrastructure</b>   |                                     |                         |              | <b>\$ 2,000</b>     | <b>\$ 200</b>             |
| <b>Complete McDade Trail</b>           |                                     |                         |              | <b>\$ 3,500,000</b> | <b>\$ 350,000</b>         |
| <b>Complete Country Road Trail</b>     |                                     |                         |              | <b>\$ -</b>         | <b>\$ -</b>               |
| <b>Total Supporting Infrastructure</b> |                                     |                         |              | <b>\$ 3,752,000</b> | <b>\$ 375,000</b>         |

**Table H-4: Option A2 – Medium-Term Infrastructure Costs (0-5 years)**

| <b>Segment</b>                         | <b>Transit Infrastructure</b>       | <b>Location</b>               | <b>Units</b> | <b>Capital Cost</b> | <b>Annual Maintenance</b> |
|--|-------------------------------------|-------------------------------|--------------|---------------------|---------------------------|
| 8                                      | Major bus stop                      | Dingmans Campground           | 1            | \$ 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Dingmans Falls Visitor Center | 1            | \$ 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Dingmans Ferry Access         | 1            | \$ 35,765           | \$ 3,577                  |
|  | Transit Center                      | Dingmans Transit Center       | 1            | \$ 569,218          | \$ 56,922                 |
|  | Trailhead                           | Adams Creek Trailhead         | 1            | \$ 60,691           | \$ 6,069                  |
|  | Trailhead                           | Zimmerman Trailhead           | 1            | \$ 60,691           | \$ 6,069                  |
|  | Trailhead                           | Additional Trailhead          | 1            | \$ 60,691           | \$ 6,069                  |
| <b>Subtotal Transit Infrastructure</b> |                                     |                               |              | <b>\$ 858,586</b>   | <b>\$ 85,859</b>          |
| <b>Segment</b>                         | <b>Trail Infrastructure (miles)</b> |                               |              |                     |                           |
| 8                                      | Hiking Trail                        | Additional Trailhead          | 0.25         | \$ 2,625            | \$ 263                    |
|  | Hiking Trail                        | Zimmerman Trailhead           | 0.25         | \$ 2,625            | \$ 263                    |
|  | Hiking Trail                        | Adams Creek Trailhead         | 0.25         | \$ 2,625            | \$ 263                    |
| <b>Subtotal Trail Infrastructure</b>   |                                     |                               |              | <b>\$ 7,875</b>     | <b>\$ 788</b>             |
| <b>Complete McDade Trail</b>           |                                     |                               |              | <b>\$ -</b>         | <b>\$ -</b>               |
| <b>Complete Country Road Trail</b>     |                                     |                               |              | <b>\$ -</b>         | <b>\$ -</b>               |
| <b>Total Supporting Infrastructure</b> |                                     |                               |              | <b>\$ 866,000</b>   | <b>\$ 87,000</b>          |



**Table H-5: Option A2 – Long-Term Infrastructure Costs (0-20 years)**

| <b>Segment</b>                         | <b>Transit Infrastructure</b>          | <b>Location</b> | <b>Units</b> | <b>Capital Cost</b> | <b>Annual Maintenance</b> |
|--|--|-----------------|--------------|---------------------|---------------------------|
|  | None                                   |                 |              | \$ -                | \$ -                      |
|  | <b>Subtotal Transit Infrastructure</b> |                 |              | \$ -                | \$ -                      |
| <b>Segment</b>                         | <b>Trail Infrastructure (miles)</b>    |                 |              |                     |                           |
|  | None                                   |                 |              | \$ -                | \$ -                      |
|  | <b>Subtotal Trail Infrastructure</b>   |                 |              | \$ -                | \$ -                      |
|  | <b>Complete McDade Trail</b>           |                 |              | \$ -                | \$ -                      |
|  | <b>Complete Country Road Trail</b>     |                 |              | \$ 5,000,000        | \$ 500,000                |
| <b>Total Supporting Infrastructure</b> |  |                 |              | \$ 5,000,000        | \$ 500,000                |

### H.3 Infrastructure Costs for Option A3

For Option A3, infrastructure improvements are recommended for the short term (Table H-6), medium term (Table H-7), and long term (Table H-8).

**Table H-6: Option A3 – Short-Term Infrastructure Costs (0-2 years)**

| Segment                                | Transit Infrastructure       | Location                     | Units | Capital Cost        | Annual Maintenance |
|--|------------------------------|------------------------------|-------|---------------------|--------------------|
| 3                                      | Major bus stop               | Kittatinny Point             | 1     | \$ 35,765           | \$ 3,577           |
|  | Major bus stop               | Shawnee Resort / Store       | 1     | \$ 35,765           | \$ 3,577           |
|  | Basic bus stop               | Hialeah Picnic Area          | 1     | \$ 12,191           | \$ 1,219           |
|  | Major bus stop               | Smithfield Beach             | 1     | \$ 35,765           | \$ 3,577           |
|  | Trailhead                    | Additional Trailhead         | 2     | \$ 121,383          | \$ 12,138          |
|  | Major bus stop               | Park Headquarters            | 1     | \$ 35,765           | \$ 3,577           |
|  | Visitor Center               | Bushkill Upgrade             | 0.5   | \$ 294,828          | \$ 29,483          |
| 4                                      | Major bus stop               | Marshalls Creek              | 1     | \$ 35,765           | \$ 3,577           |
|  | Basic bus stop               | Exxon/Flea Market            | 1     | \$ 12,191           | \$ 1,219           |
|  | Basic bus stop               | CVS/McDonalds                | 1     | \$ 12,191           | \$ 1,219           |
|  | Basic bus stop               | Super Foodtown               | 1     | \$ 12,191           | \$ 1,219           |
|  | Major bus stop               | Fernwood Resort / Petrizzo's | 1     | \$ 35,765           | \$ 3,577           |
| 5                                      | Basic bus stop               | Bushkill Launch              | 1     | \$ 12,191           | \$ 1,219           |
|  | Trailhead                    | Toms Creek                   | 1     | \$ 60,691           | \$ 6,069           |
|  | Trailhead                    | Eshback                      | 1     | \$ 60,691           | \$ 6,069           |
|  | Trailhead                    | Additional Trailhead         | 1     | \$ 60,691           | \$ 6,069           |
|  | Major bus stop               | PEEC                         | 1     | \$ 35,765           | \$ 3,577           |
| 9                                      | Major bus stop               | Milford                      | 1     | \$ 35,765           | \$ 3,577           |
|  | Major bus stop               | Milford Beach                | 1     | \$ 35,765           | \$ 3,577           |
| 10                                     | Major bus stop               | Keystone Welcome Center      | 1     | \$ 35,765           | \$ 3,577           |
|  | Major bus stop               | Matamoras                    | 1     | \$ 35,765           | \$ 3,577           |
|  | Major bus stop               | Port Jervis                  | 1     | \$ 35,765           | \$ 3,577           |
| 11                                     | Major bus stop               | Grey Towers                  | 1     | \$ 35,765           | \$ 3,577           |
|  | Major bus stop               | Cliff Park Inn               | 1     | \$ 35,765           | \$ 3,577           |
| <b>Subtotal Transit Infrastructure</b> |                              |                              |       | <b>\$ 1,159,950</b> | <b>\$ 115,995</b>  |
| Segment                                | Trail Infrastructure (miles) |                              |       |                     |                    |
| 3                                      | Biking/Hiking Trail          | Shawnee Resort / Store       | 1.00  | \$ 881,200          | \$ 88,120          |
|  | Hiking Trail                 | Additional Trailhead         | 2.00  | \$ 21,000           | \$ 2,100           |
| 4                                      | Biking/Hiking Trail          | Fernwood Resort / Petrizzo's | 1.00  | \$ 881,200          | \$ 88,120          |
| 11                                     | Hiking Trail                 | Grey Towers                  | 0.50  | \$ 2,000            | \$ 200             |
| <b>Subtotal Trail Infrastructure</b>   |                              |                              |       | <b>\$ 1,785,400</b> | <b>\$ 178,540</b>  |
| <b>Complete McDade Trail</b>           |                              |                              |       | <b>\$ 3,500,000</b> | <b>\$ 350,000</b>  |
| <b>Complete Country Road Trail</b>     |                              |                              |       | <b>\$ -</b>         | <b>\$ -</b>        |
| <b>Total Supporting Infrastructure</b> |                              |                              |       | <b>\$ 6,445,000</b> | <b>\$ 645,000</b>  |

**Table H-7: Option A3 – Medium-Term Infrastructure Costs (0-5 years)**

| <b>Segment</b>                         | <b>Transit Infrastructure</b>       | <b>Location</b>               | <b>Units</b> | <b>Capital Cost</b> | <b>Annual Maintenance</b> |
|--|-------------------------------------|-------------------------------|--------------|---------------------|---------------------------|
| 8                                      | Major bus stop                      | Dingmans Campground           | 1            | \$ 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Dingmans Falls Visitor Center | 1            | \$ 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Dingmans Ferry Access         | 1            | \$ 35,765           | \$ 3,577                  |
|  | Transit Center                      | Dingmans Transit Center       | 1            | \$ 569,218          | \$ 56,922                 |
|  | Trailhead                           | Adams Creek Trailhead         | 1            | \$ 60,691           | \$ 6,069                  |
|  | Trailhead                           | Zimmerman Trailhead           | 1            | \$ 60,691           | \$ 6,069                  |
|  | Trailhead                           | Additional Trailhead          | 1            | \$ 60,691           | \$ 6,069                  |
| <b>Subtotal Transit Infrastructure</b> |                                     |                               |              | <b>\$ 858,586</b>   | <b>\$ 85,859</b>          |
| <b>Segment</b>                         | <b>Trail Infrastructure (miles)</b> |                               |              |                     |                           |
| 8                                      | Hiking Trail                        | Additional Trailhead          | 0.25         | \$ 2,625            | \$ 263                    |
|  | Hiking Trail                        | Zimmerman Trailhead           | 0.25         | \$ 2,625            | \$ 263                    |
|  | Hiking Trail                        | Adams Creek Trailhead         | 0.25         | \$ 2,625            | \$ 263                    |
| <b>Subtotal Trail Infrastructure</b>   |                                     |                               |              | <b>\$ 7,875</b>     | <b>\$ 788</b>             |
| <b>Complete McDade Trail</b>           |                                     |                               |              | <b>\$ -</b>         | <b>\$ -</b>               |
| <b>Complete Country Road Trail</b>     |                                     |                               |              | <b>\$ -</b>         | <b>\$ -</b>               |
| <b>Total Supporting Infrastructure</b> |                                     |                               |              | <b>\$ 866,000</b>   | <b>\$ 87,000</b>          |

**Table H-8: Option A3 – Long-Term Infrastructure Costs (0-20 years)**

| <b>Segment</b>                         | <b>Transit Infrastructure</b>       | <b>Location</b> | <b>Units</b> | <b>Capital Cost</b> |                  | <b>Annual Maintenance</b> |
|--|-------------------------------------|-----------------|--------------|---------------------|------------------|---------------------------|
| 6                                      | Trailhead                           | Hornbeck        | 1            | \$                  | 60,691           | \$ 6,069                  |
| <b>Subtotal Transit Infrastructure</b> |                                     |                 |              | <b>\$</b>           | <b>60,691</b>    | <b>\$ 6,069</b>           |
| <b>Segment</b>                         | <b>Trail Infrastructure (miles)</b> |                 |              |                     |                  |                           |
| 6                                      | Hiking Trail                        | Hornbeck        | 2.00         | \$                  | 21,000           | \$ 2,100                  |
| <b>Subtotal Trail Infrastructure</b>   |                                     |                 |              | <b>\$</b>           | <b>21,000</b>    | <b>\$ 2,100</b>           |
| <b>Complete McDade Trail</b>           |                                     |                 |              | <b>\$</b>           | <b>-</b>         | <b>\$ -</b>               |
| <b>Complete Country Road Trail</b>     |                                     |                 |              | <b>\$</b>           | <b>5,000,000</b> | <b>\$ 500,000</b>         |
| <b>Total Supporting Infrastructure</b> |                                     |                 |              | <b>\$</b>           | <b>5,082,000</b> | <b>\$ 508,000</b>         |

## H.4 Infrastructure Costs for Option B

For Option B, infrastructure improvements are recommended for the short term (Table H-9), medium term (Table H-10), and long term (Table H-11).

**Table H-9: Option B – Short-Term Infrastructure Costs (0-2 years)**

| Segment                                  | Transit Infrastructure       | Location               | Units | Capital Cost        | Annual Maintenance |
|--|------------------------------|------------------------|-------|---------------------|--------------------|
| 3  | Major bus stop               | Kittatinny Point       | 1     | \$ 35,765           | \$ 3,577           |
|  | Major bus stop               | Shawnee Resort / Store | 1     | \$ 35,765           | \$ 3,577           |
|  | Basic bus stop               | Hialeah Picnic Area    | 1     | \$ 12,191           | \$ 1,219           |
|  | Major bus stop               | Smithfield Beach       | 1     | \$ 35,765           | \$ 3,577           |
|  | Trailhead                    | Additional Trailheads  | 2     | \$ 121,383          | \$ 12,138          |
|  | Major bus stop               | Park Headquarters      | 1     | \$ 35,765           | \$ 3,577           |
|  | Visitor Center               | Bushkill Upgrade       | 0.5   | \$ 294,828          | \$ 29,483          |
| 12                                       | Trailhead                    | Kaiser Trail           | 1     | \$ 60,691           | \$ 6,069           |
|  | Major bus stop               | Turtle Beach           | 1     | \$ 35,765           | \$ 3,577           |
| <b>Subtotal Transit Infrastructure</b>   |                              |                        |       | <b>\$ 667,918</b>   | <b>\$ 66,792</b>   |
| Segment                                  | Trail Infrastructure (miles) |                        |       |                     |                    |
| 3  | Biking/Hiking Trail          | Shawnee Resort / Store | 1.00  | \$ 881,200          | \$ 88,120          |
|  | Hiking Trail                 | Additional Trailhead   | 2.00  | \$ 21,000           | \$ 2,100           |
| <b>Subtotal Other Trail Improvements</b> |                              |                        |       | <b>\$ 902,200</b>   | <b>\$ 90,220</b>   |
| <b>Complete McDade Trail</b>             |                              |                        |       | <b>\$ 3,500,000</b> | <b>\$ 350,000</b>  |
| <b>Complete Country Road Trail</b>       |                              |                        |       | <b>\$ -</b>         | <b>\$ -</b>        |
| <b>Total Supporting Infrastructure</b>   |                              |                        |       | <b>\$ 5,070,000</b> | <b>\$ 507,000</b>  |

**Table H-10: Option B – Medium-Term Infrastructure Costs (0-5 years)**

| <b>Segment</b>                         | <b>Transit Infrastructure</b>       | <b>Location</b>               | <b>Units</b> | <b>Capital Cost</b> | <b>Annual Maintenance</b> |
|--|-------------------------------------|-------------------------------|--------------|---------------------|---------------------------|
| 8                                      | Major bus stop                      | Dingmans Campground           | 1            | \$ 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Dingmans Falls Visitor Center | 1            | \$ 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Dingmans Ferry Access         | 1            | \$ 35,765           | \$ 3,577                  |
|  | Transit Center                      | Dingmans Transit Center       | 1            | \$ 569,218          | \$ 56,922                 |
|  | Trailhead                           | Adams Creek Trailhead         | 1            | \$ 60,691           | \$ 6,069                  |
|  | Trailhead                           | Zimmerman Trailhead           | 1            | \$ 60,691           | \$ 6,069                  |
|  | Trailhead                           | Additional Trailhead          | 1            | \$ 60,691           | \$ 6,069                  |
| 9                                      | Major bus stop                      | Milford                       | 1            | \$ 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Milford Beach                 | 1            | \$ 35,765           | \$ 3,577                  |
| 11                                     | Major bus stop                      | Grey Towers                   | 1            | \$ 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Cliff Park Inn                | 1            | \$ 35,765           | \$ 3,577                  |
| <b>Subtotal Transit Infrastructure</b> |                                     |                               |              | <b>\$ 1,001,646</b> | <b>\$ 100,165</b>         |
| <b>Segment</b>                         | <b>Trail Infrastructure (miles)</b> |                               |              |                     |                           |
| 8                                      | Hiking Trail                        | Additional Trailhead          | 0.25         | \$ 2,625            | \$ 263                    |
|  | Hiking Trail                        | Zimmerman Trailhead           | 0.25         | \$ 2,625            | \$ 263                    |
|  | Hiking Trail                        | Adams Creek Trailhead         | 0.25         | \$ 2,625            | \$ 263                    |
| 11                                     | Hiking Trail                        | Grey Towers                   | 0.50         | \$ 2,000            | \$ 200                    |
| <b>Subtotal Trail Infrastructure</b>   |                                     |                               |              | <b>\$ 9,875</b>     | <b>\$ 988</b>             |
| <b>Complete McDade Trail</b>           |                                     |                               |              | <b>\$ -</b>         | <b>\$ -</b>               |
| <b>Complete Country Road Trail</b>     |                                     |                               |              | <b>\$ -</b>         | <b>\$ -</b>               |
| <b>Total Supporting Infrastructure</b> |                                     |                               |              | <b>\$ 1,012,000</b> | <b>\$ 101,000</b>         |

**Table H-11: Option B – Long-Term Infrastructure Costs (0-20 years)**

| <b>Segment</b>                         | <b>Transit Infrastructure</b>       | <b>Location</b>                 | <b>Units</b> | <b>Capital Cost</b> | <b>Annual Maintenance</b> |
|--|-------------------------------------|---------------------------------|--------------|---------------------|---------------------------|
| 5                                      | Basic bus stop                      | Bushkill Launch                 | 1            | \$ 12,191           | \$ 1,219                  |
|  | Trailhead                           | Toms Creek                      | 1            | \$ 60,691           | \$ 6,069                  |
|  | Trailhead                           | Eshback                         | 1            | \$ 60,691           | \$ 6,069                  |
|  | Trailhead                           | Additional Trailhead            | 1            | \$ 60,691           | \$ 6,069                  |
|  | Major bus stop                      | PEEC                            | 1            | \$ 35,765           | \$ 3,577                  |
| 6                                      | Trailhead                           | Hornbeck                        | 1            | \$ 60,691           | \$ 6,069                  |
| 13                                     | Trailhead                           | Coppermine Trailhead            | 1            | \$ 60,691           | \$ 6,069                  |
|  | Basic bus stop                      | Poxono Access                   | 1            | \$ 12,191           | \$ 1,219                  |
|  | Trailhead                           | Van Campen Glen Picnic Area     | 1            | \$ 60,691           | \$ 6,069                  |
|  | Trailhead                           | Watergate                       | 1            | \$ 60,691           | \$ 6,069                  |
|  | Trailhead                           | Millbrook Village               | 1            | \$ 60,691           | \$ 6,069                  |
|  | Trailhead                           | Rivers Bend                     | 1            | \$ 60,691           | \$ 6,069                  |
|  | Major bus stop                      | Walpack Inn                     | 1            | \$ 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Walpack Center                  | 1            | \$ 35,765           | \$ 3,577                  |
|  | Trailhead                           | Military Road Trail             | 1            | \$ 60,691           | \$ 6,069                  |
|  | Major bus stop                      | Peters Valley                   | 1            | \$ 35,765           | \$ 3,577                  |
|  | Visitor Center                      | New Jersey (existing structure) | 1            | \$ 589,655          | \$ 58,966                 |
| <b>Subtotal Transit Infrastructure</b> |                                     |                                 |              | <b>\$ 1,364,010</b> | <b>\$ 136,401</b>         |
| <b>Segment</b>                         | <b>Trail Infrastructure (miles)</b> |                                 |              |                     |                           |
| 5                                      | Hiking Trail                        | Toms Creek                      | 2.00         | \$ 21,000           | \$ 2,100                  |
|  | Hiking Trail                        | Eshback                         | 2.00         | \$ 21,000           | \$ 2,100                  |
| 6                                      | Hiking Trail                        | Hornbeck                        | 2.00         | \$ 21,000           | \$ 2,100                  |
| <b>Subtotal Trail Infrastructure</b>   |                                     |                                 |              | <b>\$ 63,000</b>    | <b>\$ 6,300</b>           |
| <b>Complete McDade Trail</b>           |                                     |                                 |              | <b>\$ -</b>         | <b>\$ -</b>               |
| <b>Complete Country Road Trail</b>     |                                     |                                 |              | <b>\$ 5,000,000</b> | <b>\$ 500,000</b>         |
| <b>Total Supporting Infrastructure</b> |                                     |                                 |              | <b>\$ 6,427,000</b> | <b>\$ 643,000</b>         |

## H.5 Infrastructure Costs for Option C

For Option C, infrastructure improvements are recommended for the short term (Table H-12), medium term (Table H-13), and long term (Table H-14).

**Table H-12: Option C – Short-Term Infrastructure Costs (0-2 years)**

| Segment                                | Transit Infrastructure | Location                      | Units | Capital Cost        | Annual Maintenance |
|--|------------------------|-------------------------------|-------|---------------------|--------------------|
| 3                                      | Major bus stop         | Kittatinny Point              | 1     | \$ 35,765           | \$ 3,577           |
|  | Major bus stop         | Shawnee Resort / Store        | 1     | \$ 35,765           | \$ 3,577           |
|  | Basic bus stop         | Hialeah Picnic Area           | 1     | \$ 12,191           | \$ 1,219           |
|  | Major bus stop         | Smithfield Beach              | 1     | \$ 35,765           | \$ 3,577           |
|  | Trailhead              | Additional Trailhead          | 2     | \$ 121,383          | \$ 12,138          |
|  | Major bus stop         | Park Headquarters             | 1     | \$ 35,765           | \$ 3,577           |
|  | Visitor Center         | Bushkill Upgrade              | 0.5   | \$ 294,828          | \$ 29,483          |
| 12                                     | Trailhead              | Kaiser Trail                  | 1     | \$ 60,691           | \$ 6,069           |
|  | Major bus stop         | Turtle Beach                  | 1     | \$ 35,765           | \$ 3,577           |
| 4                                      | Major bus stop         | Marshalls Creek               | 1     | \$ 35,765           | \$ 3,577           |
|  | Basic bus stop         | Exxon/Flea Market             | 1     | \$ 12,191           | \$ 1,219           |
|  | Basic bus stop         | CVS/McDonalds                 | 1     | \$ 12,191           | \$ 1,219           |
|  | Basic bus stop         | Super Foodtown                | 1     | \$ 12,191           | \$ 1,219           |
|  | Major bus stop         | Fernwood Resort / Petrizzo's  | 1     | \$ 35,765           | \$ 3,577           |
| 5                                      | Basic bus stop         | Bushkill Launch               | 1     | \$ 12,191           | \$ 1,219           |
|  | Trailhead              | Toms Creek                    | 1     | \$ 60,691           | \$ 6,069           |
|  | Trailhead              | Eshback                       | 1     | \$ 60,691           | \$ 6,069           |
|  | Trailhead              | Additional Trailhead          | 1     | \$ 60,691           | \$ 6,069           |
|  | Major bus stop         | PEEC                          | 1     | \$ 35,765           | \$ 3,577           |
| 6                                      | Trailhead              | Hornbeck                      | 1     | \$ 60,691           | \$ 6,069           |
| 8                                      | Major bus stop         | Dingmans Campground           | 1     | \$ 35,765           | \$ 3,577           |
|  | Major bus stop         | Dingmans Falls Visitor Center | 1     | \$ 35,765           | \$ 3,577           |
|  | Major bus stop         | Dingmans Falls Ferry Access   | 1     | \$ 35,765           | \$ 3,577           |
|  | Transit Center         | Dingmans Transit Center       | 1     | \$ 569,218          | \$ 56,922          |
|  | Trailhead              | Adams Creek Trailhead         | 1     | \$ 60,691           | \$ 6,069           |
|  | Trailhead              | Zimmerman Trailhead           | 1     | \$ 60,691           | \$ 6,069           |
|  | Trailhead              | Additional Trailhead          | 1     | \$ 60,691           | \$ 6,069           |
| 9                                      | Major bus stop         | Milford                       | 1     | \$ 35,765           | \$ 3,577           |
|  | Major bus stop         | Milford Beach                 | 1     | \$ 35,765           | \$ 3,577           |
| 10                                     | Major bus stop         | Keystone Welcome Center       | 1     | \$ 35,765           | \$ 3,577           |
|  | Major bus stop         | Matamoras                     | 1     | \$ 35,765           | \$ 3,577           |
|  | Major bus stop         | Port Jervis                   | 1     | \$ 35,765           | \$ 3,577           |
| <b>Subtotal Transit Infrastructure</b> |                        |                               |       | <b>\$ 2,104,154</b> | <b>\$ 210,415</b>  |



| <b>Segment</b>                         | <b>Trail Infrastructure (miles)</b> |                              |      |           |                  |                   |
|--|-------------------------------------|------------------------------|------|-----------|------------------|-------------------|
| 3                                      | Biking/Hiking Trail                 | Shawnee Resort / Store       | 1.00 | \$        | 881,200          | \$ 88,120         |
|  | Hiking Trail                        | Additional Trailhead         | 2.00 | \$        | 21,000           | \$ 2,100          |
| 4                                      | Biking/Hiking Trail                 | Fernwood Resort / Petrizzo's | 1.00 | \$        | 881,200          | \$ 88,120         |
| 5                                      | Hiking Trail                        | Toms Creek                   | 2.00 | \$        | 21,000           | \$ 2,100          |
|  | Hiking Trail                        | Eshback                      | 2.00 | \$        | 21,000           | \$ 2,100          |
| 6                                      | Hiking Trail                        | Hornbeck                     | 2.00 | \$        | 21,000           | \$ 2,100          |
| 8                                      | Hiking Trail                        | Additional Trailhead         | 0.25 | \$        | 2,625            | \$ 263            |
|  | Hiking Trail                        | Zimmerman Trailhead          | 0.25 | \$        | 2,625            | \$ 263            |
|  | Hiking Trail                        | Adams Creek Trailhead        | 0.25 | \$        | 2,625            | \$ 263            |
| <b>Subtotal Trail Infrastructure</b>   |                                     |                              |      | <b>\$</b> | <b>2,735,475</b> | <b>\$ 273,548</b> |
| <b>Complete McDade Trail</b>           |                                     |                              |      | <b>\$</b> | <b>3,500,000</b> | <b>\$ 350,000</b> |
| <b>Complete Country Road Trail</b>     |                                     |                              |      | <b>\$</b> | <b>-</b>         | <b>\$ -</b>       |
| <b>Total Supporting Infrastructure</b> |                                     |                              |      | <b>\$</b> | <b>8,340,000</b> | <b>\$ 834,000</b> |

**Table H-13: Option C – Medium-Term Infrastructure Costs (0-5 years)**

| <b>Segment</b>                         | <b>Transit Infrastructure</b>       | <b>Location</b>                 | <b>Units</b> | <b>Capital Cost</b> |                  | <b>Maintenance</b> |
|--|-------------------------------------|---------------------------------|--------------|---------------------|------------------|--------------------|
| 13                                     | Trailhead                           | Coppermine Trailhead            | 1            | \$                  | 60,691           | \$ 6,069           |
|  | Basic bus stop                      | Poxono Access                   | 1            | \$                  | 12,191           | \$ 1,219           |
|  | Trailhead                           | Van Campen Glen Picnic Area     | 1            | \$                  | 60,691           | \$ 6,069           |
|  | Trailhead                           | Watergate                       | 1            | \$                  | 60,691           | \$ 6,069           |
|  | Trailhead                           | Millbrook Village               | 1            | \$                  | 60,691           | \$ 6,069           |
|  | Trailhead                           | Rivers Bend                     | 1            | \$                  | 60,691           | \$ 6,069           |
|  | Major bus stop                      | Walpack Inn                     | 1            | \$                  | 35,765           | \$ 3,577           |
|  | Major bus stop                      | Walpack Center                  | 1            | \$                  | 35,765           | \$ 3,577           |
|  | Trailhead                           | Military Road Trail             | 1            | \$                  | 60,691           | \$ 6,069           |
|  | Visitor Center                      | New Jersey (existing structure) | 1            | \$                  | 589,655          | \$ 58,966          |
|  | Major bus stop                      | Peters Valley                   | 1            | \$                  | 35,765           | \$ 3,577           |
| <b>Subtotal Transit Infrastructure</b> |                                     |                                 |              | <b>\$</b>           | <b>1,073,289</b> | <b>\$ 107,329</b>  |
| <b>Segment</b>                         | <b>Trail Infrastructure (miles)</b> |                                 |              |                     |                  |                    |
|  | None                                |                                 |              |                     |                  |                    |
| <b>Subtotal Trail Infrastructure</b>   |                                     |                                 |              | <b>\$</b>           | <b>-</b>         | <b>\$ -</b>        |
| <b>Complete McDade Trail</b>           |                                     |                                 |              | <b>\$</b>           | <b>-</b>         | <b>\$ -</b>        |
| <b>Complete Country Road Trail</b>     |                                     |                                 |              | <b>\$</b>           | <b>-</b>         | <b>\$ -</b>        |
| <b>Total Supporting Infrastructure</b> |                                     |                                 |              | <b>\$</b>           | <b>1,073,000</b> | <b>\$ 107,000</b>  |

**Table H-14: Option C – Long-Term Infrastructure Costs (0-20 years)**

| <b>Segment</b>                         | <b>Transit Infrastructure</b>       | <b>Location</b> | <b>Units</b> | <b>Capital Cost</b> |                  | <b>Annual Maintenance</b> |
|--|-------------------------------------|-----------------|--------------|---------------------|------------------|---------------------------|
| 11                                     | Major bus stop                      | Grey Towers     | 1            | \$                  | 35,765           | \$ 3,577                  |
|  | Major bus stop                      | Cliff Park Inn  | 1            | \$                  | 35,765           | \$ 3,577                  |
| 14                                     | Basic bus stop                      | Old Mine Road   | 1            | \$                  | 12,191           | \$ 1,219                  |
| <b>Subtotal Transit Infrastructure</b> |                                     |                 |              | \$                  | <b>83,721</b>    | \$ <b>8,372</b>           |
| <b>Segment</b>                         | <b>Trail Infrastructure (miles)</b> |                 |              |                     |                  |                           |
| 11                                     | Hiking Trail                        | Grey Towers     | 0.50         | \$                  | 2,000            | \$ 200                    |
| <b>Subtotal Trail Infrastructure</b>   |                                     |                 |              | \$                  | <b>2,000</b>     | \$ <b>200</b>             |
| <b>Complete McDade Trail</b>           |                                     |                 |              | \$                  | -                | \$ -                      |
| <b>Complete Country Road Trail</b>     |                                     |                 |              | \$                  | <b>5,000,000</b> | \$ <b>500,000</b>         |
| <b>Total Supporting Infrastructure</b> |                                     |                 |              | \$                  | <b>5,086,000</b> | \$ <b>509,000</b>         |

## Appendix I: Transit Vehicle Costs

This appendix provides details on the costs of purchasing transit vehicles for each of the five candidate transportation options. Depending on the route, either 30-ft buses or vans would be purchased. Costs were identified for the short term (0-2 years), medium term (0-5 years), and long term (0-20 years), and are shown in 2008 dollars. Costs are provided incrementally; costs in the medium and long term do not reflect expenditures in earlier phases. They were calculated using a three-step process:

- 1. Calculate the Number of Transit Vehicles Required for Each Route**

The number of vehicles required to operate each transit route was calculated by dividing the route travel time by the headway (in hours) and rounding up to the nearest integer. To account for spare vehicle requirements, the number of transit vehicles required to operate each route was increased by 20%.

- 2. Calculate the Number of Transit Vehicles that Need to be Purchased**

The number of vehicles that need to be purchased was determined by subtracting existing transit vehicles from the number of transit vehicles required to operate each route. There were two sources of existing vehicles. Two buses were assumed to be available for extensions of the MCTA Yellow Route. In addition, transit vehicles purchased in earlier phases were assumed to be available for the medium term and the long term.

- 3. Calculate the Cost of Purchasing Transit Vehicles**

The number of transit vehicles that need to be purchased was multiplied by the cost per vehicle. The cost of medium size (30-ft) buses was assumed to be \$250,000, while the cost of vans was assumed to be \$50,000.

## I.1 Transit Vehicle Costs for Option A1

This section calculates the cost to purchase 30-ft buses for Option A1 during the short, medium, and long terms. It uses the three-step methodology discussed at the beginning of this appendix. For each phase, a range of costs are provided for 30, 60, and 120 minute headways.

### I.1.1 Transit Vehicle Costs for Option A1 in the Short Term

Between 5 and 14 buses are required during peak periods to operate Option A1 in the short term (Table I-1).

**Table I-1: Number of Buses Needed by Route (by headway)**

| # of Buses Needed by Route | Headway     |            |            |
|----------------------------|-------------|------------|------------|
|                            | 120 minutes | 60 minutes | 30 minutes |
| Yellow Route               | 3           | 5          | 9          |
| River Road Route           | 2           | 3          | 5          |
| Total                      | 5           | 8          | 14         |

Table I-2 shows the number of buses that must be purchased to operate Option A1 in the short term. Since there are two existing MCTA buses, between 3 and 12 buses must be purchased.

**Table I-2: Number of Buses to Purchase (by headway)**

| # of Buses to Purchase                  | 120 minutes | 60 minutes | 30 minutes |
|---|-------------|------------|------------|
| # of Buses Needed                       | 5           | 8          | 14         |
| <i>minus</i> Existing MCTA Buses        | 2           | 2          | 2          |
| <i>minus</i> Previously Purchased Buses | 0           | 0          | 0          |
| Total                                   | 3           | 6          | 12         |

The cost of purchasing these buses ranges from \$750,000 to \$3,000,000 to operate Option A1 in the short term (Table I-3).

**Table I-3: Capital Cost of Buses (by headway)**

| Capital Cost of Buses  | 120 minutes | 60 minutes  | 30 minutes  |
|------------------------|-------------|-------------|-------------|
| # of Buses to Purchase | 3           | 6           | 12          |
| Cost per Bus           | \$250,000   | \$250,000   | \$250,000   |
| Total                  | \$750,000   | \$1,500,000 | \$3,000,000 |

### I.1.2 Transit Vehicle Costs for Option A1 in the Medium Term

Since no additional transit service is recommended for Option A1 in the medium term, no additional buses are required.

### I.1.3 Transit Vehicle Costs for Option A1 in the Long Term

Between 6 and 17 buses are required during peak periods to operate Option A1 in the long term (Table I-4).

**Table I-4: Number of Buses Needed by Route (by headway)**

| # of Buses Needed by Route | 120 minutes | 60 minutes | 30 minutes |
|----------------------------|-------------|------------|------------|
| Yellow Route               | 4           | 6          | 12         |
| River Road Route           | 2           | 3          | 5          |
| Total                      | 6           | 9          | 17         |

Table I-5 shows the number of buses that must be purchased to operate Option A1 in the long term. Since there are two existing MCTA buses and between 3 and 12 buses were purchased in the short term, only between 1 and 3 buses must be purchased.

**Table I-5: Number of Buses to Purchase (by headway)**

| # of Buses to Purchase                  | 120 minutes | 60 minutes | 30 minutes |
|---|-------------|------------|------------|
| # of Buses Needed                       | 6           | 9          | 17         |
| <i>minus</i> Existing MCTA Buses        | 2           | 2          | 2          |
| <i>minus</i> Previously Purchased Buses | 3           | 6          | 12         |
| Total                                   | 1           | 1          | 3          |

The cost of purchasing these buses ranges from \$250,000 to \$750,000 to operate Option A1 in the long term (Table I-6).

**Table I-6: Capital Cost of Buses (by headway)**

| Capital Cost of Buses  | 120 minutes | 60 minutes | 30 minutes |
|------------------------|-------------|------------|------------|
| # of Buses to Purchase | 1           | 1          | 3          |
| Cost per Bus           | \$250,000   | \$250,000  | \$250,000  |
| Total                  | \$250,000   | \$250,000  | \$750,000  |

## I.2 Transit Vehicle Costs for Option A2

This section calculates the cost to purchase 30-ft buses for Option A2 during the short, medium, and long terms. It uses the three-step methodology discussed at the beginning of this appendix. For each phase, a range of costs are provided for 30, 60, and 120 minute headways.

### I.2.1 Transit Vehicle Costs for Option A2 in the Short Term

To operate Option A2 in the short term, 2 buses are needed at 120-minute headways, 3 buses are required at 60-minute headways, and 5 buses are needed at 30-minute headways (Table I-7). At a cost of \$250,000 per bus, the total cost ranges from \$500,000 (120-minute headway) to \$1,250,000 (30-minute headway).

**Table I-7: Cost of Buses (by headway)**

| # of Buses to Purchase | 120 minutes | 60 minutes | 30 minutes  |
|------------------------|-------------|------------|-------------|
| # of Buses Needed      | 2           | 3          | 5           |
| Cost per Bus           | \$250,000   | \$250,000  | \$250,000   |
| Total                  | \$500,000   | \$750,000  | \$1,250,000 |

### I.2.2 Transit Vehicle Costs for Option A2 in the Medium Term

To operate Option A2 in the medium term, 3 buses are needed at 120-minute headways, 5 buses are required at 60-minute headways, and 9 buses are needed at 30-minute headways. Table I-8 shows the number of buses that must be purchased to operate Option A2 in the medium term. Since buses were purchased in the short term, between 1 and 4 buses must be purchased.

**Table I-8: Number of Buses to Purchase (by headway)**

| # of Buses to Purchase                  | 120 minutes | 60 minutes | 30 minutes |
|---|-------------|------------|------------|
| # of Buses Needed                       | 3           | 5          | 9          |
| <i>minus</i> Existing MCTA Buses        | 0           | 0          | 0          |
| <i>minus</i> Previously Purchased Buses | 2           | 3          | 5          |
| Total                                   | 1           | 2          | 4          |

The cost of purchasing these buses ranges from \$250,000 to \$1,000,000 to operate Option A2 in the medium term (Table I-9).

**Table I-9: Capital Cost of Buses (by headway)**

| Capital Cost of Buses  | 120 minutes | 60 minutes | 30 minutes  |
|------------------------|-------------|------------|-------------|
| # of Buses to Purchase | 1           | 2          | 4           |
| Cost per Bus           | \$250,000   | \$250,000  | \$250,000   |
| Total                  | \$250,000   | \$500,000  | \$1,000,000 |

### **I.2.3 Transit Vehicle Costs for Option A2 in the Long Term**

Since no additional transit service is recommended for Option A2 in the long term, no additional buses are required.



### I.3 Transit Vehicle Costs for Option A3

This section calculates the cost to purchase 30-ft buses for Option A3 during the short, medium, and long terms. It uses the three-step methodology discussed at the beginning of this appendix. For each phase, a range of costs are provided for 30, 60, and 120 minute headways.

#### I.3.1 Transit Vehicle Costs for Option A3 in the Short Term

Between 7 and 19 buses are required during peak periods to operate Option A3 in the short term (Table I-10).

**Table I-10: Number of Buses Needed by Route (by headway)**

| # of Vehicles Needed by Route | 120 minutes | 60 minutes | 30 minutes |
|-------------------------------|-------------|------------|------------|
| Yellow Route                  | 3           | 5          | 9          |
| River Road Route              | 2           | 3          | 5          |
| Milford Route                 | 2           | 3          | 5          |
| Total                         | 7           | 11         | 19         |

Table I-11 shows the number of buses that must be purchased to operate Option A3 in the short term. Since there are two existing MCTA buses, between 5 and 17 buses must be purchased.

**Table I-11: Number of Buses to Purchase (by headway)**

| # of Buses to Purchase                  | 120 minutes | 60 minutes | 30 minutes |
|---|-------------|------------|------------|
| # of Buses Needed                       | 7           | 11         | 19         |
| <i>minus</i> Existing MCTA Buses        | 2           | 2          | 2          |
| <i>minus</i> Previously Purchased Buses | 0           | 0          | 0          |
| Total                                   | 5           | 9          | 17         |

The cost of purchasing these buses ranges from \$1,250,000 to \$4,250,000 to operate Option A3 in the short term (Table I-12).

**Table I-12: Capital Cost of Buses (by headway)**

| Capital Cost of Buses  | 120 minutes | 60 minutes  | 30 minutes  |
|------------------------|-------------|-------------|-------------|
| # of Buses to Purchase | 5           | 9           | 17          |
| Cost per Bus           | \$250,000   | \$250,000   | \$250,000   |
| Total                  | \$1,250,000 | \$2,250,000 | \$4,250,000 |

#### I.3.2 Transit Vehicle Costs for Option A3 in the Medium Term

Between 8 and 23 buses are required during peak periods to operate Option A3 in the medium term (Table I-13).

**Table I-13: Number of Buses Needed by Route (by headway)**

| # of Vehicles Needed by Route | 120 minutes | 60 minutes | 30 minutes |
|-------------------------------|-------------|------------|------------|
| Yellow Route                  | 3           | 5          | 9          |
| River Road Route              | 2           | 3          | 5          |
| Milford Route                 | 3           | 5          | 9          |
| Total                         | 8           | 13         | 23         |

Table I-14 shows the number of buses that must be purchased to operate Option A3 in the medium term. Since there are two existing MCTA buses and between 5 and 17 buses were purchased in the short term, between 1 and 4 buses must be purchased.

**Table I-14: Number of Buses to Purchase (by headway)**

| # of Buses to Purchase                  | 120 minutes | 60 minutes | 30 minutes |
|---|-------------|------------|------------|
| # of Buses Needed                       | 8           | 13         | 23         |
| <i>minus</i> Existing MCTA Buses        | 2           | 2          | 2          |
| <i>minus</i> Previously Purchased Buses | 5           | 9          | 17         |
| Total                                   | 1           | 2          | 4          |

The cost of purchasing these buses ranges from \$250,000 to \$1,000,000 to operate Option A3 in the medium term (Table I-15).

**Table I-15: Capital Cost of Buses (by headway)**

| Capital Cost of Buses  | 120 minutes | 60 minutes | 30 minutes  |
|------------------------|-------------|------------|-------------|
| # of Buses to Purchase | 1           | 2          | 4           |
| Cost per Bus           | \$250,000   | \$250,000  | \$250,000   |
| Total                  | \$250,000   | \$500,000  | \$1,000,000 |

### I.3.3 Transit Vehicle Costs for Option A3 in the Long Term

Between 7 and 23 buses are required during peak periods to operate Option A3 in the long term (Table I-16).

**Table I-16: Number of Buses Needed by Route (by headway)**

| # of Buses Needed by Route | 120 minutes | 60 minutes | 30 minutes |
|----------------------------|-------------|------------|------------|
| Yellow Route               | 5           | 10         | 18         |
| River Road Route           | 2           | 3          | 5          |
| Total                      | 7           | 13         | 23         |

Table I-17 shows the number of buses that must be purchased to operate Option A3 in the long term. Since there are two existing MCTA buses and between 6 and 21 buses were purchased in the long term, no buses must be purchased. In fact, there is one surplus bus to operate a 120-minute headway.

**Table I-17: Number of Buses to Purchase (by headway)**

| <b># of Buses to Purchase</b>           | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|---|--------------------|-------------------|-------------------|
| # of Buses Needed                       | 7                  | 13                | 23                |
| <i>minus</i> Existing MCTA Buses        | 2                  | 2                 | 2                 |
| <i>minus</i> Previously Purchased Buses | 6                  | 11                | 21                |
| Total                                   | -1                 | 0                 | 0                 |

## I.4 Transit Vehicle Costs for Option B

This section calculates the cost to purchase vans for Option B during the short, medium, and long terms. Vans are required because this route crosses Dingmans bridge, which cannot support the weight of a medium-size bus. It uses the three-step methodology discussed at the beginning of this appendix. For each phase, a range of costs are provided for 30, 60, and 120 minute headways.

### I.4.1 Transit Vehicle Costs for Option B in the Short Term

Between 3 and 8 vans are required during peak periods to operate Option B in the short term (Table I-18).

**Table I-18: Number of Vans Needed by Route (by headway)**

| # of Vans Needed by Route | 120 minutes | 60 minutes | 30 minutes |
|---------------------------|-------------|------------|------------|
| Southern Route            | 3           | 4          | 8          |
| Total                     | 3           | 4          | 8          |

The cost of purchasing these vans ranges from \$150,000 to \$400,000 to operate Option B in the short term (Table I-19).

**Table I-19: Capital Cost of Vans (by headway)**

| Capital Cost of Vans  | 120 minutes | 60 minutes | 30 minutes |
|-----------------------|-------------|------------|------------|
| # of Vans to Purchase | 3           | 4          | 8          |
| Cost per Van          | \$50,000    | \$50,000   | \$50,000   |
| Total                 | \$150,000   | \$200,000  | \$400,000  |

### I.4.2 Transit Vehicle Costs for Option B in the Medium Term

Table I-20 shows that between 6 and 14 vans are required during peak periods to operate Option B in the medium term.

**Table I-20: Number of Vans Needed by Route (by headway)**

| # of Vans Needed by Route | 120 minutes | 60 minutes | 30 minutes |
|---------------------------|-------------|------------|------------|
| Southern Route            | 3           | 4          | 8          |
| Milford Route             | 3           | 4          | 6          |
| Total                     | 6           | 8          | 14         |

Table I-21 shows the number of vans that must be purchased to operate Option B in the medium term. Since between 3 and 8 vans were purchased in the short term, only between 3 and 6 vans must be purchased.

**Table I-21: Number of Vans to Purchase (by headway)**

| # of Vans to Purchase     | 120 minutes | 60 minutes | 30 minutes |
|---------------------------|-------------|------------|------------|
| # of Vans Needed          | 6           | 8          | 14         |
| Previously Purchased Vans | 3           | 4          | 8          |
| Total                     | 3           | 4          | 6          |

The cost of purchasing these vans ranges from \$150,000 to \$300,000 to operate Option B in the medium term (Table I-22).

**Table I-22: Capital Cost of Buses (by headway)**

| Capital Cost of Vans  | 120 minutes | 60 minutes | 30 minutes |
|-----------------------|-------------|------------|------------|
| # of Vans to Purchase | 3           | 4          | 6          |
| Cost per Van          | \$50,000    | \$50,000   | \$50,000   |
| Total                 | \$150,000   | \$200,000  | \$300,000  |

### I.4.3 Transit Vehicle Costs for Option B in the Long Term

Table I-23 shows that between 8 and 30 vans are required during peak periods to operate Option B in the long term.

**Table I-23: Number of Vans Needed by Route (by headway)**

| # of Vans Needed by Route | 120 minutes | 60 minutes | 30 minutes |
|---------------------------|-------------|------------|------------|
| Park Loop                 | 4           | 8          | 15         |
| Reverse Park Loop         | 4           | 8          | 15         |
| Total                     | 8           | 16         | 30         |

Table I-24 shows the number of vans that must be purchased to operate Option B in the long term. Since between 6 and 14 vans were purchased in the short and medium terms, only between 2 and 16 vans must be purchased.

**Table I-24: Number of Vans to Purchase (by headway)**

| # of Vans to Purchase                  | 120 minutes | 60 minutes | 30 minutes |
|--|-------------|------------|------------|
| # of Vans Needed                       | 8           | 16         | 30         |
| <i>minus</i> Previously Purchased Vans | 6           | 8          | 14         |
| Total                                  | 2           | 8          | 16         |

The cost of purchasing these vans ranges from \$100,000 to \$800,000 to operate Option B in the long term (Table I-25).

**Table I-25: Capital Cost of Vans (by headway)**

| Capital Cost of Vans  | 120 minutes | 60 minutes | 30 minutes |
|-----------------------|-------------|------------|------------|
| # of Vans to Purchase | 2           | 8          | 16         |
| Cost per Van          | \$50,000    | \$50,000   | \$50,000   |
| Total                 | \$100,000   | \$400,000  | \$800,000  |

## I.5 Transit Vehicle Costs for Option C

This section calculates the cost to purchase both 30-ft buses and vans for Option C during the short, medium, and long terms. Both buses and vans are required because one of the routes crosses Dingmans bridge, which cannot support the weight of a medium-size bus. It uses the three-step methodology discussed at the beginning of this appendix. For each phase, a range of costs are provided for 30, 60, and 120 minute headways.

### I.5.1 Transit Vehicle Costs for Option C in the Short Term

Between 5 and 17 buses and between 3 and 8 vans are required during peak periods to operate Option C in the short term (Table I-26).

**Table I-26: Number of Buses and Vans Needed by Route (by headway)**

| # of Vehicles Needed by Route | 120 minutes | 60 minutes | 30 minutes |
|-------------------------------|-------------|------------|------------|
| Yellow Route - Buses          | 5           | 9          | 17         |
| Southern Route - Vans         | 3           | 4          | 8          |
| Total                         | 8           | 13         | 25         |

Table I-27 shows the number of buses that must be purchased to operate Option C in the short term. Since there are 2 existing MCTA buses, between 3 and 15 buses must be purchased. Between 3 and 8 vans must also be purchased.

**Table I-27: Number of Buses to Purchase (by headway)**

| # of Buses to Purchase                  | 120 minutes | 60 minutes | 30 minutes |
|---|-------------|------------|------------|
| # of Buses Needed                       | 5           | 9          | 17         |
| <i>minus</i> Existing MCTA Buses        | 2           | 2          | 2          |
| <i>minus</i> Previously Purchased Buses | 0           | 0          | 0          |
| Total                                   | 3           | 7          | 15         |

The cost of purchasing these buses and vans ranges from \$900,000 to \$4,150,000 to operate Option C in the short term (Table I-28).

**Table I-28: Capital Cost of Buses and Vans (by headway)**

| Capital Cost of Vehicles | 120 minutes | 60 minutes  | 30 minutes  |
|--------------------------|-------------|-------------|-------------|
| # of Vans to Purchase    | 3           | 4           | 8           |
| Cost per Van             | \$50,000    | \$50,000    | \$50,000    |
| # of Buses to Purchase   | 3           | 7           | 15          |
| Cost per Bus             | \$250,000   | \$250,000   | \$250,000   |
| Total                    | \$900,000   | \$1,950,000 | \$4,150,000 |

### I.5.2 Transit Vehicle Costs for Option C in the Medium Term

Between 5 and 17 buses and between 4 and 15 vans are required during peak periods to operate Option C in the medium term (Table I-29).

**Table I-29: Number of Buses and Vans Needed by Route (by headway)**

| # of Vehicles Needed by Route | 120 minutes | 60 minutes | 30 minutes |
|-------------------------------|-------------|------------|------------|
| Yellow Route - Buses          | 5           | 9          | 17         |
| Southern Route - Vans         | 4           | 8          | 15         |

Table I-30 shows the number of buses that must be purchased to operate Option C in the medium term. Since there are 2 existing MCTA buses and between 3 and 15 buses were purchased in the short term, no additional buses are required.

**Table I-30: Number of Buses to Purchase (by headway)**

| # of Buses to Purchase                  | 120 minutes | 60 minutes | 30 minutes |
|---|-------------|------------|------------|
| # of Buses Needed                       | 5           | 9          | 17         |
| <i>minus</i> Existing MCTA Buses        | 2           | 2          | 2          |
| <i>minus</i> Previously Purchased Buses | 3           | 7          | 15         |
| Total                                   | 0           | 0          | 0          |

Table I-31 shows the number of vans that must be purchased to operate Option C in the medium term. Since between 3 and 8 vans were purchased in the short term, between 1 and 7 vans must be purchased.

**Table I-31: Number of Vans to Purchase (by headway)**

| # of Vans to Purchase                  | 120 minutes | 60 minutes | 30 minutes |
|--|-------------|------------|------------|
| # of Vans Needed                       | 4           | 8          | 15         |
| <i>minus</i> Previously Purchased Vans | 3           | 4          | 8          |
| Total                                  | 1           | 4          | 7          |

The cost of purchasing these buses and vans ranges from \$50,000 to \$350,000 to operate Option C in the medium term (Table I-32).

**Table I-32: Capital Cost of Buses and Vans (by headway)**

| Capital Cost of Vehicles | 120 minutes | 60 minutes | 30 minutes |
|--------------------------|-------------|------------|------------|
| # of Vans to Purchase    | 1           | 4          | 7          |
| Cost per Van             | \$50,000    | \$50,000   | \$50,000   |
| # of Buses to Purchase   | 0           | 0          | 0          |
| Cost per Bus             | \$250,000   | \$250,000  | \$250,000  |
| Total                    | \$50,000    | \$200,000  | \$350,000  |

### I.5.3 Transit Vehicle Costs for Option C in the Long Term

Between 5 and 17 buses and between 5 and 20 vans are required during peak periods to operate Option C in the long term (Table I-33).

**Table I-33: Number of Buses and Vans Needed by Route (by headway)**

| # of Vehicles Needed by Route | 120 minutes | 60 minutes | 30 minutes |
|-------------------------------|-------------|------------|------------|
| Yellow Route - Buses          | 5           | 9          | 17         |
| Southern Route - Vans         | 5           | 10         | 20         |

Table I-34 shows the number of buses that must be purchased to operate Option C in the long term. Since there are 2 existing MCTA buses and between 3 and 15 buses were purchased in the short term, no additional buses are required.

**Table I-34: Number of Buses to Purchase (by headway)**

| # of Buses to Purchase                  | 120 minutes | 60 minutes | 30 minutes |
|---|-------------|------------|------------|
| # of Buses Needed                       | 5           | 9          | 17         |
| <i>minus</i> Existing MCTA Buses        | 2           | 2          | 2          |
| <i>minus</i> Previously Purchased Buses | 3           | 7          | 15         |
| Total                                   | 0           | 0          | 0          |

Table I-35 shows the number of vans that must be purchased to operate Option C in the long term. Since between 4 and 15 vans were purchased in the short and medium terms, between 1 and 5 vans must be purchased.

**Table I-35: Number of Vans to Purchase (by headway)**

| # of Vans to Purchase     | 120 minutes | 60 minutes | 30 minutes |
|---------------------------|-------------|------------|------------|
| # of Vans Needed          | 5           | 10         | 20         |
| Previously Purchased Vans | 4           | 8          | 15         |
| Total                     | 1           | 2          | 5          |

The cost of purchasing these buses and vans ranges from \$50,000 to \$250,000 to operate Option C in the long term (Table I-36).

**Table I-36: Capital Cost of Vans and Buses (by headway)**

| Capital Cost of Vehicles | 120 minutes | 60 minutes | 30 minutes |
|--------------------------|-------------|------------|------------|
| # of Vans to Purchase    | 1           | 2          | 5          |
| Cost per Van             | \$50,000    | \$50,000   | \$50,000   |
| # of Buses to Purchase   | 0           | 0          | 0          |
| Cost per Bus             | \$250,000   | \$250,000  | \$250,000  |
| Total                    | \$50,000    | \$100,000  | \$250,000  |



## Appendix J: Transit Operating and Maintenance Costs

This appendix provides details on the annual operating and maintenance (O&M) costs of the transit components of the five candidate transportation options, identified in the main report. Costs were identified for the short term (0-2 years), medium term (0-5 years), and long term (0-20 years), and are shown in 2008 dollars. They were calculated using a three-step process:

- 1. Calculate the Number of Runs per Year**

For each season (high, shoulder, and low), the number of hours of transit service provided each day (i.e. the service span) was first divided by the headway (in hours) and increased by one. These calculations assume that transit service will be provided 14 hours per day during the high season, 10 hours per day during the shoulder season, and 8 hours per day during the low season. For example, a service span of 14 hours and a one-hour headway would result in 15 runs per day. The number of runs per day was then multiplied by the number of days per season to determine the number of runs per season. The number of runs per year was then calculated by summing the number of runs during each of the seasons. The number of runs per season is identical for each route for all transportation options. Table J-1 shows that the number of runs per year ranges from 2,299 (120-minute headway) to 8,107 (30-minute headway).

- 2. Calculate the Number of Runs per Year**

The number of runs during the high, shoulder, and low seasons were summed.

- 3. Calculate the Number of Revenue Hours per Year**

The number of runs per year was multiplied by the route travel time. The travel time for each route was calculated by dividing the route length by an assumed average speed (15 mph) and then adding in additional time to account for layover time and makeup time.

- 4. Calculate the O&M Cost per Year**

The number of revenue hours per year was multiplied by an O&M cost per revenue hour. The O&M cost per revenue hour was assumed to be \$80, and was based on cost information provided by the Monroe County Transportation Authority to operate the Yellow Route.

**Table J-1: Annual Number of Runs for Yellow Route (by headway)**

| <b>Season</b>                   | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|---------------------------------|--------------------|-------------------|-------------------|
| <b>High Season</b>              |                    |                   |                   |
| Service Span (hours)            | 14                 | 14                | 14                |
| # of Runs per Day               | 8                  | 15                | 29                |
| # of Days per Season            | 121                | 121               | 121               |
| # of Runs per Season            | 968                | 1,815             | 3,509             |
| <b>Shoulder Season</b>          |                    |                   |                   |
| Service Span (hours)            | 10                 | 10                | 10                |
| # of Runs per Day               | 6                  | 11                | 21                |
| # of Days per Season            | 121                | 121               | 121               |
| # of Runs per Season            | 726                | 1,331             | 2,541             |
| <b>Low Season</b>               |                    |                   |                   |
| Service Span (hours)            | 8                  | 8                 | 8                 |
| # of Runs per Day               | 5                  | 9                 | 17                |
| # of Days per Season            | 121                | 121               | 121               |
| # of Runs per Season            | 605                | 1,089             | 2,057             |
| <b>Total # of Runs per Year</b> | <b>8,107</b>       | <b>2,299</b>      | <b>4,235</b>      |

Step 2, 3, and 4 are calculated individually for each transportation option in the following sections.

## J.1 Annual Operating and Maintenance for Option A1

This section calculates O&M costs for Option A1 in the short, medium, and long terms. It uses the three-step methodology discussed at the beginning of this appendix. For each phase, a range of costs are provided for 30, 60, and 120 minute headways.

### J.1.1 Short-Term O&M Costs

To calculate short-term annual O&M costs for Option A1, it is first necessary to determine the annual O&M costs for both the Yellow Route and the River Road Route. Table J-2 shows that short-term annual O&M costs for the Yellow Route range from \$736,000 (120-minute headway) to \$2,270,000 (30-minute headway) per year.

**Table J-2: Annual Operating Cost for Yellow Route (by headway)**

|                          | 120 minutes | 60 minutes  | 30 minutes  |
|--------------------------|-------------|-------------|-------------|
| Total # of Runs per Year | 2,299       | 4,235       | 8,107       |
| Revenue Hours per Run    | 4.00        | 4.00        | 3.50        |
| Revenue Hours per Year   | 9,196       | 16,940      | 28,375      |
| Cost per Revenue Hour    | \$80        | \$80        | \$80        |
| Operating Cost per Year  | \$736,000   | \$1,355,000 | \$2,270,000 |

Table J-3 shows that short-term annual O&M costs for the River Road Route range from \$368,000 (120-minute headway) to \$1,297,000 (30-minute headway) per year.

**Table J-3: Annual Operating Cost for River Road Route (by headway)**

|                          | 120 minutes | 60 minutes | 30 minutes  |
|--------------------------|-------------|------------|-------------|
| Total # of Runs per Year | 2,299       | 4,235      | 8,107       |
| Revenue Hours per Run    | 2.00        | 2.00       | 2.00        |
| Revenue Hours per Year   | 4,598       | 8,470      | 16,214      |
| Cost per Revenue Hour    | \$80        | \$80       | \$80        |
| Operating Cost per Year  | \$368,000   | \$678,000  | \$1,297,000 |

Total short-term annual O&M costs for Option A1 are summarized in Table J-4. They include the cost of the Yellow Route and the River Road Route and range from \$1,104,000 (120-minute headway) to \$3,567,000 (30-minute headway) per year.

**Table J-4: Annual O&M Costs for Option A1 (by headway)**

| O&M Costs per Route   | 120 minutes | 60 minutes  | 30 minutes  |
|-----------------------|-------------|-------------|-------------|
| Yellow Route          | \$736,000   | \$1,355,000 | \$2,270,000 |
| River Road Route      | \$368,000   | \$678,000   | \$1,297,000 |
| Total Annual O&M Cost | \$1,104,000 | \$2,033,000 | \$3,567,000 |

Of the total short-term annual O&M costs for Option A1, \$250,000 represents the estimated annual O&M cost of the existing MCTA Yellow Route. Therefore, as shown

in Table J-5, the total O&M costs for DEWA in the short term range from \$854,000 (120-minute headway) to \$3,317,000 (30-minute headway) per year.

**Table J-5: Allocation of Annual O&M Costs for Option A1 (by headway)**

| <b>Annual O&amp;M Costs</b> | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|-----------------------------|--------------------|-------------------|-------------------|
| Total Annual O&M            | \$1,104,000        | \$2,033,000       | \$3,567,000       |
| MCTA Portion                | (\$250,000)        | (\$250,000)       | (\$250,000)       |
| DEWA Portion                | \$854,000          | \$1,783,000       | \$3,317,000       |

### J.1.2 Medium-Term O&M Costs

Since no additional transit service is recommended for Option A1 in the medium term, the annual O&M costs in the medium term are the same as in the short term.

### J.1.3 Long-Term O&M Costs

To calculate long-term annual O&M costs for Option A1, it is first necessary to determine the annual O&M costs for both the Yellow Route and the River Road Route. Table J-6 shows that long-term annual O&M costs for the Yellow Route range from \$920,000 (120-minute headway) to \$3,243,000 (30-minute headway) per year.

**Table J-6: Annual Operating Cost for Yellow Route (by headway)**

|                          | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|--------------------------|--------------------|-------------------|-------------------|
| Total # of Runs per Year | 2,299              | 4,235             | 8,107             |
| Revenue Hours per Run    | 5.00               | 5.00              | 5.00              |
| Revenue Hours per Year   | 11,495             | 21,175            | 40,535            |
| Cost per Revenue Hour    | \$80               | \$80              | \$80              |
| Operating Cost per Year  | \$920,000          | \$1,694,000       | \$3,243,000       |

Table J-7 shows that long-term annual O&M costs for the River Road Route are unchanged from the short term and range from \$368,000 (120-minute headway) to \$1,297,000 (30-minute headway) per year.

**Table J-7: Annual Operating Cost for River Road Route (by headway)**

|                          | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|--------------------------|--------------------|-------------------|-------------------|
| Total # of Runs per Year | 2,299              | 4,235             | 8,107             |
| Revenue Hours per Run    | 2.00               | 2.00              | 2.00              |
| Revenue Hours per Year   | 4,598              | 8,470             | 16,214            |
| Cost per Revenue Hour    | \$80               | \$80              | \$80              |
| Operating Cost per Year  | \$368,000          | \$678,000         | \$1,297,000       |

Total annual long-term O&M costs for Option A1 are summarized in Table J-8. They include the cost of the Yellow Route and the River Road Route and range from \$1,288,000 (120-minute headway) to \$4,540,000 (30-minute headway) per year.

**Table J-8: Annual O&M Costs for Option A1 (by headway)**

| <b>O&amp;M Costs per Route</b> | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|--------------------------------|--------------------|-------------------|-------------------|
| Yellow Route                   | \$920,000          | \$1,694,000       | \$3,243,000       |
| River Road Route               | \$368,000          | \$678,000         | \$1,297,000       |
| Total Annual O&M Cost          | \$1,288,000        | \$2,372,000       | \$4,540,000       |

Of the total long-term annual O&M costs for Option A1, \$250,000 represents the estimated annual O&M cost of the existing MCTA Yellow Route. Therefore, as shown in Table J-9, the total long-term annual O&M costs for DEWA range from \$1,038,000 (120-minute headway) to \$4,290,000 (30-minute headway) per year.

**Table J-9: Allocation of Annual O&M Costs for Option A1 (by headway)**

| <b>Annual O&amp;M Costs</b> | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|-----------------------------|--------------------|-------------------|-------------------|
| Total Annual O&M            | \$1,288,000        | \$2,372,000       | \$4,540,000       |
| MCTA Portion                | (\$250,000)        | (\$250,000)       | (\$250,000)       |
| DEWA Portion                | \$1,038,000        | \$2,122,000       | \$4,290,000       |

## J.2 Annual Operating and Maintenance for Option A2

This section calculates O&M costs for Option A2 in the short, medium, and long terms. It uses the three-step methodology discussed at the beginning of this appendix. For each phase, a range of costs are provided for 30, 60, and 120 minute headways.

### J.2.1 Short-Term O&M Costs

Table J-10 shows that short-term annual O&M costs for the Milford Route ranges from \$368,000 (120-minute headway) to \$1,297,000 (30-minute headway) per year.

**Table J-10: Annual Operating Cost for the Milford Route (by headway)**

|                          | 120 minutes | 60 minutes | 30 minutes  |
|--------------------------|-------------|------------|-------------|
| Total # of Runs per Year | 2,299       | 4,235      | 8,107       |
| Revenue Hours per Run    | 2.00        | 2.00       | 2.00        |
| Revenue Hours per Year   | 4,598       | 8,470      | 16,214      |
| Cost per Revenue Hour    | \$80        | \$80       | \$80        |
| Operating Cost per Year  | \$368,000   | \$678,000  | \$1,297,000 |

### J.2.2 Medium-Term O&M Costs

Table J-11 shows that medium-term annual O&M costs for the Milford Route ranges from \$736,000 (120-minute headway) to \$2,270,000 (30-minute headway) per year.

**Table J-11: Annual Operating Cost for the Milford Route (by headway)**

|                          | 120 minutes | 60 minutes  | 30 minutes  |
|--------------------------|-------------|-------------|-------------|
| Total # of Runs per Year | 2,299       | 4,235       | 8,107       |
| Revenue Hours per Run    | 4.00        | 4.00        | 3.50        |
| Revenue Hours per Year   | 9,196       | 16,940      | 28,375      |
| Cost per Revenue Hour    | \$80        | \$80        | \$80        |
| Operating Cost per Year  | \$736,000   | \$1,355,000 | \$2,270,000 |

### J.2.3 Long-Term O&M Costs

Since no additional transit service is recommended for Option A2 in the long term, the annual O&M costs in the long term are the same as in the medium term.

### J.3 Annual Operating and Maintenance for Option A3

This section calculates O&M costs for Option A3 in the short, medium, and long terms. It uses the three-step methodology discussed at the beginning of this appendix. For each phase, a range of costs are provided for 30, 60, and 120 minute headways.

#### J.3.1 Short-Term O&M Costs

Total short-term O&M costs for Option A3 are summarized in Table J-12. They include the cost of the Yellow Route, the River Road Route, and the Milford Route and range from \$1,472,000 (120-minute headway) to \$4,864,000 (30-minute headway) per year.

**Table J-12: Annual O&M Costs for Option A3 (by headway)**

| Route            | 120 minutes | 60 minutes  | 30 minutes  |
|------------------|-------------|-------------|-------------|
| Yellow Route     | \$736,000   | \$1,355,000 | \$2,270,000 |
| River Road Route | \$368,000   | \$678,000   | \$1,297,000 |
| Milford Route    | \$368,000   | \$678,000   | \$1,297,000 |
| Total            | \$1,472,000 | \$2,711,000 | \$4,864,000 |

Of the total short-term annual O&M costs for Option A3, \$250,000 represents the estimated annual O&M cost of the existing MCTA Yellow Route. Therefore, as shown in Table J-13, the total O&M costs for DEWA in the short term range from \$1,222,000 (120-minute headway) to \$4,614,000 (30-minute headway) per year.

**Table J-13: Allocation of Annual O&M Costs for Option A3 (by headway)**

| Annual O&M Costs | 120 minutes | 60 minutes  | 30 minutes  |
|------------------|-------------|-------------|-------------|
| Total Annual O&M | \$1,472,000 | \$2,711,000 | \$4,864,000 |
| MCTA Portion     | (\$250,000) | (\$250,000) | (\$250,000) |
| DEWA Portion     | \$1,222,000 | \$2,461,000 | \$4,614,000 |

#### J.3.2 Medium-Term O&M Costs

Total medium-term annual O&M costs for Option A3 are summarized in Table J-14. They include the cost of the Yellow Route, the River Road Route, and the Milford Route and range from \$1,840,000 (120-minute headway) to \$5,837,000 (30-minute headway) per year.

**Table J-14: Annual O&M Costs for Option A3 (by headway)**

| Route            | 120 minutes | 60 minutes  | 30 minutes  |
|------------------|-------------|-------------|-------------|
| Yellow Route     | \$736,000   | \$1,355,000 | \$2,270,000 |
| River Road Route | \$368,000   | \$678,000   | \$1,297,000 |
| Milford Route    | \$736,000   | \$1,355,000 | \$2,270,000 |
| Total            | \$1,840,000 | \$3,388,000 | \$5,837,000 |

Of the total medium-term annual O&M costs for Option A3, \$250,000 represents the estimated annual O&M cost of the existing MCTA Yellow Route. Therefore, as shown in Table J-15, the total O&M costs for DEWA in the medium term range from \$1,590,000 (120-minute headway) to \$5,587,000 (30-minute headway) per year.

**Table J-15: Allocation of Annual O&M Costs for Option A3 (by headway)**

| <b>Annual O&amp;M Costs</b> | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|-----------------------------|--------------------|-------------------|-------------------|
| Total Annual O&M            | \$1,840,000        | \$3,388,000       | \$5,837,000       |
| MCTA Portion                | (\$250,000)        | (\$250,000)       | (\$250,000)       |
| DEWA Portion                | \$1,590,000        | \$3,138,000       | \$5,587,000       |

### J.3.3 Long-Term O&M Costs

Total long-term O&M costs for Option A3 are summarized in Table J-16. They include the cost of the Yellow Route, the River Road Route, and the Milford Route and range from \$1,839,000 (120-minute headway) to \$6,161,000 (30-minute headway) per year.

**Table J-16: Annual O&M Costs for Option A3 (by headway)**

| <b>Route</b>     | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|------------------|--------------------|-------------------|-------------------|
| Yellow Route     | \$1,471,000        | \$2,710,000       | \$4,864,000       |
| River Road Route | \$368,000          | \$678,000         | \$1,297,000       |
| Total            | \$1,839,000        | \$3,388,000       | \$6,161,000       |

Of the total long-term annual O&M costs for Option A3, \$250,000 represents the estimated annual O&M cost of the existing MCTA Yellow Route. Therefore, as shown in Table J-17, the total O&M costs for DEWA in the long term range from \$1,589,000 (120-minute headway) to \$5,911,000 (30-minute headway).

**Table J-17: Allocation of Annual O&M Costs for Option A3 (by headway)**

| <b>Annual O&amp;M Costs</b> | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|-----------------------------|--------------------|-------------------|-------------------|
| Total Annual O&M            | \$1,839,000        | \$3,388,000       | \$6,161,000       |
| MCTA Portion                | (\$250,000)        | (\$250,000)       | (\$250,000)       |
| DEWA Portion                | \$1,589,000        | \$3,138,000       | \$5,911,000       |



## J.4 Annual Operating and Maintenance for Option B

This section calculates O&M costs for Option B in the short, medium, and long terms. It uses the three-step methodology discussed at the beginning of this appendix. For each phase, a range of costs are provided for 30, 60, and 120 minute headways.

### J.4.1 Short-Term O&M Costs

Table J-18 shows that the short-term annual O&M costs for the Southern Route ranges from \$552,000 (120-minute headway) to \$1,946,000 (30-minute headway) per year.

**Table J-18: Annual Operating Costs for Southern Route (by headway)**

|                          | 120 minutes | 60 minutes  | 30 minutes  |
|--------------------------|-------------|-------------|-------------|
| Total # of Runs per Year | 2,299       | 4,235       | 8,107       |
| Revenue Hours per Run    | 3.00        | 3.00        | 3.00        |
| Revenue Hours per Year   | 6,897       | 12,705      | 24,321      |
| Cost per Revenue Hour    | \$80        | \$80        | \$80        |
| Operating Cost per Year  | \$552,000   | \$1,016,000 | \$1,946,000 |

### J.4.2 Medium-Term O&M Costs

To calculate medium-term annual O&M costs for Option B, it is first necessary to determine the annual O&M costs for both the Southern Route and the Milford Route. Table J-19 shows that the medium-term annual O&M costs for the Southern Route range from \$552,000 (120-minute headway) to \$1,946,000 (30-minute headway) per year.

**Table J-19: Annual Operating Cost for Southern Route (by headway)**

|                          | 120 minutes | 60 minutes  | 30 minutes  |
|--------------------------|-------------|-------------|-------------|
| Total # of Runs per Year | 2,299       | 4,235       | 8,107       |
| Revenue Hours per Run    | 3.00        | 3.00        | 3.00        |
| Revenue Hours per Year   | 6,897       | 12,705      | 24,321      |
| Cost per Revenue Hour    | \$80        | \$80        | \$80        |
| Operating Cost per Year  | \$552,000   | \$1,016,000 | \$1,946,000 |

Table J-20 shows that the medium-term annual O&M costs for the Milford Route range from \$460,000 (120-minute headway) to \$1,621,000 (30-minute headway) per year.

**Table J-20: Annual Operating Cost for Milford Route (by headway)**

|                          | 120 minutes | 60 minutes | 30 minutes  |
|--------------------------|-------------|------------|-------------|
| Total # of Runs per Year | 2,299       | 4,235      | 8,107       |
| Revenue Hours per Run    | 2.50        | 2.50       | 2.50        |
| Revenue Hours per Year   | 5,748       | 10,588     | 20,268      |
| Cost per Revenue Hour    | \$80        | \$80       | \$80        |
| Operating Cost per Year  | \$460,000   | \$847,000  | \$1,621,000 |

Total medium-term O&M costs for Option B are summarized in Table J-21. They include the cost of the Southern Route and the Milford Road Route and range from \$1,012,000 (120-minute headway) to \$3,567,000 (30-minute headway) per year.

**Table J-21: Annual O&M Costs for Option B (by headway)**

| <b>O&amp;M Costs per Route</b> | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|--------------------------------|--------------------|-------------------|-------------------|
| Southern Route                 | \$552,000          | \$1,016,000       | \$1,946,000       |
| Milford Route                  | \$460,000          | \$847,000         | \$1,621,000       |
| Total Annual O&M Cost          | \$1,012,000        | \$1,863,000       | \$3,567,000       |

### J.4.3 Long-Term O&M Costs

To calculate long-term annual O&M costs for Option B, it is first necessary to determine the annual O&M costs for both the Park Loop Route and the Park Loop Reverse Route. Table J-22 shows that the long-term annual O&M costs for the Park Loop Route range from \$1,104,000 (120-minute headway) to \$3,891,000 (30-minute headway) per year.

**Table J-22: Annual Operating Cost for Park Loop Route (by headway)**

|                          | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|--------------------------|--------------------|-------------------|-------------------|
| Total # of Runs per Year | 2,299              | 4,235             | 8,107             |
| Revenue Hours per Run    | 6.00               | 6.00              | 6.00              |
| Revenue Hours per Year   | 13,794             | 25,410            | 48,642            |
| Cost per Revenue Hour    | \$80               | \$80              | \$80              |
| Operating Cost per Year  | \$1,104,000        | \$2,033,000       | \$3,891,000       |

Table J-23 shows that the long-term annual O&M costs for the Park Loop Reverse Route range from \$1,104,000 (120-minute headway) to \$3,891,000 (30-minute headway) per year.

**Table J-23: Annual Operating Cost for Park Loop Reverse Route (by headway)**

|                          | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|--------------------------|--------------------|-------------------|-------------------|
| Total # of Runs per Year | 2,299              | 4,235             | 8,107             |
| Revenue Hours per Run    | 6.00               | 6.00              | 6.00              |
| Revenue Hours per Year   | 13,794             | 25,410            | 48,642            |
| Cost per Revenue Hour    | \$80               | \$80              | \$80              |
| Operating Cost per Year  | \$1,104,000        | \$2,033,000       | \$3,891,000       |

Total long-term annual O&M costs for Option B are summarized in Table J-24. They include the cost of the Park Loop Route and the Park Loop Reverse Route and range from \$2,208,000 (120-minute headway) to \$7,782,000 (30-minute headway) per year.

**Table J-24: Annual O&M Costs for Option B (by headway)**

| <b>O&amp;M Costs per Route</b> | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|--------------------------------|--------------------|-------------------|-------------------|
| Park Loop Route                | \$1,104,000        | \$2,033,000       | \$3,891,000       |
| Reverse Park Loop Route        | \$1,104,000        | \$2,033,000       | \$3,891,000       |
| Total Annual O&M Cost          | \$2,208,000        | \$4,066,000       | \$7,782,000       |

## J.5 Annual Operating and Maintenance for Option C

This section calculates O&M costs for Option C in the short, medium, and long terms. It uses the three-step methodology discussed at the beginning of this appendix. For each phase, a range of costs are provided for 30, 60, and 120 minute headways.

### J.5.1 Short-Term O&M Costs

To calculate short-term annual O&M costs for Option C, it is first necessary to determine the annual O&M costs for both the Southern Route and the Yellow Route. Table J-25 shows that the short-term annual O&M costs for the Southern Route range from \$552,000 (120-minute headway) to \$1,946,000 (30-minute headway) per year.

**Table J-25: Annual Operating Cost for Southern Route (by headway)**

|                          | 120 minutes | 60 minutes  | 30 minutes  |
|--------------------------|-------------|-------------|-------------|
| Total # of Runs per Year | 2,299       | 4,235       | 8,107       |
| Revenue Hours per Run    | 3.00        | 3.00        | 3.00        |
| Revenue Hours per Year   | 6,897       | 12,705      | 24,321      |
| Cost per Revenue Hour    | \$80        | \$80        | \$80        |
| Operating Cost per Year  | \$552,000   | \$1,016,000 | \$1,946,000 |

Table J-26 shows that the short-term annual O&M costs for the Yellow Route range from \$1,287,000 (120-minute headway) to \$4,540,000 (30-minute headway) per year.

**Table J-26: Annual Operating Cost for Yellow Route (by headway)**

|                          | 120 minutes | 60 minutes  | 30 minutes  |
|--------------------------|-------------|-------------|-------------|
| Total # of Runs per Year | 2,299       | 4,235       | 8,107       |
| Revenue Hours per Run    | 7.00        | 7.00        | 7.00        |
| Revenue Hours per Year   | 16,093      | 29,645      | 56,749      |
| Cost per Revenue Hour    | \$80        | \$80        | \$80        |
| Operating Cost per Year  | \$1,287,000 | \$2,372,000 | \$4,540,000 |

Total short-term O&M costs for Option C are summarized in Table J-27. They include the cost of the Southern Route and the Yellow Road Route and range from \$1,839,000 (120-minute headway) to \$6,486,000 (30-minute headway) per year.

**Table J-27: Annual O&M Costs for Option C (by headway)**

| O&M Costs per Route   | 120 minutes | 60 minutes  | 30 minutes  |
|-----------------------|-------------|-------------|-------------|
| Southern Route        | \$552,000   | \$1,016,000 | \$1,946,000 |
| Yellow Route          | \$1,287,000 | \$2,372,000 | \$4,540,000 |
| Total Annual O&M Cost | \$1,839,000 | \$3,388,000 | \$6,486,000 |

Of the total O&M costs for Option C in the short term, \$250,000 represents the estimated annual O&M cost of the existing MCTA Yellow Route. Therefore, as shown

in Table J-28, the total O&M costs for DEWA in the short term range from \$1,589,000 (120-minute headway) to \$6,236,000 (30-minute headway) per year.

**Table J-28: Allocation of Annual O&M Costs for Option C (by headway)**

| <b>Annual O&amp;M Costs</b> | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|-----------------------------|--------------------|-------------------|-------------------|
| Total Annual O&M            | \$1,839,000        | \$3,388,000       | \$6,486,000       |
| MCTA Portion                | (\$250,000)        | (\$250,000)       | (\$250,000)       |
| DEWA Portion                | \$1,589,000        | \$3,138,000       | \$6,236,000       |

## J.5.2 Medium-Term O&M Costs

To calculate annual O&M costs for Option C in the medium term, it is first necessary to determine the annual O&M costs for both the Southern Route and the Yellow Route. Table J-29 shows that the medium-term annual O&M costs for the Southern Route range from \$1,104,000 (120-minute headway) to \$3,891,000 (30-minute headway) per year.

**Table J-29: Annual Operating Cost for Southern Route (by headway)**

|                          | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|--------------------------|--------------------|-------------------|-------------------|
| Total # of Runs per Year | 2,299              | 4,235             | 8,107             |
| Revenue Hours per Run    | 6.00               | 6.00              | 6.00              |
| Revenue Hours per Year   | 13,794             | 25,410            | 48,642            |
| Cost per Revenue Hour    | \$80               | \$80              | \$80              |
| Operating Cost per Year  | \$1,104,000        | \$2,033,000       | \$3,891,000       |

Table J-30 shows that the medium-term annual O&M costs for the Yellow Route range from \$1,287,000 (120-minute headway) to \$4,540,000 (30-minute headway) per year.

**Table J-30: Annual Operating Cost for Yellow Route (by headway)**

|                          | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|--------------------------|--------------------|-------------------|-------------------|
| Total # of Runs per Year | 2,299              | 4,235             | 8,107             |
| Revenue Hours per Run    | 7.00               | 7.00              | 7.00              |
| Revenue Hours per Year   | 16,093             | 29,645            | 56,749            |
| Cost per Revenue Hour    | \$80               | \$80              | \$80              |
| Operating Cost per Year  | \$1,287,000        | \$2,372,000       | \$4,540,000       |

Total medium-term O&M costs for Option C are summarized in Table J-31. They include the cost of the Southern Route and the Yellow Road Route and range from \$2,391,000 (120-minute headway) to \$8,431,000 (30-minute headway) per year.

**Table J-31: Annual O&M Costs for Option C (by headway)**

| <b>O&amp;M Costs per Route</b> | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|--------------------------------|--------------------|-------------------|-------------------|
| Southern Loop                  | \$1,104,000        | \$2,033,000       | \$3,891,000       |
| Yellow Route                   | \$1,287,000        | \$2,372,000       | \$4,540,000       |
| Total Annual O&M Cost          | \$2,391,000        | \$4,405,000       | \$8,431,000       |

Of the total medium-term annual O&M costs for Option A3, \$250,000 represents the estimated annual O&M cost of the existing MCTA Yellow Route. Therefore, as shown in Table J-32, the total O&M costs for DEWA in the medium term range from \$2,141,000 (120-minute headway) to \$8,181,000 (30-minute headway) per year.

**Table J-32: Allocation of Annual O&M Costs for Option C (by headway)**

| <b>Annual O&amp;M Costs</b> | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|-----------------------------|--------------------|-------------------|-------------------|
| Total Annual O&M            | \$2,391,000        | \$4,405,000       | \$8,431,000       |
| MCTA Portion                | (\$250,000)        | (\$250,000)       | (\$250,000)       |
| DEWA Portion                | \$2,141,000        | \$4,155,000       | \$8,181,000       |

### J.5.3 Long-Term O&M Costs

To calculate annual O&M costs for Option C in the long term, it is first necessary to determine the annual O&M costs for both the Southern Route and the Yellow Route. Table J-33 shows that the long-term annual O&M costs for the Southern Route range from \$1,471,000 (120-minute headway) to \$5,188,000 (30-minute headway) per year.

**Table J-33: Annual Operating Cost for Southern Route (by headway)**

|                          | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|--------------------------|--------------------|-------------------|-------------------|
| Total # of Runs per Year | 2,299              | 4,235             | 8,107             |
| Revenue Hours per Run    | 8.00               | 8.00              | 8.00              |
| Revenue Hours per Year   | 18,392             | 33,880            | 64,856            |
| Cost per Revenue Hour    | \$80               | \$80              | \$80              |
| Operating Cost per Year  | \$1,471,000        | \$2,710,000       | \$5,188,000       |

Table J-34 shows that the long-term annual O&M costs for the Yellow Route range from \$1,287,000 (120-minute headway) to \$4,540,000 (30-minute headway) per year.

**Table J-34: Annual Operating Cost for Yellow Route (by headway)**

|                          | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|--------------------------|--------------------|-------------------|-------------------|
| Total # of Runs per Year | 2,299              | 4,235             | 8,107             |
| Revenue Hours per Run    | 7.00               | 7.00              | 7.00              |
| Revenue Hours per Year   | 16,093             | 29,645            | 56,749            |
| Cost per Revenue Hour    | \$80               | \$80              | \$80              |
| Operating Cost per Year  | \$1,287,000        | \$2,372,000       | \$4,540,000       |

Total long-term annual O&M costs for Option C are summarized in Table J-35. They include the cost of the Southern Route and the Yellow Route and range from \$2,758,000 (120-minute headway) to \$9,728,000 (30-minute headway) per year.

**Table J-35: Annual O&M Costs for Option C (by headway)**

| <b>O&amp;M Costs per Route</b> | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|--------------------------------|--------------------|-------------------|-------------------|
| Southern Route                 | \$1,471,000        | \$2,710,000       | \$5,188,000       |
| Yellow Route                   | \$1,287,000        | \$2,372,000       | \$4,540,000       |
| Total Annual O&M Cost          | \$2,758,000        | \$5,082,000       | \$9,728,000       |

Of the total annual O&M costs for Option A3 in the long term, \$250,000 represents the estimated annual O&M cost of the existing MCTA Yellow Route. Therefore, as shown in Table J-36, the total annual O&M costs for DEWA in the long term range from \$2,508,000 (120-minute headway) to \$9,478,000 (30-minute headway) per year.

**Table J-36: Allocation of Annual O&M Costs for Option C (by headway)**

| <b>Annual O&amp;M Costs</b> | <b>120 minutes</b> | <b>60 minutes</b> | <b>30 minutes</b> |
|-----------------------------|--------------------|-------------------|-------------------|
| Total Annual O&M            | \$2,758,000        | \$5,082,000       | \$9,728,000       |
| MCTA Portion                | (\$250,000)        | (\$250,000)       | (\$250,000)       |
| DEWA Portion                | \$2,508,000        | \$4,832,000       | \$9,478,000       |

## Appendix K: Evaluation

This appendix presents a detailed evaluation of each criterion identified in the main report and repeated below. It identifies the methodology and then shows the resulting calculations.

Goal 1 is to enhance and diversify recreational opportunities for more people. Three criteria were defined for this goal:

- Criterion 1.1: Ability to increase and disperse visitation to different park sites/resources without increasing # of vehicles on public roads
- Criterion 1.2: Ability to increase use of the park's trail system
- Criterion 1.3: Scalable to ridership expectations

Goal 2 is to address parking, safety, and congestion issues. Three criteria were defined for this goal:

- Criterion 2.1: Facilitates safer crossings at major roadways
- Criterion 2.2: Ability to improve access to park resources without dramatically increasing parking areas
- Criterion 2.3: Ability to reduce vehicle miles traveled per visitor throughout the park

Goal 3 is to improve integration of park with surrounding resources and gateway communities. Two criteria were defined for this goal:

- Criterion 3.1: Ability to integrate park and gateway communities
- Criterion 3.2: Ability to connect with public lands and surrounding resources

Goal 4 is to promote healthy parks and healthy living. Six criteria were defined for this goal and are organized into two categories:

- Protection of park resources
  - Criterion 4.1: Impact to sensitive cultural and historical resources
  - Criterion 4.2: Impact to sensitive ecological areas
  - Criterion 4.3: Footprint of the transportation system on park lands
- Encourage use of parks in a healthy way
  - Criterion 4.4: Encourages diverse populations to use park
  - Criterion 4.5: Ability to reduce vehicular emissions in the park and the surrounding communities
  - Criterion 4.6: Ability to encourage visitors to be physically active

Goal 5 is to identify opportunities for public-private partnerships. Three criteria were defined for this goal:

- Criterion 5.1: Ability to promote public-private partnership opportunities
- Criterion 5.2: Supports economic development of surrounding communities



**Criterion 1.1: Ability to increase and disperse visitation to different park sites/resources without increasing # of vehicles on public roads**

Methodology: Evaluated based on the number of connections that the transit system makes to: 1) visitor centers, 2) external resorts and gateway communities, and 2) other park destinations.

**Table K-1: # of Visitor Centers Connected to Transit System**

| Visitor Centers                 | Short Term |          |          |          |          | Medium Term |          |          |          |          | Long Term |          |          |          |          |
|---------------------------------|------------|----------|----------|----------|----------|-------------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|
|                                 | A1         | A2       | A3       | B        | C        | A1          | A2       | A3       | B        | C        | A1        | A2       | A3       | B        | C        |
| Kittatinny Point Visitor Center | 1          |          | 1        | 1        | 1        | 1           |          | 1        | 1        | 1        | 1         |          | 1        | 1        | 1        |
| Dingmans Falls VC               |            |          |          |          | 1        |             | 1        | 1        | 1        | 1        | 1         | 1        | 1        | 1        | 1        |
| Bushkill Visitor Center         | 1          |          | 1        | 1        | 1        | 1           |          | 1        | 1        | 1        | 1         |          | 1        | 1        | 1        |
| New Jersey Visitor Center       |            |          |          |          |          |             |          |          |          | 1        |           |          |          | 1        | 1        |
| Milford Visitor Center          |            | 1        | 1        |          | 1        |             | 1        | 1        | 1        | 1        |           | 1        | 1        | 1        | 1        |
| <b>Total</b>                    | <b>2</b>   | <b>1</b> | <b>3</b> | <b>2</b> | <b>4</b> | <b>2</b>    | <b>2</b> | <b>4</b> | <b>4</b> | <b>5</b> | <b>3</b>  | <b>2</b> | <b>4</b> | <b>5</b> | <b>5</b> |

**Table K-2: # of External Resorts and Gateway Communities Connected to the Transit System**

| External Resorts & Gateway Communities | Short Term |          |           |          |          | Medium Term |          |           |          |          | Long Term |          |           |          |           |
|--|------------|----------|-----------|----------|----------|-------------|----------|-----------|----------|----------|-----------|----------|-----------|----------|-----------|
|  | A1         | A2       | A3        | B        | C        | A1          | A2       | A3        | B        | C        | A1        | A2       | A3        | B        | C         |
| Stroudsburg                            | 1          |          | 1         |          | 1        | 1           |          | 1         |          | 1        | 1         |          | 1         |          | 1         |
| Delaware Water Gap Boro                | 1          |          | 1         | 1        | 1        | 1           |          | 1         | 1        | 1        | 1         |          | 1         | 1        | 1         |
| Marshalls Creek                        | 1          |          | 1         |          | 1        | 1           |          | 1         |          | 1        | 1         |          | 1         |          | 1         |
| Shawnee Resort                         | 1          |          | 1         | 1        | 1        | 1           |          | 1         | 1        | 1        | 1         |          | 1         | 1        | 1         |
| Fernwood Resort                        | 1          |          | 1         |          | 1        | 1           |          | 1         |          | 1        | 1         |          | 1         |          | 1         |
| Grey Towers                            |            | 1        | 1         |          |          |             | 1        | 1         | 1        |          |           | 1        | 1         | 1        | 1         |
| Cliff Park Inn                         |            | 1        | 1         |          |          |             | 1        | 1         | 1        |          |           | 1        | 1         | 1        | 1         |
| Keystone Welcome Center                |            | 1        | 1         |          | 1        |             | 1        | 1         |          | 1        |           | 1        | 1         |          | 1         |
| Matamoras                              |            | 1        | 1         |          | 1        |             | 1        | 1         |          | 1        |           | 1        | 1         |          | 1         |
| Port Jervis                            |            | 1        | 1         |          | 1        |             | 1        | 1         |          | 1        |           | 1        | 1         |          | 1         |
| <b>Total</b>                           | <b>5</b>   | <b>5</b> | <b>10</b> | <b>2</b> | <b>8</b> | <b>5</b>    | <b>5</b> | <b>10</b> | <b>4</b> | <b>8</b> | <b>5</b>  | <b>5</b> | <b>10</b> | <b>4</b> | <b>10</b> |

**Table K-3: # of Park Destinations Connected to Transit System**

| Park Destinations           | Short Term |          |           |          |           | Medium Term |          |           |           |           | Long Term |          |           |           |           |
|-----------------------------|------------|----------|-----------|----------|-----------|-------------|----------|-----------|-----------|-----------|-----------|----------|-----------|-----------|-----------|
|                             | A1         | A2       | A3        | B        | C         | A1          | A2       | A3        | B         | C         | A1        | A2       | A3        | B         | C         |
| Hialeah Picnic Area         | 1          |          | 1         | 1        | 1         | 1           |          | 1         | 1         | 1         | 1         |          | 1         | 1         | 1         |
| Smithfield Beach            | 1          |          | 1         | 1        | 1         | 1           |          | 1         | 1         | 1         | 1         |          | 1         | 1         | 1         |
| Additional Trailhead        | 1          |          | 1         | 1        | 1         | 1           |          | 1         | 1         | 1         | 1         |          | 1         | 1         | 1         |
| Additional Trailhead        | 1          |          | 1         | 1        | 1         | 1           |          | 1         | 1         | 1         | 1         |          | 1         | 1         | 1         |
| Park HQ                     | 1          |          | 1         | 1        | 1         | 1           |          | 1         | 1         | 1         | 1         |          | 1         | 1         | 1         |
| Bushkill Launch             | 1          |          | 1         |          | 1         | 1           |          | 1         |           | 1         | 1         |          | 1         | 1         | 1         |
| Toms Creek Trailhead        | 1          |          | 1         |          | 1         | 1           |          | 1         |           | 1         | 1         |          | 1         | 1         | 1         |
| Eshback Trailhead           | 1          |          | 1         |          | 1         | 1           |          | 1         |           | 1         | 1         |          | 1         | 1         | 1         |
| Additional Trailhead        | 1          |          | 1         |          | 1         | 1           |          | 1         |           | 1         | 1         |          | 1         | 1         | 1         |
| PEEC                        | 1          |          | 1         |          | 1         | 1           |          | 1         |           | 1         | 1         |          | 1         | 1         | 1         |
| Hornbeck Trailhead          |            |          |           |          | 1         |             |          |           |           | 1         | 1         |          | 1         | 1         | 1         |
| Dingmans Campground         |            |          |           |          | 1         |             | 1        | 1         | 1         | 1         | 1         | 1        | 1         | 1         | 1         |
| Dingmans Launch             |            |          |           |          | 1         |             | 1        | 1         | 1         | 1         | 1         | 1        | 1         | 1         | 1         |
| Adams Creek Trailhead       |            |          |           |          | 1         |             | 1        | 1         | 1         | 1         |           | 1        | 1         | 1         | 1         |
| Zimmerman Trailhead         |            |          |           |          | 1         |             | 1        | 1         | 1         | 1         |           | 1        | 1         | 1         | 1         |
| Additional Trailhead        |            |          |           |          | 1         |             | 1        | 1         | 1         | 1         |           | 1        | 1         | 1         | 1         |
| Milford Beach               |            | 1        | 1         |          | 1         |             | 1        | 1         | 1         | 1         |           | 1        | 1         | 1         | 1         |
| Cliff Park Trailhead        |            | 1        | 1         |          |           |             | 1        | 1         | 1         |           |           | 1        | 1         | 1         | 1         |
| Kaiser Trailhead            |            |          |           | 1        | 1         |             |          |           | 1         | 1         |           |          |           | 1         | 1         |
| Turtle Beach                |            |          |           | 1        | 1         |             |          |           | 1         | 1         |           |          |           | 1         | 1         |
| Coppermine Trailhead        |            |          |           |          |           |             |          |           |           | 1         |           |          |           | 1         | 1         |
| Poxono Access               |            |          |           |          |           |             |          |           |           | 1         |           |          |           | 1         | 1         |
| Van Campen Glen Picnic Area |            |          |           |          |           |             |          |           |           | 1         |           |          |           | 1         | 1         |
| Watergate                   |            |          |           |          |           |             |          |           |           | 1         |           |          |           | 1         | 1         |
| Millbrook Village           |            |          |           |          |           |             |          |           |           | 1         |           |          |           | 1         | 1         |
| Rivers Bend                 |            |          |           |          |           |             |          |           |           | 1         |           |          |           | 1         | 1         |
| Walpack Inn                 |            |          |           |          |           |             |          |           |           | 1         |           |          |           | 1         | 1         |
| Walpack Center              |            |          |           |          |           |             |          |           |           | 1         |           |          |           | 1         | 1         |
| Military Road Trailhead     |            |          |           |          |           |             |          |           |           | 1         |           |          |           | 1         | 1         |
| Peters Valley               |            |          |           |          |           |             |          |           |           | 1         |           |          |           | 1         | 1         |
| Old Mine Road Trailhead     |            |          |           |          |           |             |          |           |           |           |           |          |           |           | 1         |
| <b>Total</b>                | <b>10</b>  | <b>2</b> | <b>12</b> | <b>7</b> | <b>19</b> | <b>10</b>   | <b>7</b> | <b>17</b> | <b>14</b> | <b>29</b> | <b>13</b> | <b>7</b> | <b>18</b> | <b>30</b> | <b>31</b> |

**Criterion 1.2: Ability to increase use of park's trail system**

Methodology: Evaluated based on: 1) the number of bus stops at trailheads, and 2) the ability to establish one-way hiking and bicycling trips.

**Table K-4: # of Trailheads Connected to Transit System**

| Trailheads              | Short Term |          |          |          |           | Medium Term |          |          |          |           | Long Term |          |           |           |           |
|-------------------------|------------|----------|----------|----------|-----------|-------------|----------|----------|----------|-----------|-----------|----------|-----------|-----------|-----------|
|                         | A1         | A2       | A3       | B        | C         | A1          | A2       | A3       | B        | C         | A1        | A2       | A3        | B         | C         |
| Additional Trailhead    | 1          |          | 1        | 1        | 1         | 1           |          | 1        | 1        | 1         | 1         |          | 1         | 1         | 1         |
| Additional Trailhead    | 1          |          | 1        | 1        | 1         | 1           |          | 1        | 1        | 1         | 1         |          | 1         | 1         | 1         |
| Toms Creek Trailhead    | 1          |          | 1        |          | 1         | 1           |          | 1        |          | 1         | 1         |          | 1         | 1         | 1         |
| Eshback Trailhead       | 1          |          | 1        |          | 1         | 1           |          | 1        |          | 1         | 1         |          | 1         | 1         | 1         |
| Additional Trailhead    | 1          |          | 1        |          | 1         | 1           |          | 1        |          | 1         | 1         |          | 1         | 1         | 1         |
| Hornbeck Trailhead      |            |          |          |          | 1         |             |          |          |          | 1         | 1         |          | 1         | 1         | 1         |
| Adams Creek Trailhead   |            |          |          |          | 1         |             | 1        | 1        | 1        | 1         |           | 1        | 1         | 1         | 1         |
| Zimmerman Trailhead     |            |          |          |          | 1         |             | 1        | 1        | 1        | 1         |           | 1        | 1         | 1         | 1         |
| Additional Trailhead    |            |          |          |          | 1         |             | 1        | 1        | 1        | 1         |           | 1        | 1         | 1         | 1         |
| Cliff Park Trailhead    |            | 1        | 1        |          |           |             | 1        | 1        | 1        |           |           | 1        | 1         | 1         | 1         |
| Kaiser Trailhead        |            |          |          | 1        | 1         |             |          |          | 1        | 1         |           |          |           | 1         | 1         |
| Coppermine Trailhead    |            |          |          |          |           |             |          |          |          | 1         |           |          |           | 1         | 1         |
| Military Road Trailhead |            |          |          |          |           |             |          |          |          | 1         |           |          |           | 1         | 1         |
| Old Mine Road Trailhead |            |          |          |          |           |             |          |          |          |           |           |          |           |           | 1         |
| <b>Total</b>            | <b>5</b>   | <b>1</b> | <b>6</b> | <b>3</b> | <b>10</b> | <b>5</b>    | <b>4</b> | <b>9</b> | <b>7</b> | <b>12</b> | <b>6</b>  | <b>4</b> | <b>10</b> | <b>13</b> | <b>14</b> |

**Table K-5: The Ability to Establish One-Way Hiking & Bicycling Trails**

| Ability to Establish One-Way Hiking/Bicycling Trails | Short Term |    |     |     |     | Medium Term |     |     |     |     | Long Term |     |     |     |     |
|--|------------|----|-----|-----|-----|-------------|-----|-----|-----|-----|-----------|-----|-----|-----|-----|
|  | A1         | A2 | A3  | B   | C   | A1          | A2  | A3  | B   | C   | A1        | A2  | A3  | B   | C   |
| Yes or No?   | Yes        | No | Yes | Yes | Yes | Yes         | Yes | Yes | Yes | Yes | Yes       | Yes | Yes | Yes | Yes |

### Criterion 1.3: Scalable to ridership expectations?

Methodology: Evaluated based on whether the following transit characteristics can be scaled back to reflect reduced ridership: 1) the geographic coverage of bus routes, and 2) the vehicle size and headway. The geographic coverage of bus routes can be reduced by eliminating spurs (such as a deviation from Route 209 to PEEC) and with agreement from partners. The vehicle size and headway can be reduced with agreement from partners.

**Table K-6: Ability to Scale Transit System by Geographic Coverage**

| Route                       | Short Term   |              |              |            |            | Medium Term  |              |              |            |            | Long Term    |              |              |            |            |
|-----------------------------|--------------|--------------|--------------|------------|------------|--------------|--------------|--------------|------------|------------|--------------|--------------|--------------|------------|------------|
|                             | A1           | A2           | A3           | B          | C          | A1           | A2           | A3           | B          | C          | A1           | A2           | A3           | B          | C          |
| Yellow Route                | Maybe        |              | Maybe        |            | Maybe      | Maybe        |              | Maybe        |            | Maybe      | Maybe        |              | Maybe        |            | Maybe      |
| River Road Route            | No           |              | No           |            |            | No           |              | No           |            |            | No           |              | No           |            |            |
| Milford Route               |              | Maybe        | Maybe        |            |            |              | Maybe        | Maybe        | Yes        |            |              | Maybe        | Maybe        |            |            |
| River Road/Old Mine Road    |              |              |              | Yes        | Yes        |              |              |              | Yes        | Yes        |              |              |              |            | Yes        |
| Park Loop/Park Loop Reverse |              |              |              |            |            |              |              |              |            |            |              |              |              | Yes        |            |
| River Road/Old Mine Road    |              |              |              |            |            |              |              |              |            |            |              |              |              |            |            |
| <b>Summary</b>              | <b>Maybe</b> | <b>Maybe</b> | <b>Maybe</b> | <b>Yes</b> | <b>Yes</b> | <b>Maybe</b> | <b>Maybe</b> | <b>Maybe</b> | <b>Yes</b> | <b>Yes</b> | <b>Maybe</b> | <b>Maybe</b> | <b>Maybe</b> | <b>Yes</b> | <b>Yes</b> |

**Table K-7: Ability to Scale Transit System by Vehicle Size and Headway**

| Route                       | Short Term |              |            |            |            | Medium Term |              |            |            |            | Long Term  |              |            |            |            |
|-----------------------------|------------|--------------|------------|------------|------------|-------------|--------------|------------|------------|------------|------------|--------------|------------|------------|------------|
|                             | A1         | A2           | A3         | B          | C          | A1          | A2           | A3         | B          | C          | A1         | A2           | A3         | B          | C          |
| Yellow Route                | Maybe      |              | Maybe      |            | Maybe      | Maybe       |              | Maybe      |            | Maybe      | Maybe      |              | Maybe      |            | Maybe      |
| River Road Route            | Yes        |              | Yes        |            |            | Yes         |              | Yes        |            |            | Yes        |              | Yes        |            |            |
| Milford Route               |            | Maybe        | Maybe      |            |            |             | Maybe        | Maybe      | Yes        |            |            | Maybe        | Maybe      |            |            |
| River Road/Old Mine Road    |            |              |            | Yes        | Yes        |             |              |            | Yes        | Yes        |            |              |            |            | Yes        |
| Park Loop/Park Loop Reverse |            |              |            |            |            |             |              |            |            |            |            |              |            | Yes        |            |
| <b>Summary</b>              | <b>Yes</b> | <b>Maybe</b> | <b>Yes</b> | <b>Yes</b> | <b>Yes</b> | <b>Yes</b>  | <b>Maybe</b> | <b>Yes</b> | <b>Yes</b> | <b>Yes</b> | <b>Yes</b> | <b>Maybe</b> | <b>Yes</b> | <b>Yes</b> | <b>Yes</b> |

**Criterion 2.1: Facilities safer crossings at major roadways**

Methodology: Evaluated based on the number of bus stops with crossings located along Route 209 that are within the park's boundaries. Bus stops that are located at pulloffs (such as Adams Creek Trailhead) were counted, since visitors will be required to cross the road during one leg of their trip. Bus stops that are located at destinations off of Route 209 (such as Smithfield Beach) were not counted.

**Table K-8: Number of Crossings within DEWA along US 209**

| Crossings Along US 209 | Short Term |          |          |          |          | Medium Term |          |          |          |          | Long Term |          |          |          |          |
|------------------------|------------|----------|----------|----------|----------|-------------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|
|                        | A1         | A2       | A3       | B        | C        | A1          | A2       | A3       | B        | C        | A1        | A2       | A3       | B        | C        |
| Toms Creek Trailhead   | 1          |          | 1        |          | 1        | 1           |          | 1        |          | 1        | 1         |          | 1        | 1        | 1        |
| Eshback Trailhead      | 1          |          | 1        |          | 1        | 1           |          | 1        |          | 1        | 1         |          | 1        | 1        | 1        |
| Additional Trailhead   | 1          |          | 1        |          | 1        | 1           |          | 1        |          | 1        | 1         |          | 1        | 1        | 1        |
| Hornbeck Trailhead     |            |          |          |          | 1        |             |          |          |          | 1        | 1         |          | 1        | 1        | 1        |
| Dingmans Campground    |            |          |          |          | 1        |             | 1        | 1        | 1        | 1        | 1         | 1        | 1        | 1        | 1        |
| Adams Creek Trailhead  |            |          |          |          | 1        |             | 1        | 1        | 1        | 1        |           | 1        | 1        | 1        | 1        |
| Zimmerman Trailhead    |            |          |          |          | 1        |             | 1        | 1        | 1        | 1        |           | 1        | 1        | 1        | 1        |
| Additional Trailhead   |            |          |          |          | 1        |             | 1        | 1        | 1        | 1        |           | 1        | 1        | 1        | 1        |
| <b>Total</b>           | <b>3</b>   | <b>0</b> | <b>3</b> | <b>0</b> | <b>8</b> | <b>3</b>    | <b>4</b> | <b>7</b> | <b>4</b> | <b>8</b> | <b>5</b>  | <b>4</b> | <b>8</b> | <b>8</b> | <b>8</b> |

**Criterion 2.2: Ability to improve access to park resources without dramatically increasing parking areas**

Methodology: Same as Criterion 1.1

**Criterion 2.3: Ability to reduce vehicle miles traveled per visitor throughout the park**

Methodology: Same as Criterion 1.1

### Criterion 3.1: Ability to integrate park and gateway communities

Methodology: Evaluated based on the number of gateway communities that are connected to the transit system. Gateway communities include Stroudsburg, Delaware Water Gap Boro, Marshalls Creek, Milford, Matamoras, and Port Jervis.

**Table K-9: Number of Gateway Communities Connected to Transit System**

| # of Gateway Communities | Short Term |          |          |          |          | Medium Term |          |          |          |          | Long Term |          |          |          |          |
|--------------------------|------------|----------|----------|----------|----------|-------------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|
|                          | A1         | A2       | A3       | B        | C        | A1          | A2       | A3       | B        | C        | A1        | A2       | A3       | B        | C        |
| Delaware Water Gap Boro  | 1          |          | 1        | 1        | 1        | 1           |          | 1        | 1        | 1        | 1         |          | 1        | 1        | 1        |
| Stroudsburg              | 1          |          | 1        |          | 1        | 1           |          | 1        |          | 1        | 1         |          | 1        |          | 1        |
| Marshalls Creek          | 1          |          | 1        |          | 1        | 1           |          | 1        |          | 1        | 1         |          | 1        |          | 1        |
| Milford                  |            | 1        | 1        |          | 1        |             | 1        | 1        | 1        | 1        |           | 1        | 1        | 1        | 1        |
| Matamoras                |            | 1        | 1        |          | 1        |             | 1        | 1        |          | 1        |           | 1        | 1        |          | 1        |
| Port Jervis              |            | 1        | 1        |          | 1        |             | 1        | 1        |          | 1        |           | 1        | 1        |          | 1        |
| <b>Total</b>             | <b>3</b>   | <b>3</b> | <b>6</b> | <b>1</b> | <b>6</b> | <b>3</b>    | <b>3</b> | <b>6</b> | <b>2</b> | <b>6</b> | <b>3</b>  | <b>3</b> | <b>6</b> | <b>2</b> | <b>6</b> |

### Criterion 3.2: Ability to connect with public lands surrounding resources

Methodology: Evaluated based on the number of public land areas and surrounding resources that are connected to the transit system. Surrounding resources include Worthington State Forest, Bushkill Falls, Dingmans Falls, and Grey Towers.

**Table K-10: Ability of Transit System to Connect to Surrounding Resources**

| Ability to connect with surrounding resources | Short Term |          |          |          |          | Medium Term |          |          |          |          | Long Term |          |          |          |          |
|---|------------|----------|----------|----------|----------|-------------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|
|   | A1         | A2       | A3       | B        | C        | A1          | A2       | A3       | B        | C        | A1        | A2       | A3       | B        | C        |
| Worthington State Forest                      |            |          |          | 1        | 1        |             |          |          | 1        | 1        |           |          |          | 1        | 1        |
| Bushkill Falls                                |            |          |          |          |          |             |          |          |          |          |           |          |          |          |          |
| Dingmans Falls                                |            |          |          |          | 1        |             | 1        | 1        | 1        | 1        | 1         | 1        | 1        | 1        | 1        |
| Grey Towers                                   |            | 1        | 1        |          |          |             | 1        | 1        | 1        |          |           | 1        | 1        | 1        | 1        |
| <b>Total</b>                                  | <b>0</b>   | <b>1</b> | <b>1</b> | <b>1</b> | <b>2</b> | <b>0</b>    | <b>2</b> | <b>2</b> | <b>3</b> | <b>2</b> | <b>1</b>  | <b>2</b> | <b>2</b> | <b>3</b> | <b>3</b> |

**Criterion 4.1: Impact to sensitive cultural and historical resources**

Methodology: The impact to sensitive cultural and historical resources is assumed to be low. A detailed analysis of this criterion is beyond the scope of this project.

**Criterion 4.2: Impact to sensitive ecological areas**

Methodology: The impact to sensitive cultural and historical resources is assumed to be low. A detailed analysis of this criterion is beyond the scope of this project.

**Criterion 4.3: Footprint of the transportation system on park lands**

Methodology: Evaluated based on the land area of additional transportation infrastructure. Additional transportation infrastructure includes bus stops, visitor centers, trailheads, hiking trails, and biking/hiking trails.

**Table K-11: # of Units per Infrastructure Item**

| Infrastructure Item         | Short Term  |             |             |             |             | Medium Term |             |             |             |             | Long Term   |             |             |             |             | Sq Ft         |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|
|                             | A1          | A2          | A3          | B           | C           | A1          | A2          | A3          | B           | C           | A1          | A2          | A3          | B           | C           |               |
| Major Bus Stops             | 7           | 7           | 14          | 5           | 16          | 0           | 3           | 3           | 7           | 3           | 3           | 0           | 0           | 4           | 2           | 1,152         |
| Basic Bus Stops             | 5           | 0           | 5           | 1           | 5           | 0           | 0           | 0           | 0           | 1           | 0           | 0           | 0           | 2           | 1           | 44            |
| Visitor Center              | 0.5         | 0.0         | 0.5         | 0.5         | 0.5         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 1.0         | 0.0         | 16,393        |
| Trailhead                   | 5.0         | 1.0         | 6.0         | 3.0         | 10.0        | 0.0         | 3.0         | 3.0         | 4.0         | 6.0         | 1.0         | 0.0         | 1.0         | 10.0        | 1.0         | 4,169         |
| Biking/Hiking Trail (miles) | 2.0         | 0.0         | 2.0         | 1.0         | 2.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 0.0         | 73,920        |
| <b>Hiking Trail (miles)</b> | <b>0.00</b> | <b>0.50</b> | <b>2.00</b> | <b>2.00</b> | <b>8.75</b> | <b>0.00</b> | <b>0.75</b> | <b>0.75</b> | <b>1.25</b> | <b>0.00</b> | <b>0.00</b> | <b>0.00</b> | <b>2.00</b> | <b>6.00</b> | <b>0.50</b> | <b>21,120</b> |

**Table K-12: Footprint of Additional Transportation Infrastructure (acres)**

| Infrastructure Item         | Short Term |            |            |            |            | Medium Term |            |            |            |            | Long Term  |            |            |            |            |
|-----------------------------|------------|------------|------------|------------|------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|                             | A1         | A2         | A3         | B          | C          | A1          | A2         | A3         | B          | C          | A1         | A2         | A3         | B          | C          |
| Major Bus Stops             | 0.2        | 0.2        | 0.4        | 0.1        | 0.4        | 0.0         | 0.1        | 0.1        | 0.2        | 0.1        | 0.1        | 0.0        | 0.0        | 0.1        | 0.1        |
| Basic Bus Stops             | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0         | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        |
| Visitor Center              | 0.2        | 0.0        | 0.2        | 0.2        | 0.2        | 0.0         | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.4        | 0.0        |
| Trailhead                   | 0.5        | 0.1        | 0.6        | 0.3        | 1.0        | 0.0         | 0.3        | 0.3        | 0.4        | 0.6        | 0.1        | 0.0        | 0.1        | 1.0        | 0.1        |
| Biking/Hiking Trail (miles) | 3.4        | 0.0        | 3.4        | 1.7        | 3.4        | 0.0         | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        |
| Hiking Trail (miles)        | 0.0        | 0.2        | 1.0        | 1.0        | 4.2        | 0.0         | 0.4        | 0.4        | 0.6        | 0.0        | 0.0        | 0.0        | 1.0        | 2.9        | 0.2        |
| <b>Total</b>                | <b>4.2</b> | <b>0.5</b> | <b>5.5</b> | <b>3.3</b> | <b>9.2</b> | <b>0.0</b>  | <b>0.7</b> | <b>0.7</b> | <b>1.2</b> | <b>0.7</b> | <b>0.2</b> | <b>0.0</b> | <b>1.1</b> | <b>4.3</b> | <b>0.4</b> |

**Criteria 4.4: Encourages diverse populations to use park**

Methodology: Evaluated based on the number of connections that the transit system makes to: 1) visitor centers, resorts/accommodations, 3) rail stations, and 4) gateway communities.

**Table K-13: Number of Visitor Centers and Accommodations Connected to Transit System**

| Visitor Centers & Accommodations | Short Term |          |          |          |          | Medium Term |          |          |          |          | Long Term |          |          |          |          |
|----------------------------------|------------|----------|----------|----------|----------|-------------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|
|                                  | A1         | A2       | A3       | B        | C        | A1          | A2       | A3       | B        | C        | A1        | A2       | A3       | B        | C        |
| Kittatinny Point Visitor Center  | 1          |          | 1        | 1        | 1        | 1           |          | 1        | 1        | 1        | 1         |          | 1        | 1        | 1        |
| Shawnee Resort                   | 1          |          | 1        | 1        | 1        | 1           |          | 1        | 1        | 1        | 1         |          | 1        | 1        | 1        |
| Fernwood Resort                  | 1          |          | 1        |          | 1        | 1           |          | 1        |          | 1        | 1         |          | 1        |          | 1        |
| Dingmans Falls Visitor Center    |            |          |          |          | 1        |             | 1        | 1        | 1        | 1        | 1         | 1        | 1        | 1        | 1        |
| Bushkill Visitor Center          | 1          |          | 1        | 1        | 1        | 1           |          | 1        | 1        | 1        | 1         |          | 1        | 1        | 1        |
| New Jersey Visitor Center        |            |          |          |          |          |             |          |          |          | 1        |           |          |          | 1        | 1        |
| Cliff Park Inn                   |            | 1        | 1        |          |          |             | 1        | 1        | 1        |          |           | 1        | 1        | 1        | 1        |
| Milford Visitor Center           |            | 1        | 1        |          | 1        |             | 1        | 1        | 1        | 1        |           | 1        | 1        | 1        | 1        |
| <b>Total</b>                     | <b>4</b>   | <b>2</b> | <b>6</b> | <b>3</b> | <b>6</b> | <b>4</b>    | <b>3</b> | <b>7</b> | <b>6</b> | <b>7</b> | <b>5</b>  | <b>3</b> | <b>7</b> | <b>7</b> | <b>8</b> |

**Table K-14: Number of Rail Stations Connected to Transit System**

| Rail Stations     | Short Term |          |          |          |          | Medium Term |          |          |          |          | Long Term |          |          |          |          |
|-------------------|------------|----------|----------|----------|----------|-------------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|
|                   | A1         | A2       | A3       | B        | C        | A1          | A2       | A3       | B        | C        | A1        | A2       | A3       | B        | C        |
| Port Jervis       |            | 1        | 1        |          | 1        |             | 1        | 1        |          | 1        |           | 1        | 1        |          | 1        |
| Lackawanna Cutoff |            |          |          |          |          |             |          |          |          |          | 1         |          | 1        | 1        | 1        |
| <b>Total</b>      | <b>0</b>   | <b>1</b> | <b>1</b> | <b>0</b> | <b>1</b> | <b>0</b>    | <b>1</b> | <b>1</b> | <b>0</b> | <b>1</b> | <b>1</b>  | <b>1</b> | <b>2</b> | <b>1</b> | <b>2</b> |

**Table K-15: Number of Gateway Communities Connected to Transit System**

| Gateway Communities     | Short Term |          |          |          |          | Medium Term |          |          |          |          | Long Term |          |          |          |          |
|-------------------------|------------|----------|----------|----------|----------|-------------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|
|                         | A1         | A2       | A3       | B        | C        | A1          | A2       | A3       | B        | C        | A1        | A2       | A3       | B        | C        |
| Stroudsburg             | 1          |          | 1        |          | 1        | 1           |          | 1        |          | 1        | 1         |          | 1        |          | 1        |
| Delaware Water Gap Boro | 1          |          | 1        | 1        | 1        | 1           |          | 1        | 1        | 1        | 1         |          | 1        | 1        | 1        |
| Marshalls Creek         | 1          |          | 1        |          | 1        | 1           |          | 1        |          | 1        | 1         |          | 1        |          | 1        |
| Matamoras               |            | 1        | 1        |          | 1        |             | 1        | 1        |          | 1        |           | 1        | 1        |          | 1        |
| Port Jervis             |            | 1        | 1        |          | 1        |             | 1        | 1        |          | 1        |           | 1        | 1        |          | 1        |
| <b>Total</b>            | <b>3</b>   | <b>2</b> | <b>5</b> | <b>1</b> | <b>5</b> | <b>3</b>    | <b>2</b> | <b>5</b> | <b>1</b> | <b>5</b> | <b>3</b>  | <b>2</b> | <b>5</b> | <b>1</b> | <b>5</b> |



**Criterion 4.5: Ability to reduce vehicular emissions in the park and the surrounding communities**

Methodology: Same as Criterion 1.1.

**Criterion 4.6: Ability to encourage visitors to be physically active**

Methodology: Same as Criterion 1.1.

**Criterion 5.1: Ability to promote public-private partnership opportunities**

Methodology: Evaluated based on the number of: 1) transit agency partners, and 2) business partners. Transit agency partners would include MCTA and a emerging Pike County agency. Business partners are those that share a bus stop with the transit service.

**Table K-16: Number of Transit Agency Partners**

| Transit Agency Partners | Short Term |          |          |          |          | Medium Term |          |          |          |          | Long Term |          |          |          |          |
|-------------------------|------------|----------|----------|----------|----------|-------------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|
|                         | A1         | A2       | A3       | B        | C        | A1          | A2       | A3       | B        | C        | A1        | A2       | A3       | B        | C        |
| MCTA                    | 1          |          | 1        |          | 1        | 1           |          | 1        |          | 1        | 1         |          | 1        |          | 1        |
| Pike County             |            | 1        | 1        |          | 1        |             | 1        | 1        |          | 1        |           | 1        | 1        |          | 1        |
| NJ Transit              |            |          |          |          |          |             |          |          |          |          | 1         |          | 1        | 1        | 1        |
| Metro-North             |            | 1        | 1        |          | 1        |             | 1        | 1        |          | 1        |           | 1        | 1        |          | 1        |
| <b>Total</b>            | <b>1</b>   | <b>2</b> | <b>3</b> | <b>0</b> | <b>3</b> | <b>1</b>    | <b>2</b> | <b>3</b> | <b>0</b> | <b>3</b> | <b>2</b>  | <b>2</b> | <b>4</b> | <b>1</b> | <b>4</b> |

**Table K-17: Number of Business Partners**

| Business Partners | Short Term |          |          |          |          | Medium Term |          |          |          |          | Long Term |          |          |          |          |
|-------------------|------------|----------|----------|----------|----------|-------------|----------|----------|----------|----------|-----------|----------|----------|----------|----------|
|                   | A1         | A2       | A3       | B        | C        | A1          | A2       | A3       | B        | C        | A1        | A2       | A3       | B        | C        |
| Fernwood Resort   | 1          |          | 1        |          | 1        | 1           |          | 1        |          | 1        | 1         |          | 1        |          | 1        |
| Shawnee Resort    | 1          |          | 1        | 1        | 1        | 1           |          | 1        | 1        | 1        | 1         |          | 1        | 1        | 1        |
| Shawnee Store     | 1          |          | 1        | 1        | 1        | 1           |          | 1        | 1        | 1        | 1         |          | 1        | 1        | 1        |
| Exxon/Flea Market | 1          |          | 1        |          | 1        | 1           |          | 1        |          | 1        | 1         |          | 1        |          | 1        |
| CVS/McDonalds     | 1          |          | 1        |          | 1        | 1           |          | 1        |          | 1        | 1         |          | 1        |          | 1        |
| Super Foodtown    | 1          |          | 1        |          | 1        | 1           |          | 1        |          | 1        | 1         |          | 1        |          | 1        |
| Cliff Park Inn    |            | 1        | 1        |          |          |             | 1        | 1        | 1        |          |           | 1        | 1        | 1        | 1        |
| Walpack Inn       |            |          |          |          |          |             |          |          |          | 1        |           |          |          | 1        | 1        |
| <b>Total</b>      | <b>6</b>   | <b>1</b> | <b>7</b> | <b>2</b> | <b>6</b> | <b>6</b>    | <b>1</b> | <b>7</b> | <b>3</b> | <b>7</b> | <b>6</b>  | <b>1</b> | <b>7</b> | <b>4</b> | <b>8</b> |

**Criterion 5.2: Supports economic development of surrounding communities**

Methodology: Same as Criterion 3.1.