

JOHNSTOWN FLOOD NATIONAL MEMORIAL ALTERNATIVE TRANSPORTATION STUDY

FINAL REPORT



South Fork Fishing and Hunting Club 1889 Clubhouse

PREPARED FOR:



PREPARED BY:



**CLOUGH, HARBOUR
& ASSOCIATES LLP**
ENGINEERS, SURVEYORS, PLANNERS
& LANDSCAPE ARCHITECTS
Albany, NY

IN CONJUNCTION
WITH:



EINHORN YAFFEE PRESCOTT
Albany, NY

CONTRACT ORDER No.: T4130030001

SEPTEMBER 2004

QUALIFICATIONS STATEMENT

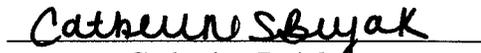
This report was prepared by qualified transportation planners employed by Clough, Harbour & Associates LLP (CHA). CHA, a multi-disciplined consulting engineering firm with offices throughout the eastern United States, has the resources and the capabilities to prepare such reports.

This report has been prepared expressly for the use of the National Park Service. No other parties are entitled to rely upon this report unless our express written consent is obtained. All conclusions drawn were based on CHA's review of available data, and site-specific information pertaining to this project. Recommendations were made based on CHA's knowledge, experience, and professional judgment concerning transportation planning.

This report was prepared by:

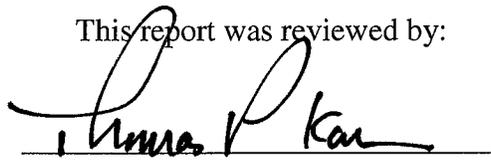


Scott Lewendon, R.L.A.
Senior Transportation Planner



Catherine Bujak
Planner

This report was reviewed by:



Thomas Karis, P.E.
Partner

This report was approved by:

Keith Newlin
Park Superintendent

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1.0 INTRODUCTION

1.1 Background and Study Purpose

The Johnstown Flood of 1889 was the worst inland flood in the nation’s history. The flood claimed over 2,000 lives, and completely destroyed multiple communities along its path. The disaster triggered a tremendous humanitarian response, and caused many to question how humans should interact with the natural environment.

The Johnstown Flood National Memorial (JOFL), owned and operated by the National Park Service (NPS), commemorates the Johnstown Flood and the lives that were lost in the disaster. The JOFL is located in the townships of Adams and Croyle, Cambria County, Pennsylvania (see Figure 1). The flood devastated the area along the Little Conemaugh River Valley from South Fork to Johnstown.

Numerous related sites exist in the vicinity of the JOFL. The NPS recognizes the importance of each of the sites in interpreting the “whole story” of the flood disaster, and has identified the need to develop a transportation connection among the sites. As such, the purpose of this study is to determine the best methods for implementing an Alternative Transportation System (ATS) at the JOFL. The ATS would link the sites within and in the vicinity of the JOFL, essentially enhancing the overall visitor experience at the park.

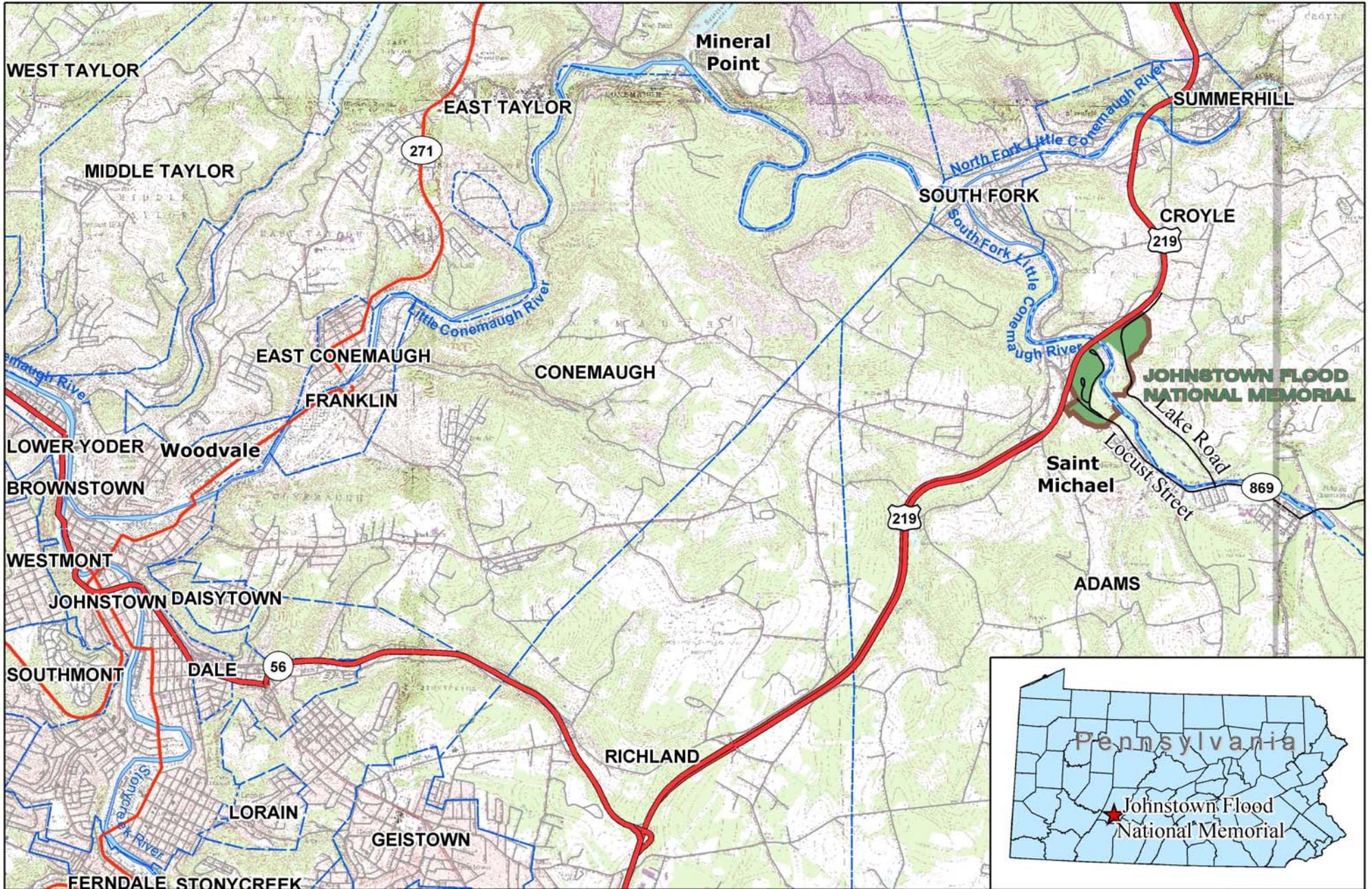
1.2 Alternative Transportation Systems

Over the last few decades, visitation of national parks has grown tremendously. Most visitors to national parks arrive by automobile, creating congestion and a deterioration of facilities. Many parks are not equipped to accommodate high volumes of automobile traffic, which results in visitors parking their automobiles on shoulders and sensitive vegetated areas. In addition, high levels of automobile traffic create air and noise pollution, degrade the visitor experience, and complicate the interpretation of sites and resources. As such, the Department of the Interior and Department of Transportation developed strategies to improve the transportation systems at national parks.

One such strategy involves the implementation of alternative means of transportation within national parks, thereby reducing automobile use. Types of alternative transportation include:

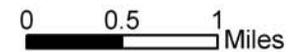
- Bicycle
- Bus
- Boat
- Ferry
- Multi-modal trails
- Train
- Tram
- Trolley
- Van

An ATS presents visitors with various transportation options, allowing visitors to more thoroughly enjoy the park experience. An ATS also reduces traffic congestion, decreases air and noise pollution, increases visitor safety, and improves the mobility of visitors with disabilities.



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**NATIONAL PARK SERVICE
JOHNSTOWN FLOOD NATIONAL MEMORIAL
CAMBRIA COUNTY, PENNSYLVANIA
FIGURE 1 - LOCATION MAP**



The NPS's Alternative Transportation Program (ATP) coordinates and supports ATS planning and implementation at parks throughout the country. In establishing an ATS, parks follow the objectives of the ATP:

- Improving the visitor experience
- Protecting natural and cultural resources
- Promoting economic development
- Fostering strong partnerships
- Enhancing visitor safety and security
- Enabling new services

This study will identify various ATS options for the JOFL, and evaluate how well each option meets the objectives above.

2.0 BRIEF HISTORY

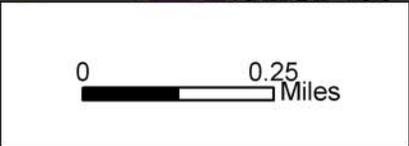
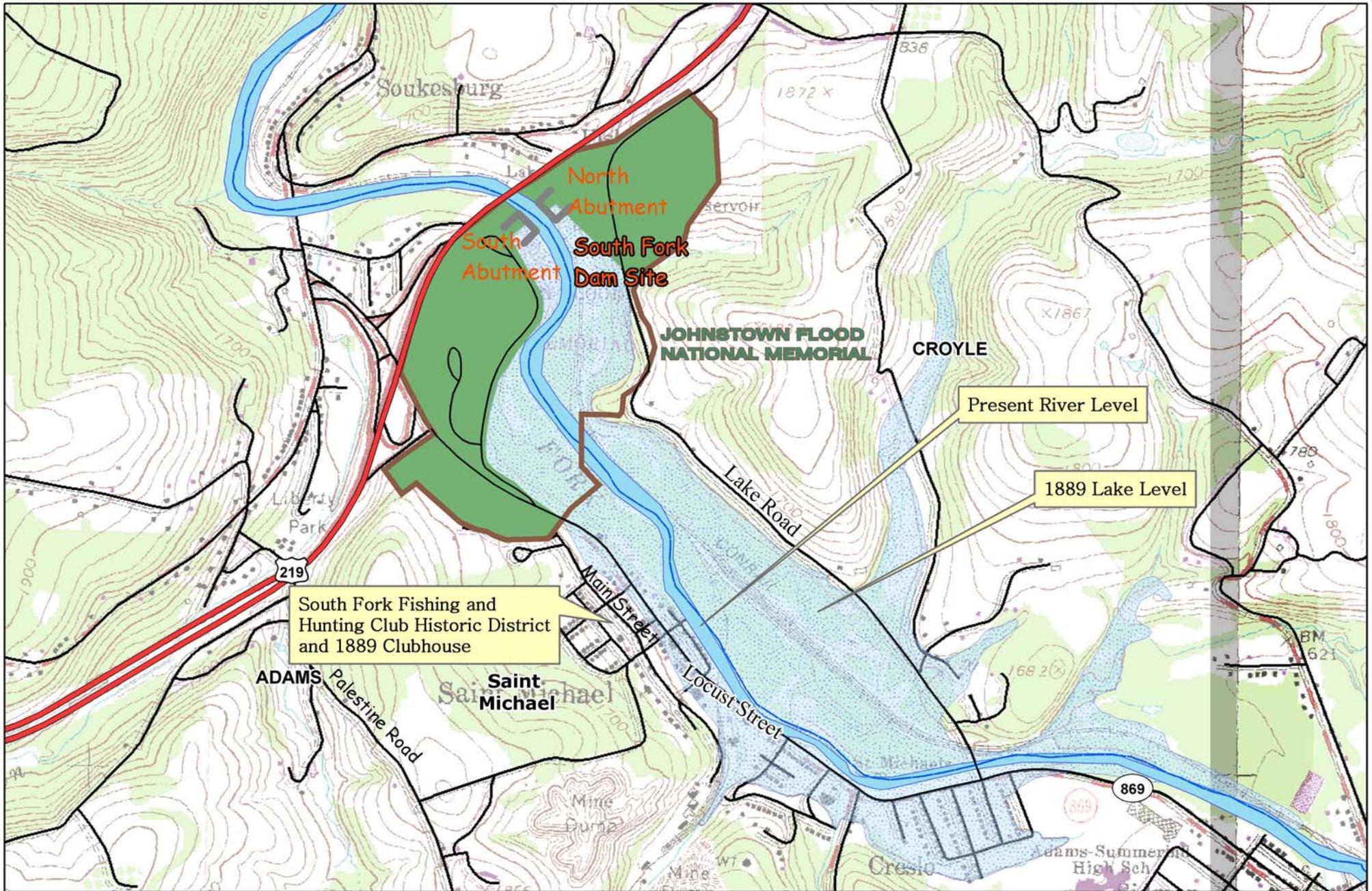
Built in 1834, the Pennsylvania Mainline Canal brought prosperity to the City of Johnstown. An earthen dam (i.e., South Fork Dam) and reservoir (i.e., Lake Conemaugh) were built 10 miles northeast of Johnstown to supply water to the canal (see Figure 2). In 1857, the Pennsylvania Railroad purchased the canal system, and later abandoned South Fork Dam. The dam deteriorated until its purchase in 1879 by the South Fork Fishing and Hunting Club. The club haphazardly repaired the dam, and converted Lake Conemaugh into an exclusive summer retreat.



Lake Conemaugh (NPS)

After a night of heavy rain, the South Fork Dam broke on May 31, 1889. The failed dam sent 20 million tons of water surging through the narrow Little Conemaugh River Valley to Johnstown. A 36-foot wall of water formed, carrying buildings, machinery, freight cars, oil, barbed wire, bridge sections, trees, and hundreds of victims. After destroying Johnstown, the flood became jammed at an old stone railroad bridge. The jam eventually caught fire, and burned for two days.

The cleanup operation spanned several years. Many bodies were never identified, and hundreds of the victims were never found. The flood claimed 2,209 lives, with 40 additional lives lost from flood-related illness. Property damage totaled \$17 million. Clara Barton and her newly-formed American Red Cross built shelter for the homeless, and distributed food, clothing, and medicine. Overall, contributions from the United States and abroad totaled over \$3.7 million.



3.0 EXISTING CONDITIONS

3.1 Site Description

As shown on Figure 1, the JOFL is located along U.S. Route 219 and Locust Street (State Route 869) at the South Fork Dam site. The JOFL encompasses 165 acres of park, and preserves the remains of the South Fork Dam and portions of the former lakebed. The remains of the dam consist of two worn abutments (i.e., North and South Abutments).



Remains of South Fork Dam/North Abutment

The South Fork Little Conemaugh River flows directly through the JOFL between the abutments. The elevation of the river at the JOFL measures approximately 1,560 feet above mean sea level. In Johnstown, the river elevation measures approximately 1,160 feet above mean sea level.

The NPS has supported the expansion of the JOFL boundary to include the 1889 Clubhouse, clubhouse annex, and two cottages of the South Fork Fishing and Hunting Club. The clubhouse served as the focal point of the club, and housed the majority of the members during their visits to the lake. The buildings exist in Saint Michael on the southern shoreline of the former lakebed.

3.2 Land Use & Population

The land immediately surrounding the JOFL consists of small townships and villages with single-family residences and locally-owned commercial establishments. Land use becomes more urban towards Johnstown. The area offers numerous tourist attractions related to the flood and Allegheny Portage Railroad.

The surrounding topography is hilly, with communities located within the river valleys. Numerous streams flow from the hilltops. Nearby rivers include the Little Conemaugh, Conemaugh, and Stonycreek.

Table 1 presents municipal, county, and state population data.

TABLE 1 - POPULATION, 1990 & 2000			
Area	1990	2000	% Change
East Conemaugh Borough	1,470	1,291	-12.2%
Ehrenfeld Borough	307	234	-23.8%
Franklin Borough	565	442	-21.8%
South Fork Borough	1,197	1,138	-4.9%
Adams Township	6,869	6,495	-5.4%
Conemaugh Township	2,399	2,145	-10.6%
Croyle Township	2,451	2,233	-8.9%
East Taylor Township	3,073	2,726	-11.3%
Johnstown City	28,134	23,906	-15.0%
Cambria County	163,029	152,598	-6.4%
State of Pennsylvania	11,881,643	12,281,054	3.4%
Source: U.S. Census, 2000			

As shown above, the municipalities in the vicinity of the JOFL experienced negative population growth over the last decade. Cambria County as a whole also experienced negative growth. In contrast, the state's population grew by 3.4%.

3.3 Existing Park Resources

Facilities to the north of the dam include a Visitor Center with main parking lot, the Colonel Unger House (residence of the former South Fork Fishing and Hunting Club president), a picnic area, and a smaller parking area with a short walking trail to the North Abutment overlook. The Visitor Center contains exhibits, and offers a 35-minute film that details the events of the flood.



Colonel Unger House

Facilities to the south of the dam include a parking lot, picnic area, and short walking trail leading to the South Abutment overlook. No internal vehicle or pedestrian connection currently exists between the North and South Abutments.

The South Fork Fishing and Hunting Club Historic District, located contiguous to the JOFL site, plays a key role in the interpretation of the disaster. The district exists along the southern portion of the lakebed in Saint Michael, and contains several of the original cottages from the time of the flood. As previously mentioned, the NPS has supported the expansion of the JOFL boundary to include the 1889 Clubhouse, clubhouse annex, and two cottages of the South Fork Fishing and Hunting Club.

3.4 Interpretive Sites

A number of other sites (see Figure 3) exist in the vicinity of the JOFL that directly contribute to the interpretation of the flood disaster. Primary interpretive sites include the following:

- Johnstown Flood Museum – Located on Washington Street in downtown Johnstown, the museum presents numerous exhibits, an award-winning documentary, a multi-media show, and artifacts recovered from the flood. The resources at the museum greatly assist visitors in understanding the history and magnitude of the disaster.
- Stone Bridge & Point Park – Stone Bridge, located on the Conemaugh River immediately below the junction of the Stonycreek and Little Conemaugh Rivers, marks the location of the massive “flood-jam” and subsequent fire. An adjacent small park (i.e., Point Park) contains a continuously-lit torch that serves as a memorial to the disaster at Stone Bridge.

- Grandview Cemetery – Many of the flood victims are buried in Grandview Cemetery. A section of the cemetery, named the “Unknown Plot,” contains the bodies of 777 unidentified flood victims, as well as a large monument. The cemetery is located on Millcreek Road in the outskirts of Johnstown.



Grandview Cemetery

- Path of the Flood Trail – Currently in the design stage, the Path of the Flood Trail will allow users to follow the path of the Johnstown Flood by foot or bicycle. The trail will follow abandoned railroad lines and roadways along the Little Conemaugh River between Johnstown and the JOFL.

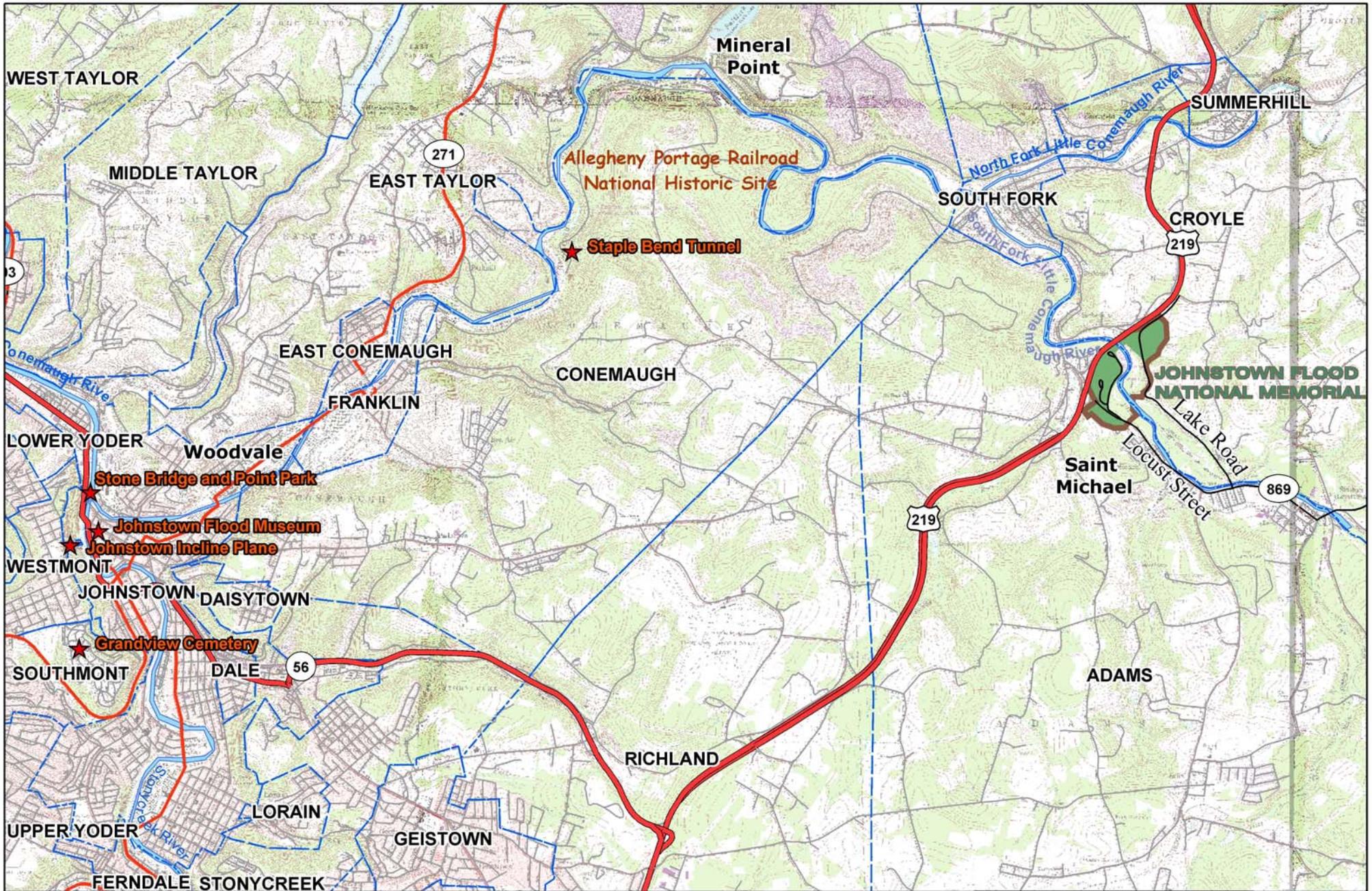
- Johnstown Inclined Plane – The Johnstown Inclined Plane was opened for business on June 1, 1891, two years after the Johnstown Flood. Located in the western portion of Johnstown, the inclined plane provided convenient transportation up Yoder Hill, and connected the valley floor to the new “higher-ground” residential development of Westmont Borough.



Johnstown Inclined Plane

In 1936, the incline provided a means of escape from the valley when floodwaters again swept through Johnstown. During this flooding event, the incline carried almost 4,000 people to safety. During a subsequent flood in 1977, the incline transported people to safety, and also transported

boats, emergency personnel, and equipment down to the valley for rescue operations.



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 FIGURE 3 - INTERPRETIVE SITES



0 0.5 1 Miles
 *Note: The Path of the Flood Trail is currently under design.



Today, the Johnstown Inclined Plane functions primarily as a tourist attraction. The site offers a visitor center, observation deck, and other facilities. From the top of the incline, visitors can gain an excellent view of the city and Little Conemaugh River Valley.

- **Local Communities** - The flood struck and destroyed several communities on its path to Johnstown. The flood first struck South Fork, and then continued on to Mineral Point, East Conemaugh, and Woodvale. A tour of the impacted communities helps visitors to visualize the magnitude of the devastation, and better understand the local character and geography of the area.

Secondary interpretive sites are not directly related to the history of the flood, but add to the interpretation of the disaster. Secondary sites include the following:

- **Allegheny Portage Railroad National Historic Site** - To complete the Main Line canal system, the state constructed a series of inclined planes, which allowed steam engines to transport canal boats over the Allegheny Mountain range. This inclined plane railroad system, named the Allegheny Portage Railroad, was considered a technological wonder, and reduced travel time between Philadelphia and Pittsburgh from 23 to four days (note that the Johnstown Inclined Plane was not affiliated with the Allegheny Portage Railroad).

The Allegheny Portage Railroad National Historic Site encompasses 1,249 acres along and adjacent to the Little Conemaugh River. The Historic Site contains several inclined planes, stone culverts, stone railroad ties, and other remains of the portage railroad.

- **Staple Bend Tunnel** – Staple Bend Tunnel, located approximately four miles northeast of Johnstown within the Allegheny Portage Railroad National Historic Site, is the oldest railroad tunnel in the United States. The tunnel is open to the public, and will be part of the future Path of the Flood Trail.

3.5 Existing Visitor Transportation System

The existing parking lots are rarely crowded, and the park experiences little to no traffic congestion.¹ Access is almost entirely conducted by motor vehicle.

Most of the visitors to the park consist of local residents who stay for approximately one to two hours.² The JOFL received approximately 105,400 visits in 2003. Visitation is predicted to climb 9.77% in 2004, and then decrease by 1.49% in 2005.³

3.5.1 *Memorial Site Access*

Visitors traveling on Route 219 may reach the south side of the park via Locust Street (State Route 869), and the north side of the park via Lake Road (see Figure 2). Locust Street follows

¹ Federal Highway Administration & Federal Transit Administration, “*Federal Lands Alternative Transportation Systems Study*,” Volume 3, *Johnstown Flood National Memorial Field Report*, 2001, p. 4.

² Ibid.

³ National Park Service, “*Statistical Abstract*,” 2003.

the southern shoreline of the lakebed, while Lake Road follows the northern shoreline. The two roads connect at the southern tip of the lakebed, creating a six-mile loop along the shoreline.

The 1889 Clubhouse exists on the southern shoreline of the lakebed in Saint Michael. The clubhouse is located on Main Street, in the vicinity of the intersection with Franklin Street.



1889 Clubhouse

3.5.2 Internal Circulation

No internal vehicular or pedestrian connection currently exists between the North and South Abutments. Both the South Fork Little Conemaugh River and Conrail tracks run between the abutments; thus, a connection would require crossing the river and railroad tracks. Freight trains often stop along this section of the railroad, which presents an obstacle to implementing an at-grade crossing.

3.5.3 Existing Interpretive Tours

NPS Tour⁴

In conjunction with the Ford Motor Company Proud Partners Transportation Program, the NPS offered an interpretive tour for the Johnstown Flood in the summer months of 2002 and 2003. In 2003, the tour ran from June 15 to August 23, five days a week (Thursday through Monday). The tour was conducted by van, and lasted approximately four hours. A student intern with extensive knowledge of the Johnstown Flood history guided the tour.

The tour began at the Visitor Center of the JOFL. The first stops on the tour consisted of the 1889 Clubhouse and South Fork Dam remains. The tour then continued on to Johnstown via U.S. Route 219 and State Route 56 (Johnstown Expressway). In Johnstown, the tour included stops (in order) at the Johnstown Flood Museum, Johnstown Inclined Plane, and Grandview Cemetery. The tour then headed back to the JOFL via State Route 56 and U.S. Route 219. This route represents the most direct and easily accessible route between Johnstown and the JOFL.

The goal of the tour was to present the “whole story” of the flood. The tour highlighted the connectivity of the numerous sites, enhancing the understanding of the events leading up to and following the disaster.

During the 10 weeks of the tour, 349 visitors participated. Forty-four (44) of the 50 available tours were utilized, resulting in an average of eight visitors per tour (349 visitors/44 tours).

For the tour, the NPS rented a 15-passenger van. The size of the van met demand during the majority of the season. On a few peak-activity days, demand exceeded capacity, and some

⁴ This section is based on information from William F. Lindley, Jr., Acting Superintendent, “*Final Report of the Proud Partner Transportation Program at Johnstown Flood National Memorial*,” 2003.

visitors were asked to follow the van in their own vehicles. No visitors were denied from joining the tour.

The many local partners of the tour included the South Fork Fishing and Hunting Club, Johnstown Area Heritage Association, Grandview Cemetery, and staff at the Johnstown Inclined Plane. The partners look forward to participating in a third season.

Motor Carrier Tours

The Johnstown Flood Museum currently provides volunteer “walk-on guides” for visiting privately-operated motor carrier tours. After leaving the museum, the tour buses are guided to the various interpretive sites, including the JOFL. Motor carrier tours often learn about this service through the tourism promotion organizations in the area, such as the Johnstown & Cambria County Convention & Visitors Bureau and the Allegheny Mountains Convention & Visitors Bureau. Motor carrier tours of the JOFL and other interpretive sites are not promoted on a routine basis.⁵

4.0 ALTERNATIVE SOLUTIONS

This section presents various alternatives for implementing an ATS at the JOFL. To provide visitors with a variety of transportation options, the ATS could consist of four transportation modes: transit, automobile, bicycle, and pedestrian. Each mode is described below.

4.1 Transit

This section describes potential transit vehicles and routes for transporting visitors among the interpretive sites.

4.1.1 *Alternative Transit Vehicles*

Based on the specific needs of the park, three types of transit vehicles were chosen as potential options for transporting visitors. Each of the three vehicles is summarized below using information from the NPS publication “*Transit Vehicles for National Parks: Selection Factors and Technologies.*”

Passenger Van

Passenger vans are used for transporting small groups, and typically hold 12 to 15 passengers. The vehicles are built on a standard one-half ton to one ton platform, and can be modified to accommodate a variety of uses. As low-floor options are not available, the vehicles must contain lifts to meet Americans with Disabilities



Passenger Van (NPS)

⁵ Telephone conversation with Shirley Stahl, Johnstown Flood Museum Site Manager, January 15, 2004.

Act (ADA) requirements. The average purchase cost of the vehicle ranges from \$25,000 to \$35,000.

The NPS could purchase or lease a vehicle for the ATS. For the Summer 2003 interpretive tour, the NPS rented a van at a cost of \$3,000 for 10 weeks. An opportunity exists for the NPS to use recycled government vans at a cost of \$400 per month.⁶

Specialty/Cutaway Vehicle

Specialty/cutaway vehicles are often used for shuttle or extended travel purposes. The vehicles are customized for specific uses, and some manufacturers offer low-floor options. Larger specialty/cutaway vehicles can seat over 24 passengers.



Specialty/Cutaway Vehicle

Under Pennsylvania's Commercial Driver Licensing Program, an individual must possess a commercial driver's license (CDL) to operate the following:

- A single vehicle with a gross vehicle weight rating of 26,001 pounds or more
- A vehicle designed to transport 16 or more persons, including the driver

Thus, depending on the size of the specialty/cutaway vehicle, the operator may need to possess a CDL. Purchase costs of the vehicles range from \$50,000 to \$200,000+. The NPS could purchase or lease a vehicle for the ATS.

Note that Cambria County Transit possesses a 19-passenger van to provide rural service. However, federal regulations prohibit charter tours.

Intercity (Commercial) Bus

Intercity buses are designed for high-speed long distance trips. The buses have a single front door, luggage and storage compartments, and typically a restroom. The total number of seats varies. The buses have a turning radius between 40 and 47 feet. Use of an intercity bus for the ATS would require a partnership between the NPS and a private entity. The NPS could organize the tours and provide an interpretive guide, and the private entity could provide the driver and vehicle. This type of partnership could help to attract visitors from outside the existing market area.

According to Cambria County Transit, scheduled bus service does not currently operate on the Route 219 corridor due to lack of demand.

⁶ Telephone conversation with Terry Roth, Chief of Interpretation, December 10, 2003.

4.1.2 Alternative Transit Routes

Several routes connect the JOFL to the sites in Johnstown. For this study, one direct and two interpretive transit routes were chosen for evaluation (see Figure 4). Each route would begin at the JOFL Visitor Center, and then follow the six-mile loop around the lakebed with a stop at the 1889 Clubhouse. After circling the lakebed, each route would proceed in a different direction (described below).

A tour on any of the routes under consideration would span approximately four hours of time. This length of time represents the maximum that visitors are generally willing to spend on a tour of the sites.⁷ As a result, those routes that involve more travel time would allow less time at each interpretive site.

Transit Route A – Route 219/Route 56

After circling the lakebed, Transit Route A would proceed south on U.S. Route 219, and then west on State Route 56 (Johnstown Expressway) to Johnstown. The roads are limited access, multi-lane, divided interstate and expressway highways. In Johnstown, the route would include stops (in order) at the Johnstown Flood Museum, Johnstown Inclined Plane, Stone Bridge/Point Park, and Grandview Cemetery. After leaving the cemetery, the route would head back to the JOFL along Routes 56 and 219. Route A mimics the route of the Summer 2003 interpretive tour.

The route would total approximately 30 miles round-trip, and involve approximately 55 minutes of travel time. As such, the route would allow approximately three hours of time at the various interpretive sites. The roads can easily accommodate large buses and vans.

The objective of this route is to reach each site in the most direct manner. However, the route would bypass the communities along the Little Conemaugh River, eliminating important elements of the interpretation of the disaster.

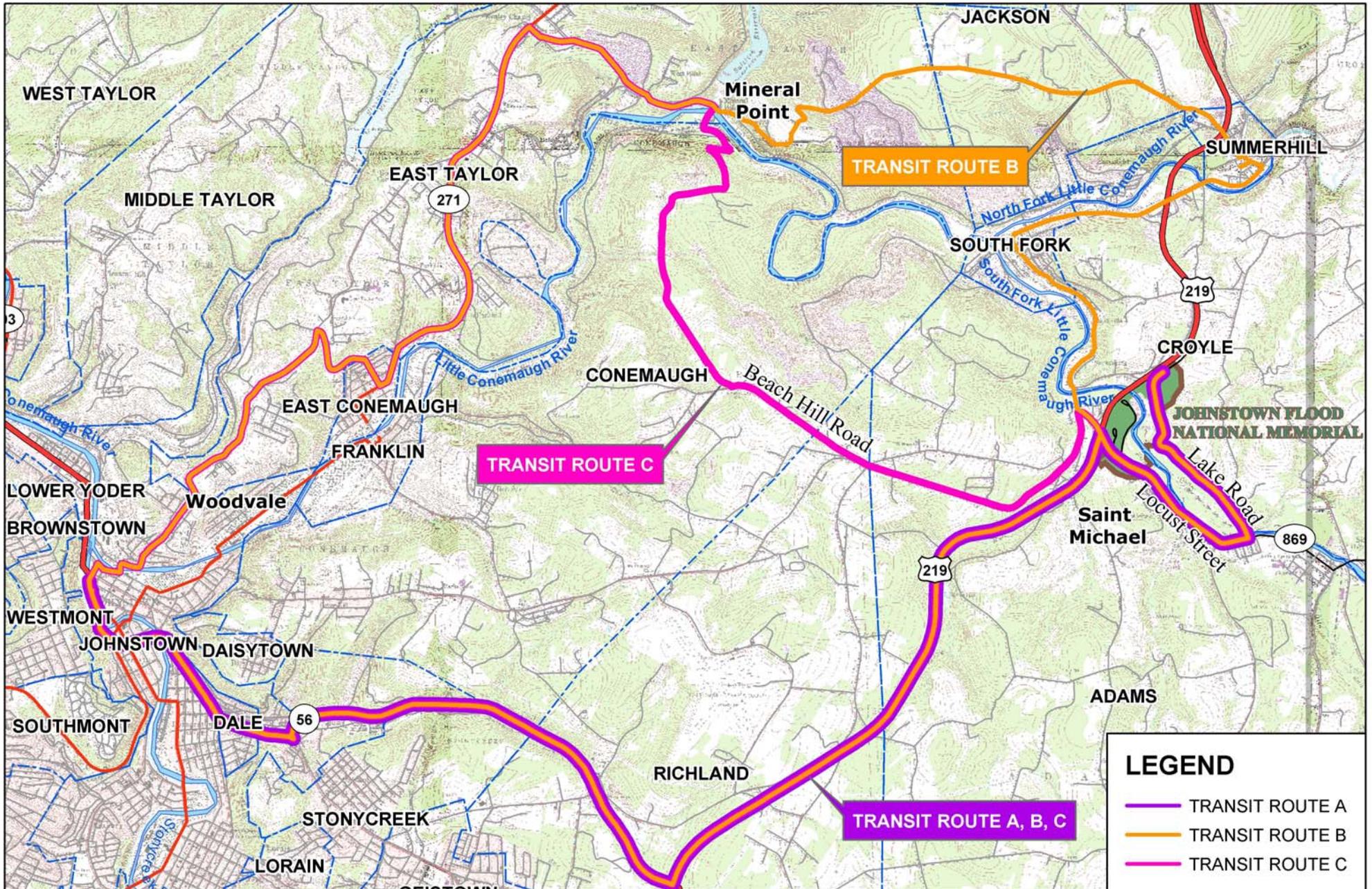
Transit Route B – Summerhill/Route 271

After circling the lakebed, Transit Route B would follow the floodpath to South Fork, stopping at a strategic location to allow visitors to view the valley (the construction of an off-street parking area would be required). After leaving South Fork, Route B would follow local roads through Summerhill and Mineral Point to State Route 271. The route would then proceed south on S.R. 271 to Johnstown. The route could include loops into Parkhill and East Conemaugh.

In Johnstown, the route would include stops (in order) at the Johnstown Flood Museum, Johnstown Inclined Plane, Stone Bridge/Point Park, and Grandview Cemetery. After leaving the cemetery, the route would head back to the JOFL along Routes 56 and 219.

The route would total approximately 40 miles round-trip (not including loops into Parkhill and East Conemaugh), and involve approximately 1.5 hours of travel time. As such, the route would allow approximately 2.5 hours of time at the various interpretive sites.

⁷ Telephone conversation with Terry Roth, Chief of Interpretation, December 10, 2003.



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FIGURE 4 - ALTERNATIVE TRANSIT ROUTES



0 0.5 1 Miles



The local rural roads on this route are generally 20 to 22 feet wide, with little to no shoulder or edge striping. The route would include a steep approach into Mineral Point (approximately 11% slope), and several switchback curves. Large buses could have difficulty negotiating the grade and turning radii of the roads.

Route B is the longest (distance-wise) of the three routes under consideration. As such, the route would allow the least amount of time at each interpretive site. However, the route would offer the greatest interpretive benefit of the three routes by providing an excellent view of the valley from South Fork, and visiting the local communities that were struck by the flood.

Transit Route C - Beach Hill Road/Route 271

After circling the lakebed, Transit Route C would follow Beach Hill Road north to Mineral Point. At this point, Route C would follow the path of Route B to Johnstown. After leaving Johnstown, the route would head back to the JOFL along Routes 56 and 219. The route would total approximately 35 miles round-trip, and involve approximately one hour and 25 minutes of travel time. As such, the route would allow approximately two hours and 35 minutes of time at the various interpretive sites.

The characteristics of the roadways on Route C are similar to those on Route B. Route C would also include a steep approach into Mineral Point (approximately 11% slope), and several switchback curves. Large buses could have difficulty negotiating the grade and turning radii of the roads.

Route C serves as a compromise between Route A and Route B. The route would offer more interpretive benefit than Route A by visiting several of the communities struck by the flood, and allow more time at the interpretive sites in Johnstown than Route B. However, the route would bypass South Fork (the first community struck by the flood) and the associated view of the valley.

4.1.3 Boarding Facilities

To evaluate visitor safety, this section identifies and assesses passenger boarding facilities at each of the interpretive sites on the routes.

- Johnstown Flood National Memorial – Although the JOFL does not provide a specific passenger boarding facility, the Visitor Center parking lot is large enough to sufficiently accommodate a bus or van.
- 1889 Clubhouse – An unpaved off-street parking area on the east side of the clubhouse provides a sufficient boarding point for a bus or van.



Parking Area at the 1889 Clubhouse

- Johnstown Flood Museum – The museum does not provide an exclusive parking facility for visitors. Visitors must park on the street or in a private lot adjacent to the museum building. Passengers currently board vans and buses in a no-parking zone in front of the museum. After unloading, the van from the Summer 2003 tour parked in the adjacent commercial off-street parking lot. Through the achievement of a cooperative agreement, the potential exists for the museum to provide a boarding facility in an area behind the building next to the United Way. Visitors could then access the museum through the connecting alley.
- Stone Bridge & Point Park – A small paved off-street parking area exists along Washington Avenue. The area accommodates approximately three automobiles. The area cannot accommodate a large bus.
- Grandview Cemetery – An internal one-way road system exists within the cemetery. Sufficient space exists for vans and buses to stop along the side of the road for boarding. However, the narrow roadways and small turning radii may create difficulties for travel by a large bus.
- Johnstown Inclined Plane – Existing on-street parking can sufficiently accommodate boarding for a van. A large bus would require multiple vacant parking spaces.



Parking at the Inclined Plane

4.1.4 Transit Vehicle Recommendation

Based on preliminary review of boarding facilities, visitor demand, and financial constraints, a 15-passenger van represents the most feasible transit vehicle of the three under consideration. A van is much less costly than a specialty vehicle, and does not require special training or a commercial driver’s license (CDL) for operation (note: a CDL is required if the van is designed to transport 16 or more persons, including the driver).

In addition, a 15-passenger van would sufficiently accommodate current demand. In the future, the NPS may desire to partner with a private entity to provide commercial bus tours.

4.2 Automobile

The General Management Plan (GMP) for the JOFL lists several management goals related to the establishment of an interpretive program at the park. One goal is to “implement an auto tour between the park and Johnstown to interpret to the visitor the complete story of the flood.”

The NPS has developed a system of self-guided driving tours for Civil War battlefield sites. For example, at the Fredericksburg and Spotsylvania National Military Park in Virginia, the NPS has published a written guide that contains a narrative summary of the battle, directions to the

battlefield, a suggested tour route of the battlefield, and a map.⁸ This type of system could be implemented for the JOFL. The written guide would include a brief history of the Johnstown Flood, a suggested tour route of the JOFL and related sites, and a map. For each site, the written guide would provide background information and describe specific items of interest. To meet Americans with Disabilities Act (ADA) requirements, the text of the guide would be available in cassette form.

Visitors would obtain the written guide at the JOFL Visitor Center. The tour would ideally follow the path of Transit Route B (described above), and include stops at the following:

- 1889 Clubhouse & South Fork Fishing and Hunting Club Historic District
- Location along State Route 3024 (overlooking the valley)
- Strategic location in each of the communities along the floodpath (South Fork, Mineral Point, East Conemaugh, Woodvale)
- Staple Bend Tunnel
- Stone Bridge/Point Park
- Johnstown Flood Museum
- Johnstown Inclined Plane
- Grandview Cemetery

Implementation of the tour would require the installation of trailblazer signing along the route and at the stops (as appropriate). An off-street parking area would be constructed at the chosen overlook location along S.R. 3024. Adequate parking facilities/areas exist at the remainder of the stops.

In comparison to the transit options, the driving tour option would offer more independence to visitors, allowing individuals to view the sites at their own pace. However, the automobile mode of travel represents the least environmentally-sensitive mode (compared to transit, bicycle, and pedestrian).

4.3 Bicycle System

4.3.1 *Background*

The bicycle is another mode of transportation that could link the various sites within and in the vicinity of the JOFL. Due to the physical requirements and skill necessary for propelling a bicycle, as well as the limited range of a bicycle compared to a motor vehicle, many visitors would not likely choose this mode for touring all the sites along the Little Conemaugh River Valley. However, the bicycle has many advantages over the motor vehicle. Bicycles are easier to operate and maintain, do not use costly and polluting fuel, and provide a source of recreation and exercise.

Bicycling is a popular activity in America. A Harris Poll conducted in 1991 revealed that nearly half (46%) of all Americans 18 years and older bicycled at least once during the previous year.⁹

⁸ www.nps.gov

⁹ FHWA-PD-94-023, "Final Report – The National Bicycling and Walking Study," 1994, p. 10.

The average bicycle trip measures approximately two miles.¹⁰ However, healthy adults can easily achieve bicycle trips of five miles or more. Studies for the Mohawk Hudson Greenway¹¹ in New York State and the Bethpage Parkway Bikeway¹² on Long Island revealed that the average duration of a bicycle trip on a bicycle trail is 100 to 120 minutes.

An established bicycle system at JOFL would enhance the overall visitor experience at the park by providing an additional recreational activity for visitors, and allowing visitors to tour the sites at their own pace. Bicycles can travel on most existing roadways or follow off-road paths and trails (bicycles are generally prohibited from using interstate and expressway highways).

4.3.2 Suitability of Roadways for Bicycling

The 1999 publication, “*American Association of State Highway & Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities*,” serves as the primary source of design criteria for bicycle facilities. This document defines four types of bicycle facilities: shared roadway, signed shared roadway, bicycle lane, and shared-use path. At JOFL, a route along local roads that connects the various interpretive sites would be classified as a “shared roadway.” If signs were erected to guide bicyclists along the route and alert motorists of the presence of bicyclists, the route would be classified as a “signed shared roadway.”

AASHTO guidelines and the Federal Highway Administration (FHWA) 1994 publication, “*Selecting Roadway Design Treatments to Accommodate Bicycles*,” present standards to assess the suitability of a roadway for use as a shared roadway or signed shared roadway. In rural areas with bicyclists of all skill levels, roadways with an annual average daily traffic volume (AADT) of less than 10,000 vehicles should provide the following shoulder widths:

- Four feet where average motor vehicle speeds are less than 40 mph
- Six feet where average motor vehicle speeds are 41 to 50 mph

No nationally-accepted guidelines exist for rating the degree of challenge of bicycle touring routes. Numerous bicycle touring companies regularly schedule 30- to 75-mile bicycle tours, often in hilly terrain. For example, Vermont Bicycle Tours conducts a six-day tour of Acadia National Park in Maine. The level of difficulty is described as “easy to moderate,” with a combination of easy terrain mixed with moderate hills. Daily distances range from 13 to 26 miles.¹³

With its rural roads, challenging mountain climbs, and rolling hills, the Southern Alleghenies Region offers a unique setting for bicycle touring. As part of an integrated tourism program, the Southern Alleghenies Regional Tourism Confederation appointed a special committee to develop a bicycle touring project in the region, called Cycling the Southern Alleghenies (CSA). CSA features 20 individual self-guided routes, including the Raging Rapids Adventure Tour, Covered Bridge Scenic Tour, and Tuscarora Mountain Challenge Tour. Bicyclists can ride an individual route in a day, or combine the routes for a multiple-day bicycling vacation.

¹⁰ Ibid., p. 11.

¹¹ Capital District Transportation Committee, Mohawk-Hudson Bike/Hike Trail User Counts/Survey Findings, 1997.

¹² NYS Department of Transportation, Draft Survey Results, Bethpage State Parkway Bikeway, 1999.

¹³ www.vbt.com

The closest CSA route to the JOFL, named the “Castle Tower Tour,” begins in Cresson and ends at the Castle Tower in Patton, covering a distance of approximately 20 miles. The level of difficulty is considered moderate. The route has few challenging climbs with rolling to hilly terrain.

Based on the experience of bicycle touring companies, a bicycle tour length of 10 miles in the hilly areas surrounding the JOFL would be considered reasonable and challenging to bicyclists of average to above-average fitness levels. With an approximate change in elevation of less than 500 feet between the Visitor Center and Johnstown, the degree of difficulty of the terrain would be described as “moderate.”

4.3.3 *Alternative Bicycle Routes and Tours*

Lakebed Route

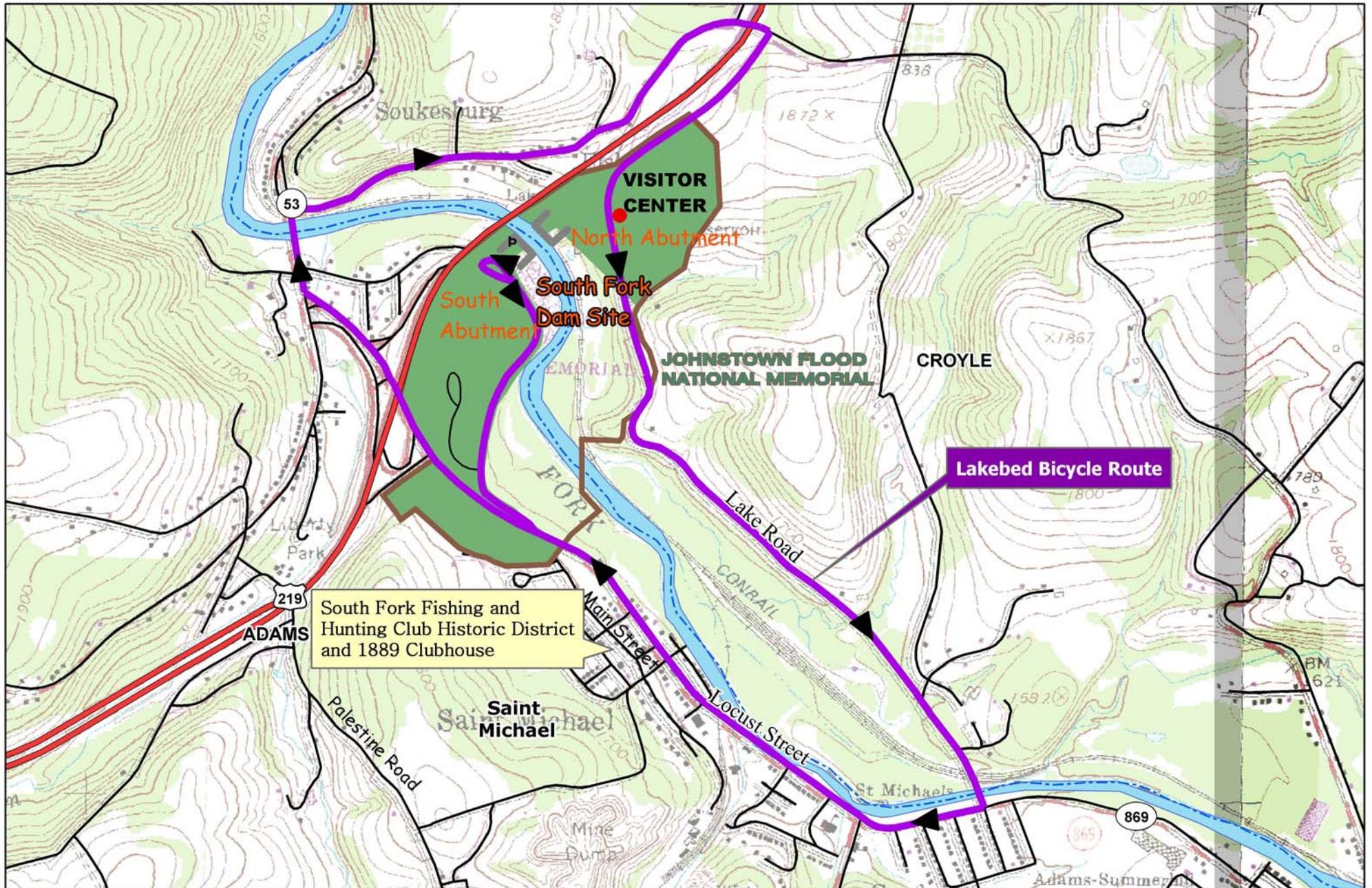
As shown on Figure 5, the Lakebed Route consists of a circuit that begins and ends at the Visitor Center. The route follows the roads surrounding the former lakebed. From the Visitor Center, bicyclists would follow Lake Road to the southernmost tip of the lakebed (intersection of Lake Road and Locust Street). Bicyclists would then proceed north along the shoreline on Locust Street (Route 869), with stops at the 1889 Clubhouse and South Fork Fishing and Hunting Club District in Saint Michael. From the clubhouse, bicyclists would proceed along Locust Street to the park access road and South Abutment. From the abutment, bicyclists would ‘back-track’ to Locust Street, and proceed westerly under Route 219 to the Route 53 Bridge. After crossing the bridge, bicyclists would follow the road back to the Visitor Center. Overall, the sites on the route would include the Visitor Center, 1889 Clubhouse, South Fork Fishing and Hunting Club District, Saint Michael community, and South Abutment.

The distance of the route would total approximately six miles and the maximum change in elevation is approximately 225 feet. Bicyclists would share the road with motor vehicles in most locations. The route would be moderately difficult, requiring a reasonable level of bicycling skill. One long climb occurs in the vicinity of Lake Road and the Visitors Center. At a conservative bicycling speed of nine miles per hour (mph), the route would involve a travel time of approximately 40 to 45 minutes.

The terrain of this route compares with two similar routes in Acadia National Park. The Eagle Lake Route is a six-mile ride along carriage roads with a total change in elevation of approximately 180 feet. This ride is rated as “moderate/family.”¹⁴ The Aunt Betty Pond Route involves a similar distance and change in elevation, and is rated as “moderate.”¹⁵ This route is somewhat more challenging as it includes two long climbs.

¹⁴ Minutolo, Audrey, “*Biking on Mount /Desert Island*,” Down East Books, Camden, ME, 1996, p.17.

¹⁵ *Ibid.*, p.19.



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NATIONAL PARK SERVICE
JOHNSTOWN FLOOD NATIONAL MEMORIAL
CAMBRIA COUNTY, PENNSYLVANIA
FIGURE 5 - LAKEBED BICYCLE ROUTE



0 0.25 Miles



The route would generally meet the AASHTO guidelines for shared roadway bicycle facilities. Areas with no shoulders exist along the lower section of Lake Road and between the Route 53 Bridge and Route 219 in the vicinity of Fishertown. However, the roads experience average annual daily traffic (AADT) counts of approximately 500 vehicles. This low volume of traffic would allow bicyclists to conveniently share the roadway lanes.

Path of the Flood Trail Route

As previously mentioned, the Path of the Flood Trail will allow users to follow the path of the Johnstown Flood by foot or bicycle. The trail will measure approximately 10 miles, and follow abandoned railroad lines and roadways along the Little Conemaugh River between Johnstown and the JOFL. The abandoned railroad lines contain gradual grades, and no steep hills are anticipated. With a length of 20 miles and change in elevation of approximately 400 feet from Johnstown to the JOFL, a round-trip bicycle tour along this facility would be classified as “moderate.” The route would likely involve approximately two hours of riding time uphill to the JOFL and less than one hour of riding time downhill to Johnstown.

Overall, the Path of the Flood Trail Route would involve a self-guided system that allows visitors to bicycle between Johnstown and the JOFL. An option for this route could involve the use of a transit vehicle equipped with bicycle racks. Users could bicycle downhill from the JOFL to Johnstown, and then ride the transit vehicle back to the JOFL (or vice-versa). Using the transit vehicle would allow visitors to spend more time at the interpretive sites. This type of “one-way trip” system would require coordination among various partners, the establishment of a transit schedule, and a transit vehicle equipped with bicycle racks.

4.4 Pedestrian System – Internal Route

The existing internal pedestrian system at the JOFL consists of short walking trails to the North and South Abutments. As previously discussed, no connection exists between the abutments. Both the South Fork Little Conemaugh River and Conrail tracks run between the abutments; thus, a connection would require crossing the river and railroad tracks.

The construction of a pedestrian bridge would connect the park’s internal trail system, and also provide visitors with a unique view of the lakebed and valley. The need for a pedestrian connection is identified in the JOFL General Management Plan, which recommends the construction of a low-level pedestrian bridge over the river and railroad. Note that a pedestrian bridge over the railroad must also provide sufficient clearance for passing railroad cars.

The NPS could consider two potential solutions for connecting the abutments. The first would involve the construction of an elevated structure directly adjacent to the Route 219 Bridge that would follow the slope of the abutments, and cross the railroad and river in line with the easterly face of the abutments. A minimum clearance of 22 feet would be necessary to extend the structure over the railroad and allow for the passage of railroad cars.

Another potential solution would involve the construction of an elevated pedestrian structure attached to the Route 219 Bridge. The structure could be accessible from a trail built on the embankment of Route 219. The existing structure of the bridge may not enable the construction of a cantilevered walkway off of the existing piers. However, a structure hung from the pier caps beneath the bridge may be feasible. A thorough investigation of the bridge would be necessary to determine the feasibility of attaching a pedestrian structure.



Route 219 Bridge

An important consideration regarding the design and location of a pedestrian bridge is the potential visual impact on the abutments and the overall historic character of the JOFL. A visual impact is related to how a viewer responds to a change in the existing visual environment. Consideration is given to how the proposed visual feature is viewed from the site and how the site is viewed from the proposed structure.

A pedestrian bridge would be viewed in the context of the larger Route 219 Bridge. The Route 219 Bridge is currently a dominant visual element in the view from the abutments towards the Little Conemaugh River Valley; thus, the addition of a pedestrian bridge structure would not significantly change the view from the abutments. A pedestrian bridge would not be more visually intrusive than the existing highway bridge, and only a minimal visual impact on the view from the abutments would occur.

A pedestrian bridge attached or adjacent to the Route 219 Bridge would provide viewers with an elevated view of the dam site from the river valley. Viewers on the bridge would gain a greater appreciation of the width of the dam opening, creating an opportunity for increased interpretation of the Johnstown Flood. Overall, the installation of a pedestrian structure would likely have a positive visual impact on the view of the dam site.

4.5 Alternative Screening

As previously stated in Section 1.2, the NPS's Alternative Transportation Program (ATP) coordinates and supports ATS planning and implementation at parks throughout the country. In establishing an ATS, parks follow the objectives of the ATP:

- Improving the visitor experience
- Protecting natural and cultural resources
- Promoting economic development
- Fostering strong partnerships
- Enhancing visitor safety and security
- Enabling new services

The ATS options were screened to determine how well each option meets the ATP objectives. Table 2 presents the results of the screening.

TABLE 2 – ALTERNATIVE SCREENING							
Mode	Route	ATP Objectives (see legend below)					
		1	2	3	4	5	6
Transit (15-pass. van)	A						
	B						
	C						
Automobile	Self-guided						
Bicycle	Lakebed						
	Path of the Flood						
Pedestrian	Internal						

Legend:

ATP Objectives
 1 - Improving the visitor experience
 2 - Protecting natural and cultural resources
 3 - Promoting economic development
 4 - Fostering strong partnerships
 5 - Enhancing visitor safety and security
 6 - Enabling new services

Meets Objective Somewhat Meets Objective Does Not Meet Objective

5.0 RECOMMENDATIONS

This section presents recommendations for implementing an ATS at the JOFL. Each recommendation would enhance the overall visitor experience at the park, and contribute to the establishment of a transportation connection among the various interpretive sites.

Recommendation 1 – Continue Existing 15-Passenger Van Tour

The existing 15-passenger van interpretive tour meets current and anticipated future demand. This tour should continue to be offered during the summer months and possibly on the weekends during the fall months. Transit Routes B and C are not currently recommended due to the steep grades and turning radii of the roads along the routes, and the additional driving time that would be required to visit the communities along the path of the flood.

To be successful, this tour should be actively promoted throughout the region. The NPS should partner with organizations, such as the Johnstown Area Heritage Association (JAHA), Johnstown & Cambria County Convention & Visitors Bureau, and Johnstown Flood Museum, in promoting and advertising the tour.

The NPS should continue to lease a 15-passenger van for at least another three years to determine growth trends before considering the purchase of a vehicle.

Recommendation 2 – Establish Motor Carrier Tour

As previously stated, motor carrier tours of the JOFL and other interpretive sites are not promoted on a routine basis. However, the establishment of a regular motor carrier tour could expand the market area of the JOFL, and increase visitation at the park. The NPS could take advantage of this opportunity by forming a partnership with the Johnstown & Cambria County Convention & Visitors Bureau. The NPS could provide walk-on guides for the tours. Overall, the NPS should further research the potential for a partnership.

Recommendation 3 – Implement Self-Guided Driving Tour

The NPS should implement a self-guided driving tour among the various interpretive sites. To provide the greatest interpretive benefit, the tour should follow the roads of Transit Route B. Implementation of the tour would involve the development of a written guide and map, and the installation of trailblazer signing along the route. The written guide should be prepared in partnership with the Johnstown Flood Museum to allow tours that proceed in either direction between Johnstown and the JOFL.

The “story” of the Johnstown Flood continuously develops along the route through the valley from the JOFL. As such, an accompanying audio tape could be developed that narrates the events of the Johnstown Flood for participants of the driving tour.

Recommendation 4 – Promote Lakebed and Path of the Flood Trail Bicycle Routes

Bicycling represents an increasingly popular, environmentally-friendly mode of transportation. As such, both the Lakebed Route and Path of the Flood Trail Route should be promoted. For the Lakebed Route, the JOFL could pursue a partnership with a local bicycle shop to rent bicycles at the Visitor Center for a nominal fee. The bicycle shop could perform routine maintenance on the leased bicycles as part of the partnership agreement. The NPS should work and coordinate with local agencies to ensure that the Path of the Flood Trail connects to the JOFL.

Recommendation 5 – Develop Cycling the Southern Alleghenies Bicycle Route

As previously discussed, the Cycling the Southern Alleghenies (CSA) program features numerous individual self-guided bicycle routes in the Southern Allegheny Region. The NPS should work with the Southern Alleghenies Regional Tourism Confederation to develop a CSA bicycle route of the JOFL interpretive sites. The route could be combined with existing routes as part of a multiple-day adventure.

Recommendation 6 – Construct Internal Pedestrian Connection

The need exists for a pedestrian connection between the North and South Abutments within the JOFL. The construction of a pedestrian bridge would connect the park's internal trail system, and also provide visitors with a unique view of the lakebed and valley.

As previously stated, both the South Fork Little Conemaugh River and Conrail tracks run between the abutments. Thus, a pedestrian connection would consist of an extensive elevated structure attached or adjacent to the Route 219 Bridge. Determining the feasibility of constructing such a structure is beyond the scope of this study. The NPS should develop a partnership with the Pennsylvania Department of Transportation to discuss the feasibility of attaching a pedestrian bridge to the Route 219 structure. A detailed engineering analysis would be necessary as part of a separate future study.

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