

Alternate 15 would meet the purpose and need for the project. Although the alternate would result in minimal park and environmental impact, it would result in closure of the existing bridge crossing for many months. Closing the bridge crossing would require travelers to detour more than 100 roadway miles to the next nearest Potomac River crossing at the Woodrow Wilson Bridge (I-95) near Washington, DC. The bridge closure would also have severe negative effects on regional economic conditions and operations at NSF Dahlgren, as well as many other businesses in Charles County and King George County that rely on mobility over the existing bridge. Alternate 15 would cost approximately \$620 million.

### ***Conclusion of Least Harm Analysis***

Based on the evaluation presented in this section, and in **Table 9**, Modified Alternate 7 is the alternate that causes the least overall harm to Section 4(f) properties.

## **VIII. ALL POSSIBLE PLANNING TO MINIMIZE HARM**

“All possible planning,” as defined in 23 CFR 774.17, includes all reasonable measures identified in the Section 4(f) Evaluation to minimize harm and mitigate for adverse impacts and effects. Modified Alternate 7 minimizes harm to Section 4(f) resources by incorporating measures into the project that minimize the impact on, and the use of, the resources. This section summarizes these minimization measures and also provides a review of alignment shifts and mitigation.

To reduce the amount of encroachment that Modified Alternate 7 would have on park properties in Virginia, the distance between the existing Nice Bridge and the proposed new bridge to the north has been minimized to a distance that would allow typical bridge construction methods. Other minimization measures to reduce park impacts will continue to be evaluated during the design phase, including steeper side slopes, reduced median width, retaining walls, and mechanically stabilized embankments (MSE).

Modified Alternate 7 proposes a single two-way bike/ped path on the south side of the new bridge. Compared to constructing two one-way paths (as presented with Alternate 7 in the Draft Section 4(f) Evaluation), a single two-way path results in less encroachment into Dahlgren Wayside Park and reduces the project cost by approximately seven percent. Consideration was also given to placing the path on the north side of the new bridge. This would locate the path closer to the park and enhance park amenities; however, a path loop beneath the west end of the bridge could also potentially result in greater encroachment into the park. Consideration for placing the path on either the north or south side of the new bridge will continue during final design. Park and recreational facilities on either side of the bridge would be fully accessible by the bike/ped path, regardless of the path location.

Modified Alternate 7 was evaluated to determine the possibility of allowing the existing historic bridge to remain standing, rather than removing it. Two options were considered: 1) retaining the bridge and taking it out of service, and 2) retaining the bridge and maintaining it as a bike/ped path.

If the existing bridge were retained and taken out of service, future maintenance and rehabilitation would need to occur in accordance with AASHTO *Guidelines for Historic Bridge Rehabilitation and Replacement*. The relative severity of harm to the historic bridge would be reduced, likely resulting in no adverse effect. However, retention of the bridge would result in the following costs:

- Routine bridge maintenance (costs to repair structural defects discovered during annual inspections, torque bolts, and make routine repairs) is expected to incur an annual expense of \$1.5 million (in 2009 dollars).
- Maintenance of the bridge deck to prevent debris falling into the river and navigational channel is expected to cost \$65 million every 40 years (or an average annual cost of \$1.6 million, in 2009 dollars).

- Painting of the structural steel and associated repair of corroded members is expected to cost \$40 million every 20 years (or an average annual cost of \$2 million, in 2009 dollars).
- Closing the bridge would also require installation of security measures (fencing and barricades) to prevent unauthorized vehicular and pedestrian access. In addition, if the new bridge should be designed with a larger horizontal navigational clearance, the US Coast Guard (USCG) would require installation of a fender system on the existing bridge to protect the two main piers on either side of the navigation channel. These measures would require a one-time expense estimated to cost \$20.5 million.

The existing bridge could also be retained and serve as a bike/ped path. This would allow the bridge to continue to have a transportation function, which would make the annual costs to preserve the bridge more justifiable. This option would allow the proposed bike/ped path to be removed from Modified Alternate 7, which would result in construction cost savings that defray the maintenance cost of the existing bridge for a number of years. However, in addition to the costs described above, converting the existing bridge to a bike/ped trail would necessitate an initial outlay of \$4.5 million to provide safety fencing along the entire bridge, and over \$5 million annually for maintenance of the existing bridge for transportation purposes. The mounting cost of maintenance would eventually become too great a financial burden to justify preserving the existing bridge to accommodate a bicycle/pedestrian path. The costs of maintaining a bicycle/pedestrian trail would be substantially lower with the trail incorporated into the new bridge, since only one bridge substructure would have to be maintained.

The expenditures for retaining the bridge would substantially increase the project cost, and would be difficult to justify for a bridge that ceases to have a roadway function. Therefore, the cost of these measures is not a reasonable public expenditure in light of the adverse impacts of the project on the Section 4(f) property and the benefits of the measure to the property.

Modified Alternate 7 was also evaluated to determine the possibility of allowing the existing Potomac River Bridge Administration Building to remain standing. Three options were considered: 1) shift the US 301 approach curve in Maryland; 2) shift the US 301 approach in Maryland to the north; and 3) raise the US 301 approach in Maryland.

With Modified Alternate 7, the US 301 approach roadway on the Maryland side forms a 2,200-foot S-curve between the east bridge abutment and the intersection with Orland Park Road (*Appendix A*). If the S-curve were shifted approximately 1,600 feet westward, the US 301 roadway would pass to the south of the Administration Building, with a minor encroachment onto the boundary of the historic site. Assuming this option included the same profile and bridge length proposed with Modified Alternate 7, approximately 1,100 feet of the S-curve would be on the bridge structure. Incorporating a curve into the bridge structure would add to the cost and complexity of the design and construction. The cost would be further increased by the construction of more than 2,000 feet of temporary roadway that would be required for the purpose of maintaining traffic while the new approach roadway is constructed to a higher profile. Either a retaining wall approximately 15 feet high or a 300-foot longer bridge would be required to avoid encroachment of fill slopes onto the Administration Building.

Shifting the US 301 approach in Maryland northward to avoid the Administration Building would result in impacts to the Aqua-Land Marina and Campground (Aqua-Land), a low-income community. The northern shift would also result in noise impacts at the Aqua-Land and greater forest impact. Additional costs would be required as a result of a substantial increase in right-of-way acquisition, a longer relocation of Orland Park Road, and construction of an S-curve on the bridge.

The profile of Modified Alternate 7 could be raised approximately 25 feet higher than the profile of the existing bridge and approach pavement to allow US 301 to pass directly over the Administration

Building. Raising the profile would increase the visual and audible impacts of the bridge. In addition, the higher profile would widen the footprint of the embankment on the approach to the bridge, resulting in additional forest and stream impacts, a longer relocation of Orland Park Road, and additional property acquisition from Aqua-Land. Raising the profile would also require added costs for a 350-foot longer bridge than proposed in Modified Alternate 7, noise insulation to buffer the sound of traffic passing directly overhead, and a fire suppression system to safeguard the bridge against any potential fires in the Administration Building.

The existing Administration Building does not comply with modern building codes and Americans with Disabilities Act (ADA) standards. For the building to continue to function for the MDTA, extensive renovations would be needed to meet current building codes, and an expansion would be needed to meet current floor space requirements. The condition of the building, factored with costs to avoid the building, make measures to minimize harm not reasonable public expenditures in light of the adverse impacts of the project on the Section 4(f) property and the benefits of the measure to the property.

Mitigation has been incorporated into Modified Alternate 7 for Section 4(f) uses that cannot be avoided or further minimized. These mitigation measures have been determined through consultation with the officials having jurisdiction over each resource. For historic sites, the Draft Section 4(f) Evaluation anticipated that mitigation measures would be documented in a Memorandum of Agreement (MOA) per Section 106 of the National Historic Preservation Act. However, during consultation with the Maryland Historic Trust (MHT) and the Virginia Department of Historic Resources (VDHR), it was determined that a Programmatic Agreement (PA) would be more appropriate because of the unknown timing of design, construction, and mitigation implementation. For park properties, mitigation measures are documented in an executed MOA (*Appendix D*).

Mitigation measures in the PA, executed in July 2011, were developed in coordination with the Maryland State Historic Preservation Officer (SHPO) at MHT, and the Virginia SHPO at VDHR. The following stipulations are included in the PA:

- MDTA shall develop a plan to document and photograph the Nice Bridge and Administration Building. The plan for recordation will be implemented in accordance with the standards of the Historic American Engineering Record (HAER).
- MDTA shall consider interpretive signage to be mounted in public locations adjacent to and/or on the Nice Bridge.
- MDTA shall consider creating an interpretive display that illustrates the history of the Nice Bridge, to be installed in an interior public space near the Project area.
- MDTA shall establish an electronic informational site that describes the history of the Nice Bridge and Administration Building.
- MDTA shall establish the expanded limits of the archeological Area of Potential Effect (APE). MDTA shall ensure that archeological investigations of the expanded APE are conducted. Any archaeological sites identified within the expanded APE will be evaluated for the NRHP as part of Phase II investigations, in accordance with 36 CFR Part 800.4(c).
- MDTA will conduct a Phase I underwater archeological survey of the Potomac River within the APE. Any archaeological sites identified will be evaluated for the NRHP as part of Phase II investigations.
- MDTA shall ensure that a Phase II archeological investigation is conducted for the Nice Bridge Shell Midden Site (18CH0797) and the Barnesfield Plantation Site (44KG0171).

Mitigation measures in the MOA, executed in September 2011, were developed in coordination with VDOT, FHWA, NPS, VTC, the Virginia Department of Conservation and Recreation (DCR), and King George County, and include the following:

- Parkland mitigation needs will be determined based on final engineering design plans. The mitigation will satisfy no less that a 2:1 ratio of replacement parkland to impacted parkland.
- A site search will be conducted and coordinated with the signatories to the MOA. Riverfront properties will be considered.
- Replacement parkland for Barnesfield Park shall be of at least equal fair market value to the appraised value of the converted parkland, and of reasonably equivalent usefulness, recreational value, and location, to satisfy the requirements of Section 6(f) of the LWCF Act and the Federal Lands to Parks Program.
- MDTA shall prepare a landscape plan for the three properties in Virginia, with the intent of screening the highway from the properties. Noise mitigation will be considered at Dahlgren Wayside Park.
- MDTA shall construct a new public trail within Dahlgren Wayside Park that will provide access from the park to the bicycle/pedestrian path on the new bridge. The Dahlgren Wayside Park entrance and parking lot will be relocated. Hardscape features such as picnic tables, flagpoles, replacement boat landing, and barbecue grills shall be installed.
- Any unused portion of the Potomac Gateway Welcome Center property will be returned to King George County for park usage. This will not be considered replacement parkland.

Based on the evaluation presented in this section, Modified Alternate 7 includes all possible planning to minimize harm.

## IX. COORDINATION

### A. Officials with Jurisdiction over Parkland

As part of the Section 4(f) Evaluation, comments have been received from the official(s) with jurisdiction over each park resource (*Appendix B*). According to 23 CFR 774.17, the ‘official with jurisdiction’ is the official of the agency owning or administering the Section 4(f) resource. FHWA’s Section 4(f) Policy Paper (March 1, 2005) states there may be instances where the agency owning or administering the land has delegated or relinquished its authority to another agency via an agreement on how some of its land will function or be managed. This is the case with Barnesfield Park, Dahlgren Wayside Park, and the Potomac Gateway Welcome Center, where activities on these lands require the consent of the US DOI, in addition to the property owner, based on the conditions of the 1972 Federal Lands to Parks transfer agreement and resulting covenants placed on the park properties.

MDTA and FHWA met with all officials with jurisdiction over park properties and the US Navy on September 14, 2009 and November 16, 2009 to present the Draft Section 4(f) Evaluation; discuss the impact of each analyzed alternate on Section 4(f) properties; discuss MDTA’s Preferred Alternate; and identify measures to mitigate park impacts. The outline for the MOA was initiated at these meetings. A copy of the executed MOA is included as *Appendix D*.

#### 1. US Department of Interior/National Park Service

US DOI/NPS serves multiple jurisdictional roles for the park properties in Virginia, including oversight of any land conversion that may be required from Barnesfield Park in accordance with Section 6(f) of the LWCF Act, and approval of any land transfer in accordance with covenants and restrictions stipulated in deeds for those properties.