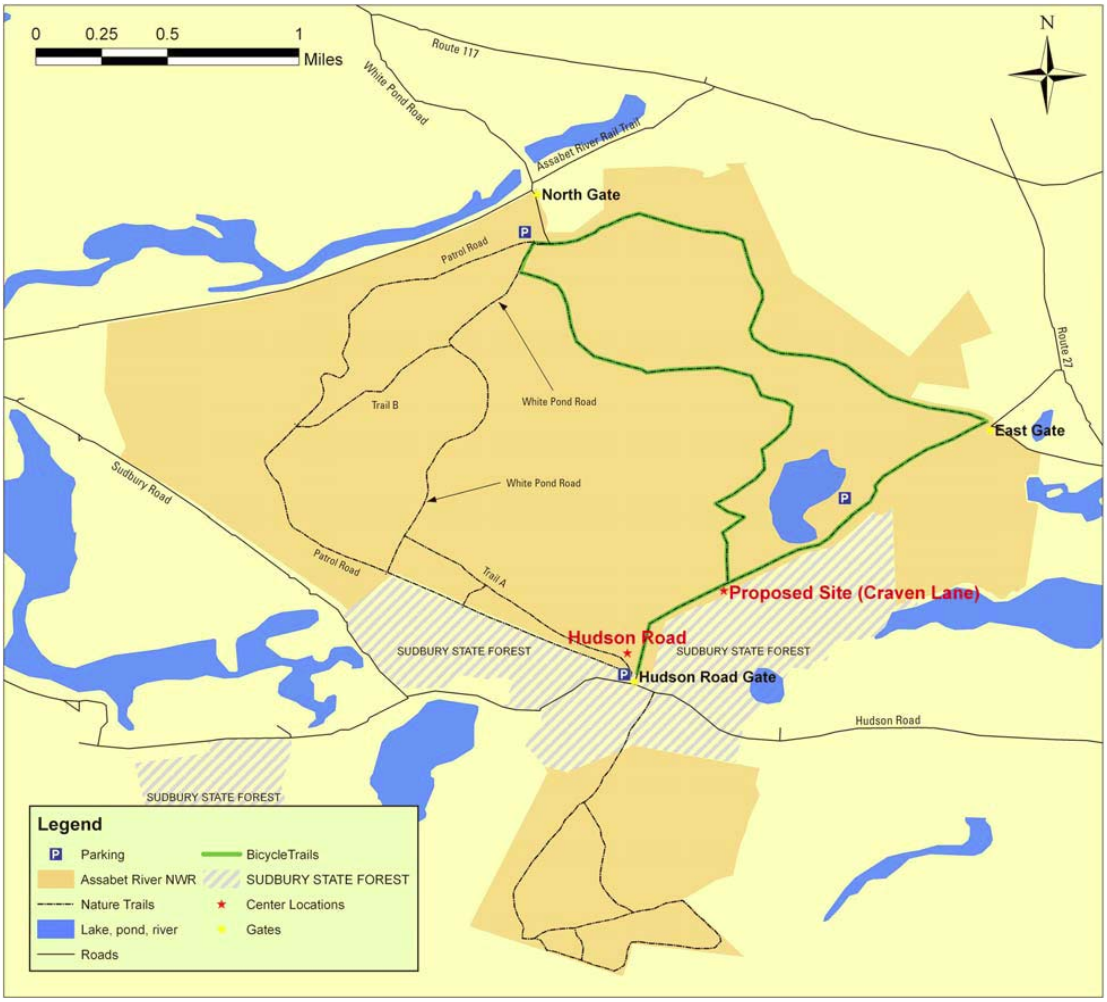
Assabet River NWR: Craven Lane (Proposed Site)

This site is located on Assabet River NWR along Craven Lane (see below). The site is adjacent to Sudbury State Forest land and is located approximately 3/10 of a mile from Puffer Pond. There is an existing trail network that provides access to wildlife observation and photography opportunities on the refuge. The site is located approximately 1/3 mile north of Hudson Road in Sudbury. The Service would develop signs directing visitors from Hudson Road to the site, since the Visitor Center would not be visible from outside the refuge.

Parking would be provided adjacent to the building. The main access to the site would be from Hudson Road in Sudbury. The Service would develop a secondary vehicular access from Old Marlborough Road in Maynard. This entrance would provide access to the refuge off of Route 27 in Maynard at what is known as the East Gate. However, since the existing road cuts through a wetland north of Puffer Pond and the road floods seasonally, permanent access will not occur until the road is improved to restore the hydrologic link between the two sides of the road.

Under this alternative, **access to the Visitor Center via bicycle would be allowed.** We have included a compatibility determination for bicycling as Appendix A. **We would allow bicycling as a means of transportation to the Visitor Center and to certain points on the refuge. For example, bicycles may be allowed from the North Gate east along the Patrol Road and south along Craven Lane or from the North Gate south along White Pond Road and east along a Service Road or Patrol Road to the Visitor Center.**

Bicycles would be allowed to enter from the Hudson Road Gate and East Gate and travel on Craven Lane to the Visitor Center. By allowing bicycles as a means of transportation to specific points on the refuge, we will be able to link to the Assabet River Rail Trail that is to the north of the refuge and provide individuals with the opportunity to access the refuge by a method that will environmentally friendly.



Appendix A: **Compatibility determination for bicycle access**

COMPATIBILITY DETERMINATION

USE: Non-motorized Cycling To Facilitate Priority Public Uses

Refuge Name: Assabet River National Wildlife Refuge

Establishing Authority: Assabet River National Wildlife Refuge (NWR) was established in 2000 under an Act Authorizing the Transfer of Certain Real Property for Wildlife, or Other Purposes. (16 U.S.C. 667b).

Purpose: Assabet River NWR's purpose is its "...particular value in carrying out the national migratory bird management program." (16 U.S.C. 667b-d, as amended)

National Wildlife Refuge System Mission: To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE:

(a) What is the use? Is the use a priority public use?

The use is cycling to facilitate travel for priority public uses on the Assabet River National Wildlife Refuge. Priority public uses allowed on Assabet River NWR are hunting, fishing, wildlife observation and photography, environmental education, and interpretation. Cycling would not likely support hunting, but could support the remaining priority uses. Cycling itself is not a priority public use.

(b) Where would the use be conducted?

Cycling would be allowed on designated roads and trails on the refuge. These would be designated as travel routes for bicycles to access the proposed visitor center and certain wildlife observation points on the refuge, including but not limited to the proposed overlook at Puffer Pond, potential wildlife observation blinds along Patrol Road and bank fishing locations on Puffer Pond. These trails are former military roads that have an appropriate width and surface for cycling. The vast majority of these existing roads are bordered by heavy vegetation. A map depicting allowed cycling routes will be posted at the refuge, on the Assabet River NWR website, and will be available at the Eastern Massachusetts NWR Complex headquarters. Trails and roads that would be opened for cycling are the Patrol Road from the East Gate westward to the Hudson Road gate, White Pond Road, Craven Lane and Old Marlborough Road.

(c) When would the use be conducted?

Designated roads and trails would be **open to cycling all year until closed by snow**. Snow removal is not conducted on Refuge trails. Cycling usually occurs between April and November with peak use in July through October, depending on weather. To promote safety, cycling hours will be limited to sunrise to sunset.

(d) How would the use be conducted?

Cycling to facilitate priority public uses commonly involves observing the natural landscape from a bicycle. Riders stop to observe associated animal and plant communities. The use mainly occurs in groups with an average group size of 2-4 riders. Cyclists may gather in larger groups for seasonal events like the viewing of fall colors (USFWS, 2002). To promote safety with other users and encourage a nature viewing experience, organized cycling groups will not be allowed to ride on the refuge and organized riding events of any type, including races, will not be permitted.
Travel would be limited to designated roads with paved or gravel surfaces where road width can accommodate the safe passage of other users. **A paved bicycle path may be**

constructed on or adjacent to certain gravel roads to accommodate bicycles arriving from the adjacent Assabet River Rail Trail. Designated trails will have sufficient viewing distance for cyclists to detect the approach of other users and maneuver to accommodate them. Cyclists either enter the Refuge at public entry points or transport bicycles by vehicle and park at designated parking sites. Off road use is prohibited.

Cycling on the Refuge is currently prohibited. Cycling will be conducted in accordance with the stipulations necessary to ensure compatibility. **Safety and information signs will be installed at Refuge entry points and at appropriate sites** where designated roads intersect other roads and trails.

There will be several trails on the refuge that will be open for pedestrian use only. Additionally, most of the former railroad beds will remain closed to all public use and will provide access for Service vehicles only or will be allowed to revegetate.

Roads and trails will be maintained in such a manner as is practical to minimize environmental effects such as erosion and sedimentation and to provide safe conditions for travel. Roads will be monitored annually to determine if they remain appropriate and safe for cycling use.

(d) Why is this use being proposed?

Cycling on the Refuge would provide an increased opportunity for the public to participate in priority public uses. Cycling is less physically demanding than pedestrian access, is an environmentally preferable mode of transportation, provides a more expedient mode of travel to view the Refuge's diverse biological assets than foot traffic alone, and requires less maintenance to keep trails open for the public than would be necessary if vehicles were allowed. As restricted to designated roads and trails with hardened and modified surfaces, cycling would cause minimal surface disturbance. Refuge roads and trails provide exceptional opportunities to view wetland communities because they offer unrestricted views and are relatively level for easy cycling.

The refuge is adjacent to the Assabet River Rail Trail. A link between the rail trail and the refuge, including the proposed visitor center, would provide a valuable wildlife viewing opportunity to the adjacent communities.

AVAILABILITY OF RESOURCES:

The resources necessary to provide and administer this use, at anticipated use levels, is available within current and anticipated refuge budgets. Staff time associated with administration of this use is related to assessing the need for road maintenance and repair, maintaining kiosks, gates, sign-posting of roads, monitoring potential impacts of the use on Refuge resources and visitors, ensuring visitor compliance, and providing information to the public about the use.

The Refuge Manager will administer the program. The Complex Outdoor Recreation Planner will be responsible for public outreach. Biological program staff will monitor the environmental effects of public access. The Park Ranger will conduct law enforcement activities to provide for visitor safety and resource protection.

A Maintenance Worker performs the maintenance and repair of Refuge roads, trails and associated structures. The refuge has a heavy equipment fleet that includes a motor grader, dump truck, bulldozer, front-end loader, 4x4 farm tractor, bobcat, and backhoe.

Annual costs associated with the administration of all trails, including those that will allow cycling, are estimated below:

Trail maintenance and repair (cleaning culverts, brush clearing), sign installation and

kiosk construction and repair
WG-10 Equipment Operator for 14 work days = $1,836.00

Planning and monitoring road conditions, supervising staff to monitor bicycle use and its effects on environment and other visitors, and providing information to the public
GS-12 Outdoor Recreation Planner for 14 work days = $2,553,60

Law enforcement, monitoring bicycle users and interactions with other users
GS-9 Park Ranger for 28 work days = $3,635.2

Monitoring environmental effects of bicycle use
GS-9 Wildlife Biologist for 10 work days (monitoring) = $1,704

Vehicle fuel / law enforcement patrols = $210

Heavy equipment fuel = $150

Signs, printing maps and information = $550

Grand Total Estimated Costs = $,10,488.8

Funding will be sought for the construction of a 4' wide bike path along portions of the Patrol Road and on other refuge roads. As outlined in this CD, the refuge would **open approximately 5.25 miles of trail to bicycles**. Paved bicycle trails cost approximately $100,000 per mile.

Based on existing Refuge expenditures for managing visitor use, funding is adequate to ensure compatibility and to administer and manage the recreational use listed.

ANTICIPATED IMPACTS OF THE USE:
A literature review of potential impacts associated with cycling was completed for this use at Canaan Valley NWR in West Virginia. The information obtained from that literature was incorporated into this CD. Additional research was located for this CD. Potential and anticipated impacts of cycling as reported in the literature and through field investigations are described below:

Soil Impacts: Bicycle wheels can cause physical impacts on soil surfaces. Cessford (1995) notes the shearing action of wheels creates damage to trails, which increases when trail conditions are wet or when traveling up a steep slope. When traveling down slope, skidding with hard braking can result in loosening soil surfaces, which leads to rutting and erosion by channeling water down wheel ruts. If braking is not performed on downhill travel, the impact of tires on the slope will be much less damaging (Cessford 1995).

It is anticipated that bicycle use of designated routes will cause minor to no soil erosion and compaction. Routes designated for this use have very little elevation change with no steep grades. The designated routes are pre-existing roads that have been previously altered by vehicles and military equipment, therefore soils are generally compacted and less susceptible to physical impact and mechanical erosion. Based on the conditions of designated routes and current levels use, this activity is not likely to cause significant impacts to soils.

Plant Impacts: Bicycle use will occur on designated roads and trails that have little to no vegetation. In fact, we prefer that vegetation not grow up on these roads and trails, because vegetation that grows through the pavement can damage refuge roads. For non-paved surfaces, we would need to mow the trails as vegetation grows higher than would be appropriate for bicycling or walking. It is anticipated that bicycles will have some impacts on refuge plant communities growing on the designated travel routes. However, Thurston and Reader (2001)

found no differences in impacts to vegetation between mountain biking and hiking on trails during an experiment on a provincial park in Ontario. They also found that impacts did not extend beyond 30 cm of the centerline of the trail. The designated routes were located predominately on upland soils to prevent impacts to fragile wetland soils and associated plant communities. Rare plant species have not been found on the designated routes. Based on anticipated levels of use, no significant impacts to plants are likely to occur through the use of bicycles on designated routes.

Wildlife Impacts: Human uses can result in habitat modification, pollution and create disturbances to wildlife. Disturbances vary with the wildlife species involved and the type, level, frequency, duration and the time of year such activities occur. Whittaker and Knight (1998) note that wildlife response can include attraction, habituation and avoidance. Human induced avoidance by wildlife can prevent animals from using otherwise suitable habitat. The effects of trails on plants and animals are complex and not limited to trail width. A 'zone of influence' is described where trail use disturbs areas outside the immediate trail corridor (Miller et al. 2001, Trails and Wildlife Task Force 1998). Miller et al. (1998) describe a 75-meter zone of influence where bird abundance and nesting activities (including nest success) were found to increase as distance from a recreational trail increased in both grassland and forested habitats. Bird communities in this study were apparently affected by the presence of recreational trails, where 'generalists' (American robins) were found near trails and 'specialist' species (i.e. grasshopper sparrows) were found farther from trails. Nest predation was also found to be greater near trails (Miller et. al 1998). Additionally, Taylor and Knight (2003) describe an area of influence of 100 meters for 4 types of ungulates. If we apply a 100-meter area of influence to the proposed bicycling trails, the area of potential impacts to wildlife species consists of 18% of the total area of the refuge. Further, there was no difference in impacts from bikers versus hikers.

Knight and Cole (1991) describe behavioral changes as a result of disturbance from recreational use. Effects range from short-term shifts in habitat use to complete abandonment of disturbed areas in favor of undisturbed sites. Disturbance can have negative effects by increasing the energy demands on wildlife. Flight in response to disturbance can lower songbird nesting productivity and cause disease and death. Knight and Cole (1991) suggest recreational activities occurring simultaneously may have a combined negative impact on wildlife. Hammitt and Cole (1998) conclude that the frequent presence of humans in 'wildland' areas can dramatically change the normal behavior of wildlife mostly through 'unintentional harassment'.

Seasonal sensitivities are also important in wildlife responses to human disturbance. For example, when a species is already stressed, human disturbance can compound the effect on the animal. Examples of these disturbances would include regularly flushing birds during nesting or causing mammals to flee during winter months, thereby consuming large amounts of stored fat reserves. Hammitt and Cole (1998) note that females with young (such as white-tailed deer) are more likely to flee from a disturbance than those without young. This indicates increased sensitivity to human disturbance during the breeding season.

Anticipated impacts bicycle use on wildlife include temporal disturbances to species using habitat on the trail or directly adjacent to the trail. These disturbances are likely to be short term and infrequent based on anticipated levels of use and adjacent habitat types. Use of some trails may cause direct impacts such as mortality (crushing amphibians foraging on or crossing designated routes) to nest abandonment of bird species nesting on trails. There is a wetland that is bisected by Old Marlborough Road. This relatively short stretch of road is adjacent to more sensitive habitat than the rest of the proposed routes. Additional wetland species (such as turtles and waterfowl) may be impacted. Long-term impacts may include certain wildlife species avoiding trail corridors as a result of this use over time. These impacts are expected to be minor.

User Conflicts: Conflicts between trail users are commonly reported in the literature (Knight and Gutzwiller 1995, Ramthun 1995, Watson et. al 1994, Chavez et al 1993). Conflicts range from concerns over personal safety, to conflicts among user groups.

Any effects of cycling on the roads and trails designated are not anticipated to constitute significant short-term or long-term impacts. The anticipated use is viewed as an effective and justifiable method of travel allows the public to discover, experience, and enjoy priority public uses on the 2,230-acre Refuge. Continued monitoring of the effects of cycling and associated human activities is necessary to better understand the influence of the use on refuge habitats, plant and wildlife communities, and visitors. Monitoring will identify any actions needed to respond to new information (adaptive management) and correct problems that may arise in the future.

DETERMINATION: THIS USE IS COMPATIBLE __X___

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

- Cycling to facilitate priority public uses is only compatible on the roads and trails designated by refuge staff. Off road cycling is prohibited.
- Only non-motorized bicycles may be used.
- Signs necessary for visitor information, safety, and traffic control will be installed.
- The Refuge will conduct an outreach program to promote public awareness and compliance with Refuge public use regulations.
- Cycling is allowed between sunrise and sunset.
- Camping and overnight parking are prohibited.
- Cycling on roads designated for vehicular travel will be permitted subject to vehicles having the right-of-way.
- To promote safety with other users and encourage a nature viewing experience, cycling by organized groups and cycling events will not be allowed.
- All routes designated for public access will be annually inspected for maintenance needs. Road and trail conditions that require immediate maintenance will be identified and appropriate action will be taken to correct such conditions. Prompt action will be taken to correct any conditions that risk public safety.
- Routes designated for public access will be monitored annually to determine if they should be continued.
- Routine law enforcement patrols will be conducted throughout the year. The patrols will promote compliance with refuge regulations, monitor public use patterns and public safety, and document visitor interaction. Patrols will include the routine assessment of safety conditions and visitor interactions on Refuge routes. Conditions that are or will risk public safety will be identified and appropriate action will be promptly taken to correct such conditions. Non-compliance rates will be monitored and high levels of non-compliance could result in suspension of the cycling program.

JUSTIFICATION:
This use has been determined to be compatible provided the stipulations necessary to ensure compatibility are implemented, and the use does not exceed thresholds necessary for visitor safety and resource protection. This use is not expected to materially interfere with or detract from the mission of the National Wildlife Refuge System nor diminish the purposes for which the Refuge was established, will not pose significant adverse effects on Refuge resources, will not interfere with public use of the Refuge, nor cause an undue administrative burden.