

Chapter 4

Environmental Consequences

Introduction

This chapter describes the environmental consequences or impacts of implementing each of the alternatives. For analytical purposes, it is assumed the Land-Use Allocations and Management Actions for each alternative presented in Chapter 2 would be implemented. The impact analysis is based on the Reasonable Foreseeable Development Scenarios that are projected to occur under each of the alternatives. Further, the analysis focuses on the environmental elements presented in Chapter 3 that are present on Meadowood Farm.

The environmental consequences section identifies the direct, indirect and cumulative impacts, both adverse and beneficial, that might occur. Further National Environmental Policy Act (NEPA) review and compliance with statutory/regulatory regulations will be required when Management Actions, such as construction of facilities or trails, are initiated.

For the purpose of analysis “short-term” impacts described in this document are those that would last 5 years or less; “long-term” impacts would last more than 5 years. The analysis presented in this chapter is based on available information and on the professional judgment of resource specialists who prepared the document. The impact discussion will be limited to Management Actions shown in Table 2-1 that could impact elements listed in Table 3-1.

Environmental Elements Not Present or Would Not Be Affected

The following environmental elements (see Table 3-1) have been examined and are not present and/or will not be affected by selection of any of the alternatives or the Proposed Action: Areas of Critical Environmental Concern, Farm Lands (prime or unique), Flood Plains, Environmental Justice, Native American Religious Concerns, Waste - Hazardous or Non-hazardous, Wilderness, and Wild and Scenic Rivers.

Acreage figures shown in this chapter are estimates made for analysis purposes and comparison of alternatives in this land-use plan. The actual acreage that could be impacted, adverse or beneficial, will be determined on a site-specific basis when a specific project or activity is proposed.

Impacts of Implementing Alternative #1 (No Action)

Management Objective

Management practices in place after October 18, 2001, the date of Bureau of Land Management (BLM) acquisition of the property, would continue.

Reasonable Foreseeable Development (RFD) Scenario

Horses

A hay storage shelter would be constructed. Equestrian facilities and pastures would encompass approximately 50 acres.

Wild Horses and Burros (WH&B): There would be no WH&Bs at Meadowood Farm.

Partners: Meadowood Farm would not be available for federal or other equine partnerships.

Boarders: Boarding of domestic, privately owned horses would be allowed. The boarding facility would hold up to 50 animals.

Environmental Education:

There would be no environmental education programs or facilities.

Recreation:

Camping would not be allowed.

Fishing would not be allowed.

Motorized hobby activities (see glossary) would not be allowed.

Existing trails would be maintained for equestrian use by boarders. New trails would not be constructed.

Recreational motorized passenger vehicle use would not be allowed.

Recreational non-motorized passenger vehicle use would not be allowed.

Wildlife:

Wildlife habitat would not be actively managed.

Fisheries:

Fisheries in streams and ponds would be maintained as a result of riparian area maintenance.

Vegetation:

Forest: Existing forested acreage would be maintained. Silvicultural practices would not be applied to forestland except for removal of safety hazards.

Pasture: Would not exceed 50 acres. An invasive/non-native species control program would be initiated.

Historic Hayfields: Would be allowed to grow and reseed naturally through the various vegetative successional stages.

Riparian/Wetlands Areas including Ponds:

Would be protected and maintained in their current condition.

Impacts to Resources

Air Quality and Climate: Impacts to air quality would be generated from two sources: (1) fugitive dust generated from farm maintenance vehicles operating on unpaved roads would increase suspended particulates in the immediate area during dry conditions; and (2) exhaust from the use of farm machinery, passenger and transport vehicles, and other machinery or tools powered by internal combustion engines would have a negative effect.

Monitoring of air quality on Meadowood Farm has not been conducted; therefore, baseline data is not available. Under this alternative a measurable change in the regulated air pollutants nitrogen oxides (NOx), sulfur oxides (SOx) and particulates (Pm) would not occur. Impacts from the referenced sources would be limited to the immediate vicinity of the activity and would be of short duration (24 hours or less).

Based on the RFD Scenario, indirect or cumulative impacts to air quality on Mason Neck would not occur.

Coastal Zone Management: There could be direct impacts to Virginia's coastal zone by the construction of a hay shelter. In accordance with 15 Code of Federal Regulations (CFR) 930, a coastal zone consistency review would be conducted by the Commonwealth of Virginia as part of the development of an environmental assessment (EA) that would be prepared prior to the start of construction of the hay shelter. No indirect or cumulative impacts to Virginia's coastal zone would be anticipated from implementing the activities identified in the RFD Scenario.

Cultural Resources: Potential impacts that could occur to cultural resources would be from farm maintenance work and equine activity resulting from commercial horse boarding. This use

could result in inadvertent disturbance of historic properties because the existence and location of these sites, if any, are unknown. Impacts would be limited to displacement of resources through equine movement in pastures and trails, and from farm vehicle travel. In accordance with the Standard Management Common to All Alternatives, cultural surveys would be conducted prior to starting ground disturbing activities. If sites with the potential of being historic or prehistoric properties would be located, consultation would take place with the State Historic Preservation Officer, the Advisory Council on Historic Preservation, and other interested people or groups as appropriate.

Minerals: The existing sand and gravel pit has been stabilized, but this would not preclude its use in the future as a source of surfacing material on existing travel ways on Meadowood Farm. This use would be minimal and the pit size would not increase. If the pit is used, new disturbance would only occur in previously disturbed areas. No activities under this alternative would create indirect or cumulative impacts to mineral resources.

Recreation Resources: No recreational facility development or recreation opportunities for the general public (such as hiking, bird watching or equestrian trail riding) would occur under this alternative. Meadowood Farm would remain closed to the public, with the exception of horse boarding. Equestrian activities would not impact other recreation activities since Meadowood Farm would be closed to other recreational uses.

Under this alternative, user impacts on the resources, such as soil compaction, trampling, and erosion would not occur except from horse boarding. However, there would be lost recreational opportunities in that only a few people would benefit from using Meadowood Farm for recreation purposes.

Visual Resource Management: Meadowood Farm would be managed as a Visual Resource Management (VRM) Class III resource. The existing visual resource associated with Meadowood Farm could be impacted by construction of a hay storage shelter. This impact would be reduced by proper siting of the new facility and by use of building materials and/or colors which would not contrast with the existing landscape. The guidelines for meeting the goals of VRM Class III would be applied. With the incorporation of the measures referenced above, no indirect or cumulative impacts to the visual resource would occur. No activities under this alternative would create indirect or cumulative impacts to visual resources.

Economic and Social: There would not be an increase in consumer spending (lodging, meals, gasoline) because visitor use of Meadowood Farm would basically remain unchanged from its current level. There would not be any activities at Meadowood Farm that could affect the existing economic and social setting. Since there would be no permanent population changes associated with this alternative, there would be no impacts to local schools, hospitals, housing, water/sewer, and other basic community infrastructure elements.

Soils: Two types of impacts to soils could occur: soil compaction and soil erosion. These impacts could cause a loss of soil productivity and an increase in turbidity of local aquatic areas. Farm maintenance vehicles on roads and in the pastures would cause soil compaction. Soil compaction decreases air and water infiltration into the soil profile, thus reducing soil productivity. The impact of soil compaction would be long term and irreparable where trails, roads, or facilities are located.

Soil erosion results in a loss of the organic layer and topsoil. This leads to a decrease in available plant nutrients and makes it difficult for an area to support vegetation. The application of a mulch and prompt reseeding of areas where vegetation would be removed or in areas where detectable erosion would occur would mitigate soil erosion. Under normal climatic and moisture conditions, areas where erosion would occur should recover quickly (less than 6 months); therefore, this impact would be short term. There would be some erosion in steep areas of the existing pastures and on steeper segments of trails or roads due to the impact of horse hoofs and vehicle travel on the sandy soil. However, the erosion due to horse traffic and vehicle travel would be localized to isolated areas and would not adversely impact resources outside the immediate vicinity of where erosion would occur. BLM would work cooperatively with local and regional organizations to stabilize areas where erosion occurred through application of mulch, reseeding and/or installation of drainage structures. No indirect or cumulative impacts to soils would be expected to occur under this alternative.

Traffic/Transportation: There would be no noticeable impact on daily traffic patterns. Existing vehicle numbers traveling to and from Meadowood Farm would not increase or decrease. Impacts to local traffic would remain consistent with the traffic that is presently occurring in conjunction with the commercial boarding operation (e.g., boarders, farriers, veterinarians, feed, and bedding delivery traffic).

Water Quality, Surface and Ground: There would be no adverse effects on the drinking water supply from activities identified in the RFD Scenario. Because of the absence of potable water, a public drinking-water supply system is expected to be established on Meadowood Farm by winter 2002. There could be impacts to water quality due to runoff from onsite disposal of manure cleaned from stables. Offsite disposal or composting of manure, or a combination of these, could be applied to minimize water quality degradation. No direct, indirect, or cumulative negative impacts to water quality would occur under this alternative.

Riparian/Wetlands and Ponds: Some resource commitments and general project-by-project restrictions would be required to maintain protection of riparian resources. Riparian habitat would improve as weed species would be controlled. Periodic intensive maintenance would be required to avoid the ponds filling in due to sedimentation and aquatic vegetation growth.

Wildlife: Under the RFD Scenario for this alternative, the existing forest habitat would grow and change naturally, allowing for use by any wildlife species that find the habitats suitable. The species that currently use Meadowood Farm would continue to find habitat on the property. Deer

would continue to use the existing fields for grazing and bedding. Horse pastures and mowed fields would continue to provide habitat for brown-headed cowbirds and starlings. Spring mowing would continue to decrease cover and foraging space for wildlife, an important period for wildlife because of reproductive needs.

Fisheries: The health of fish populations in streams would be maintained as a result of riparian area maintenance. This could be accomplished through weed removal projects and establishment of riparian vegetation where needed.

Federal and State Listed Species: There are no federally listed or state sensitive species known to exist on Meadowood Farm. The BLM is required by regulations to manage threatened or endangered species or state sensitive species and their habitat. If federally listed or state sensitive species are encountered, management actions would be taken immediately to ensure the continued existence of the species and/or their habitat.

Vegetation:

Forest: The current mixed hardwood forest of beech-oak with some pockets of pine would continue to mature, with the pines diminishing. The current understory of mountain laurel and holly would continue to flourish.

Historic Hayfields: The historic hayfields would continue to be dominated by red fescue and orchard grass. With continuation of mowing for field maintenance, there would be a need for periodic fertilization to maintain grassland.

Pastures: The grass in the existing pastures would continue to be heavily grazed by horses, allowing the continued persistence of clover and dandelions, and cultivated grasses.

Invasive, Nonnative Species: Invasive, nonnative species would be controlled through mechanical and chemical means. Should orchard grass be addressed as an invasive species to be removed and replaced, the species composition of the historic hayfields would change.

Impacts of Implementing Alternative #2 (Minimum Use)

Management Objective

Meadowood Farm would be managed for natural and cultural resources with regulated visitor use.

Reasonable Foreseeable Development (RFD) Scenario

Horses

Meadowood Farm would hold up to 50 equine partnership and BLM horses. A hay storage shelter would be constructed and the existing pastures would be cross-fenced. The equestrian facilities would encompass approximately 50 acres currently used for pasture. Equine facilities would not be available for use by the general public.

Wild Horses and Burros (WH&B): WH&B adoption events would be held. However, no WH&Bs would be held on a long-term basis at Meadowood Farm, and adoptions would only occur at scheduled adoption events. Therefore, permanent facilities to support the WH&B program would not be constructed.

Partners: BLM would consider both public and federal equine partnerships at Meadowood Farm. Equine partnerships that would provide the most benefit to the public and complement BLM goals and programs would be pursued in order to use the equine facilities at Meadowood Farm for the best public use. Examples of potential equine partnerships could include availability of the facilities for therapeutic riding, educational clinics, and boarding federal horses.

Boarders: Boarding of domestic privately owned horses would be phased out.

Environmental Education:

An Environmental Education Center would not be constructed. Environmental education events would be held using existing facilities.

Recreation:

Camping would not be allowed except for special environmental education activities authorized by BLM.

Fishing would not be allowed.

Motorized hobby activities (see glossary) would not be allowed.

Existing trails would be maintained for pedestrian and equestrian use.

Recreational motorized passenger vehicle use would not be allowed.

Recreational non-motorized passenger vehicle use would not be allowed.

Wildlife:

Wildlife habitat would be actively managed.

Fisheries:

Fisheries in streams and ponds would improve as a result of riparian areas protection and enhancement.

Vegetation:

Forest: Existing forested acreage would be maintained. Silvicultural practices would be applied to improve forest stand composition and health.

Pasture: Would not exceed 50 acres. An invasive/non-native species control program would be implemented.

Historic Hayfields: Would be converted to native grasslands.

Riparian/Wetlands Areas including Ponds: Would be protected and enhanced.

Impacts to Resources

Air Quality and Climate: Impacts to air quality would be similar to Alternative 1. There would not be a change in the amount of fugitive dust generated by vehicle traffic on unpaved roads since Meadowood Farm would remain closed to recreational motorized and non-motorized passenger vehicle use. There would be a minimal increase in suspended particulates from equestrian and pedestrian use of unpaved trails and roads. There would also be an increase in the regulated air pollutants due to the occasional WH&B adoption events and increased visitor use of Meadowood Farm. However, in both instances these increases would be sporadic, short term and would be limited to the immediate vicinity of the activity.

Prescribed burning could be used under Alternative 2 to remove hazardous fuels, i.e. vegetative residue or for wildlife habitat improvement. Smoke from prescribed fires could release several “criteria air pollutants” identified by the Environmental Protection Agency (EPA). The need for prescribed fire would be evaluated during preparation of an activity plan. Site-specific burn actions would be addressed in a detailed prescribed fire operations plan. All burning would be in compliance with Virginia’s smoke management guidelines.

Based on the RFD Scenario, indirect or cumulative impacts to air quality on Mason Neck would not be expected to occur under Alternative 2.

Coastal Zone Management: Impacts that would occur under Alternative 2 would be the same as Alternative 1 because there would be no construction other than a hay storage shelter. As in Alternative 1, there would be a coastal zone consistency review by the Commonwealth of Virginia prior to construction of the hay shelter. No indirect or cumulative impacts to Virginia’s coastal zone would occur from the construction of the hay shelter.

Cultural Resources: Potential impacts that could occur to cultural resources would be the same as Alternative 1, but there would be a greater chance of disturbance because there would be more ground disturbing activities. Impacts to cultural resources could include inadvertent disturbance of cultural artifacts because the existence and location of cultural sites is unknown. Impacts could occur through displacement of resources by equine and pedestrian movement in the pastures and on trails. Vegetation manipulation, such as disking and planting, could also impact cultural resources. Since commercial boarding would be phased out, impacts would potentially be reduced because the WH&Bs would be contained in a smaller area when on site and the number of horses in the open pastures and trails would be reduced.

In accordance with the Standard Management Common to All Alternatives, cultural surveys would be conducted prior to starting ground disturbing activities. If sites with the potential of being historic or prehistoric properties would be located, consultation would take place with the State Historic Preservation Officer, the Advisory Council on Historic Preservation, and other interested people or groups as appropriate.

Minerals: The existing sand and gravel pit has been stabilized, but this would not preclude its use in the future as a source of surfacing material on existing travel ways on Meadowood Farm. This use would be minimal and the pit size would not increase. If the pit would be used, new disturbance would only occur in previously disturbed areas. No activities under this alternative would create indirect or cumulative impacts to mineral resources.

Recreation Resources: As recreational opportunities would increase at Meadowood Farm under this alternative, both adverse and beneficial impacts would be realized. Beneficial impacts would include public access to Meadowood for pedestrian and equestrian trail use, and opportunities to engage in environmental education programs. The benefits of the uses in this alternative would include opportunities for increased physical and educational activity in a natural setting.

Potential adverse impacts could include user conflicts and resource damage. A conflict is defined as goal interference attributed to another's behavior (Niccolucci, Watson, & Williams, 1994). Niccolucci et al. (1994) also indicate that conflict episodes are cumulative and have a foundation in previous events. People who would perceive a conflict with their recreational goals could confront the source that has kept them from achieving their goal, or they could be displaced by the conflict and seek another location to achieve their recreational goals.

Other adverse impacts could include more users on the trail to investigate the novel recreational opportunity in the area, which could lead to user conflicts, off trail exploration, litter, equine and human waste issues, soil displacement, and disturbance of wildlife. The cumulative, long-term effects of these consequences could lead to permanent vegetation change/loss, soil compaction, channeling, erosion, and relocation of wildlife.

In efforts to mitigate resource impacts, seasonal-use restrictions would be required to avoid negative effects on wildlife and on the resources (e.g., in the wet season). Other mitigating measures could include use limitations, trail layout and design, separation of incompatible uses, and trail rotation.

Camping: Under Alternative 2, Meadowood Farm would be managed as a day-use-only facility. Limited camping would be allowed for environmental education purposes as authorized by the BLM. The impacts of allowing limited camping could include trampling of vegetation, littering, human waste issues, temporary displacement of wildlife and soil compaction. These impacts would be minimized by "Leave No Trace" camping ethics, and by proper campsite layout and design. Efforts would be made to ensure no sensitive plant or animal species would

be in the areas where camping would be allowed. Camping would be restricted to areas that would not be susceptible to soil compaction. Provisions would be made for human waste disposal by construction of facilities or supplying temporary waste disposal facilities. Littering would not be expected to be significant because the policy of "pack it in, pack it out" would apply to all authorized activities. Trampling of vegetation could not be avoided, but the vegetation would recover when the campers would leave. Since camping opportunities would not be open to the general public, indirect or cumulative impacts on resources or camping opportunities on the Mason Neck Peninsula would not occur.

Visual Resource Management: Meadowood Farm would be managed as a VRM Class III resource. The potential for impacts to the visual resource at Meadowood Farm would be increased by construction of a hay storage shelter and temporary corrals for the WH&B program. These impacts would be reduced by proper siting of newly constructed facilities and use of building materials and/or colors that would not contrast with the existing landscape. The guidelines for meeting the goals of VRM Class III would be applied during design and construction of new facilities. With the incorporation of the measures referenced above, no indirect or cumulative impacts to the visual resource would occur.

Economic and Social: There would be no construction of horse arenas, horse stabling facilities, or an environmental education center under this alternative, although some enlargement of existing facilities would occur to accommodate increased public use. Consequently there would be minimal changes in area employment or income in either the short or long term as a result of construction activity at Meadowood.

There would be no expected impacts to local schools, hospitals, housing, water/sewer, and other basic infrastructure elements.

Some area residents who enjoy recreating in a less developed setting could believe that Alternative 2 would provide lifestyle benefits from enhanced open space and solitude as compared to the more development-oriented recreational opportunities found in Alternatives 3 and 4. Other individuals who would be prevented from pursuing recreational activities that would be prohibited under this alternative could experience a loss in social well being.

Permanent elimination of some recreational activities under this alternative (e.g., control line model airplane flying) could create adverse economic impacts to local businesses.

Soils: The impacts that would occur to soils would be the same as those described under Alternative 1. There would not be an increase in erosion potential. However, there could be an increase in soil compaction. This increase could come from the unloading and loading of WH&Bs, parking of vehicles, and from limited BLM authorized environmental education camping. However, very few areas that have not already been compacted by various human activities and vehicles would be affected. No indirect or cumulative impacts to soils would occur under this alternative.

Traffic/Transportation: Daily visitor use to Meadowood Farm would not have noticeable impacts on traffic numbers, types or patterns. During adoption events, however, both the number and types of vehicles and traffic patterns could be affected. Vehicles turning into or exiting Meadowood Farm could adversely affect traffic patterns. Types of vehicles could include semi-trucks delivering livestock for the adoption, and adopters driving pick-up trucks with horse trailers. These vehicles could affect traffic flow because they require a wider turning radius and would be slower when starting from a stop. These impacts would be greatest at the beginning and end of the adoption event. To minimize the impacts of the increased traffic, the BLM would work with local authorities and the Virginia Department of Transportation to manage traffic on local roads during adoption events.

Water Quality, Surface and Ground: There would be no adverse effects on the drinking water supply from activities identified in the RFD Scenario. Because of the absence of potable water, a public drinking-water supply system is expected to be established on Meadowood Farm by winter 2002. The general quality of surface water and peak flow runoff would improve due to riparian habitat improvements. There could be impacts to water quality due to runoff from onsite disposal of manure cleaned from stables. Offsite disposal or composting of manure, or a combination of these, could be applied to minimize water quality degradation. No direct, indirect, or cumulative negative impacts to water quality would occur under this alternative.

Riparian/ Wetlands and Ponds: Increased visitation would require increased resource commitments and general project-by-project restrictions would be required to protect riparian resources. Trail and facility construction would avoid Resource Protection Areas (RPAs) or would be completed using boardwalks to avoid long-term impacts to riparian/wetland areas. Riparian habitat would improve as weed species would be controlled. All riparian/wetland protection and improvements would be conducted in accordance with Best Management Practices (BMPs) as mentioned in Chapter 2. Also, intensive riparian improvement projects would be implemented to speed riparian habitat recovery where needed. Periodic intensive maintenance would be required to avoid the ponds filling in due to sedimentation and aquatic vegetation growth.

Wildlife: Under the RFD Scenario for this alternative, the existing forest habitat would be managed for optimum diversity of wildlife habitats in an oak-beech-hickory-pine forest with a diverse shrub-forb understory. Conversion of 100 acres of historic hayfields to native grassland and creation of forest edges within grassland windrows would improve the overall quality of wildlife habitat. Eastern bluebirds, other edge-using species, and species requiring large blocks of grassland (such as some ground-nesting birds) would benefit from these habitat improvements. The conversion of historic hayfields to native grasses would temporarily disrupt some deer use patterns. Once established however, these grasslands would provide better habitat quality for deer.

Increased visitation would disrupt some wildlife activities or temporarily displace wildlife. Wherever the visitor activities would cause more than temporary displacement (i.e., disruption of

reproductive success of wildlife), seasonal, time of day, and/or area use restrictions would be implemented.

Improvement of riparian habitat would enhance the survival of aquatic species in streams and ponds. Horse pastures would continue to provide habitat for brown-headed cowbirds and starlings.

Fisheries: The health of fish populations in streams and ponds would be improved with maintenance and improvement of riparian areas. This could be accomplished through weed removal projects and establishment of riparian vegetation where needed.

Federal and State Listed Species: There are no federally listed or state sensitive species known to exist on Meadowood Farm. The BLM is required by regulations to manage threatened or endangered species or state sensitive species and their habitat. If federally listed or state sensitive species are encountered, management actions would be taken immediately to ensure the continued existence of the species and/or their habitat.

Vegetation:

Forest: The current forest would be intensively managed to restore hardwood diversity in areas where selective cutting affected the species mix. Forest management practices would also be used to promote species diversity in the understory.

Historic Hayfields: The historic hayfields would be converted to native grassland, which would include the addition of small trees and shrubs in a wave-like pattern at the forest edge to increase ecotone diversity and provide habitat for migratory songbirds.

Pastures: The grass in the existing pastures would continue to be heavily grazed by horses, allowing the continued persistence of clover, dandelions, and cultivated grasses.

Invasive, Nonnative Species: Invasive, nonnative species would be controlled through mechanical and chemical means. Increased visitation activities would increase the possibility that invasive species would be inadvertently introduced from outside this property. Also, the disturbance of existing vegetation would increase, providing opportunities for existing invasive species to spread.

Impacts of Implementing the Proposed Action

Management Objective

Meadowood Farm would be managed for regulated visitor use with emphasis on recreation, natural resources, and equine and environmental education activities.

Reasonable Foreseeable Development (RFD) Scenario

Horses:

Meadowood Farm would hold up to a total of 100 equines. The total number of animals would be a combination of WH&Bs and domestic horses. The equestrian facilities would cover approximately 100 acres, including the current 50 acres already used as pasture. Up to 50 horses would remain at the current facility (i.e., stables, current pastures, and indoor arena), which reflects the historic number of animals boarded at the facility. Additional fencing, stabling, corrals, animal shelters, hay storage shelters, and an outdoor riding arena would be constructed. Expansion of facilities would occur on historic hayfields or pasture land and would be situated to minimize visual and other resource impacts.

Wild Horses and Burros (WH&Bs): A permanent WH&B holding facility would be constructed separate from the domestic horse stabling. This WH&B facility would be situated on the historic hayfields or pasture land and would be located to minimize visual impacts from public roads. The facility would contain small paddocks or corrals with attached shelters and feed bunks. The paddock fencing would be either portable pipe corral panels or wood fencing with a height of 6 to 7 feet. Several smaller pastures would be constructed adjacent to the facility to house mares with foals until the foals are weaned or are old enough to be adopted, as well as animals that would be separated for rehabilitation. While the WH&B facility would optimally be managed for a population of 25 head and under, it would be constructed for and anticipated to hold up to 50 animals for adoption events. The facility would also be used to hold repossessed and returned equines. Educational demonstrations would be conducted in both the indoor and outdoor riding rings.

Adoption events would be held on a recurring basis (e.g., monthly or bi-monthly) and also by appointment for individuals. An adoption event would have specified dates, times, and number of animals available for adoption by qualified adopters. Except for adoption events, and demonstrations, there would be no appreciable traffic increase associated with the WH&B facility.

Partners: Under the Proposed Action, BLM would consider both public and federal equine partnerships at Meadowood Farm. Equine partnerships that would provide the most benefit to the public and would complement BLM goals and programs would be instrumental in maximizing the use of the equine facilities at Meadowood Farm for the best public use. Examples of potential equine partnerships would include availability of the facility for therapeutic riding, educational clinics, and federal horses.

Boarders: Boarding of privately owned horses would be allowed under the Proposed Action. Boarding private horses would occur under a concession or contract, or be overseen by BLM personnel. To minimize conflicts between boarders, partners, and the general public, BLM would designate areas and times for boarder, partner, and public use of the facilities.

Environmental Education:

An Environmental Education Center with parking for automobiles and buses to accommodate groups would be constructed. The facilities would be open to individuals on a daily basis and to groups on a reservation basis.

Recreation:

Camping would not be allowed except for special environmental education activities authorized by BLM.

Fishing would be allowed in support of environmental education and youth-related programs. Public fishing would be allowed on at least one pond.

Motorized hobby activities (see glossary) would be allowed. This regulated use would be restricted to designated areas and times.

Existing trails would be available and improved for pedestrian and equestrian use. New trails would be constructed.

Recreational motorized passenger vehicle use would not be allowed.

Recreational non-motorized passenger vehicle use would be allowed. This regulated use would be restricted to designated areas and times.

Meadowood Farm would be available for equine related clinics.

An outdoor riding arena with parking areas would be constructed for public use.

Wildlife:

Some wildlife habitat management activities would occur.

Fisheries:

Fisheries in streams and ponds would be managed in cooperation with state and local conservation groups to enhance overall conditions and to enhance and maintain a quality recreational public fishery in at least one pond.

Vegetation:

Forest: Existing forested acreage would be maintained. Silvicultural practices would be applied for forest stand composition maintenance and health improvement.

Pasture: Would not exceed 100 acres. A proactive invasive/non-native species control program would be implemented and incorporated into environmental education.

Historic Hayfields: Would be converted to approximately 50 acres of pasture and 50 acres of native grasslands.

Riparian/Wetlands Areas including Ponds:

Would be protected and enhanced through state and local partnerships.

Impacts to Resources

Air Quality and Climate: Sources of impacts to air quality would be the same as Alternatives 1 and 2. However, there would be an increase in these impacts because construction activities could increase suspended particulates during drier periods and the use of construction machinery could increase the regulated air pollutants referenced in Alternative 1. Increases in visitor use and in the types of recreational use allowed would also increase impacts to air quality. There would also be an increase in the regulated air pollutants due to the occasional WH&B adoption events and increased visitor use of Meadowood Farm. These increases in the amount of fugitive dust or in regulated pollutants would not affect the overall air quality in the Mason Neck area. Both of these impacts would be sporadic, short term, and would be limited to the specific area and time that construction and recreational activities would occur.

Prescribed burning could be used under the Proposed Action to remove hazardous fuels, i.e. vegetative residue or for wildlife habitat improvement. Smoke from prescribed fires can release several “criteria air pollutants” identified by the EPA. The need for prescribed fire would be evaluated during preparation of an activity plan. Site-specific burn actions would be addressed in a detailed prescribed fire operations plan. All burning would be in compliance with Virginia’s smoke management guidelines.

Based on the RFD Scenario, indirect or cumulative impacts to air quality on Mason Neck would not be expected to occur.

Coastal Zone Management: There could be direct impacts to Virginia’s coastal zone by the construction of hay storage shelters, a WH&B holding facility, an environmental education center and new trails. In accordance with 15 CFR 930, a coastal zone consistency review would be conducted by the Commonwealth of Virginia as part of the development of an EA that would be prepared prior to the start of construction projects or other land-use plan implementation activities. No indirect or cumulative impacts to Virginia’s coastal zone would occur from implementing the activities identified in the RFD Scenario.

Cultural Resources: The potential for impacts to cultural resources would increase due to the increased types of recreational use, increased number of horses, and proposed construction activities at Meadowood Farm. Impacts to cultural resource could include inadvertent disturbance of cultural artifacts because the existence and location of cultural sites is unknown. Impacts could occur through displacement of resources by equine and pedestrian activities, and non-motorized passenger vehicle use.

In accordance with the Standard Management Common to All Alternatives, cultural surveys would be conducted prior to starting ground disturbing activities. If sites with the potential of being historic or prehistoric properties would be located, consultation would take place with the State Historic Preservation Officer, the Advisory Council on Historic Preservation, and other interested people or groups as appropriate.

Minerals: The existing sand and gravel pit has been stabilized, but this would not preclude its use in the future as a source of surfacing material on existing travel ways on Meadowood Farm. This use would be minimal and the pit size would not increase. If the pit would be used, new disturbance would only occur in previously disturbed areas. No activities under the Proposed Action would create indirect or cumulative impacts to mineral resources.

Recreation Resources: Changes in current recreation use by visitors at Meadowood Farm would bring about both beneficial and adverse impacts. A major benefit of the Proposed Action would be the increased variety of quality recreation activities that would be offered, however, the increased activity at Meadowood Farm would also have adverse impacts.

The presence of Meadowood Farm, and the fact that it is now public land, could provide numerous recreational opportunities to the residents on Mason Neck Peninsula and the surrounding Washington, D.C. metropolitan area.

Benefits from recreation can be organized into four main categories: personal benefits (individual), social and cultural benefits (community), economic, and environmental (O'Sullivan, 1999). These broad categories can be broken down further. The following are some examples of benefits attributed to recreation, based on completed research.

According to O'Sullivan (1999), personal benefits could include better mental health and health maintenance, stress management, self confidence, balance between work and play, personal development and growth, life satisfaction (quality of life), prevention of hypertension, strokes, colon cancer, and reduction of numerous other ailments. These individual benefits are more subjective than some of the other benefits due to personal experience, preference and expectations, values, and goals.

Community satisfaction/pride, socialization opportunities, family bonding and understanding and tolerance of others are examples of social and cultural benefits (O'Sullivan, 1999). Economic benefits attributed to recreation include reduced health care and crime costs, enhanced property values, and decreased absenteeism (O'Sullivan, 1999). Finally, under environmental benefits, O'Sullivan (1999) includes the following benefits: stewardship and preservation opportunities, environmental ethics, preservation of natural, cultural and historic sites, and ecosystem sustainability. It is anticipated that these and other benefits would be realized in association with Meadowood Farm in this Proposed Action.

BLM's mission is to "sustain the health, diversity and productivity of the public lands for the use and enjoyment of present and future generations." BLM would monitor and evaluate all activities and would use restrictions to establish thresholds for proper use levels. Monitoring and evaluating would take place on an ongoing basis, to remain consistent with the agency mission and to ensure public safety and the health of the resource. If the results from monitoring and evaluating impacts indicated that mitigating measures were ineffective, BLM could amend the Meadowood Farm land-use plan.

Camping: The type and magnitude of the impacts of camping under the Proposed Action would be the same as those discussed under Alternative 2.

Fishing: Under the Proposed Action, fishing in support of environmental education would be allowed on the Meadowood Farm ponds. Additionally, limited public fishing would be allowed on at least one of the ponds at Meadowood Farm. BLM would also make accommodations to provide fishing in compliance with the 1990 Americans with Disabilities Act (ADA). This would result in some direct impacts to the areas used to access the ponds, as well as the area around the ponds. These impacts, which could include vegetation trampling, could lead to long-term negative consequences including permanent loss or change of vegetation, soil compaction, and erosion. These impacts could be mitigated by use restrictions, and site layout and design. Benefits from this Proposed Action would include an increase in recreational opportunities for the public, a new setting for shoreline fishing, and the improved health of a managed pond and fishery.

Motorized Hobby: The Proposed Action would allow for public motorized hobby use at designated areas and times, thereby enhancing the opportunity for individuals to receive some of the general benefits from recreational activities described at the beginning of the Recreation Resources section. Additionally, some motorized hobby activities could provide hands-on educational opportunities in the fields of science and mathematics.

Engine sounds associated with motorized hobby vehicles could be considered an adverse impact from this activity. These sounds could create conflicts with other uses such as outdoor environmental education activities, wildlife watching, hiking, and horseback riding. A conflict is defined as goal interference attributed to another's behavior (Niccolucci, Watson, & Williams, 1994). Niccolucci et al. (1994) also indicate that conflict episodes are cumulative and have a foundation in previous events. An individual who perceives a conflict with their recreation goals may confront the source that has kept them from achieving their goal, or they may be displaced by the conflict and seek another location to achieve their recreation goals.

Other adverse impacts could include vegetation trampling by activity participants and spectators. The cumulative effect of vegetation trampling could lead to long-term negative consequences, including permanent loss or change of vegetation, soil compaction, and erosion. The space requirements and sound would be locally disturbing to wildlife activities such as nesting or care

for young in the spring and early to late summer. Use restrictions would be developed to avoid negative impacts on wildlife and other resources (e.g., in the wet season).

Currently, the Fairfax County, Department of Planning and Zoning, noise ordinance for residential and commercial sites indicates that noise levels should not exceed 55 and 60 decibels respectively at the property line. (D. Gregg, personal communication, Aug. 14, 2002). Impacts from motorized hobby use would be mitigated by identifying a site that could sustain this use and would be situated such that the associated sound would comply with the county noise ordinance. According to O'Keefe and Prescott (2000), moving closer to a noise source by half the total distance will increase sound intensity by 6 decibels (dB). Similarly, moving twice the distance from a sound source will decrease the perceived sound level from the start point by 6 dB (O'Keefe and Prescott, 2000). By coordinating with Fairfax County officials and utilizing this and other research, motorized hobby use would be brought into compliance with the established noise ordinance.

To mitigate impacts, times and areas for public motorized hobby activities would be designated. BLM would monitor and evaluate impacts, such as sound, vegetation trampling, use levels, and wildlife habitat use on an ongoing basis. This information would be used to establish thresholds for proper use levels and to ensure public safety. As previously stated, if monitoring and evaluating efforts indicate that mitigating measures are ineffective, BLM could amend the Meadowood land-use plan.

Trails-Pedestrian: Under the Proposed Action, pedestrian use of suitable, existing trails at Meadowood Farm would be allowed. Additional trails would be constructed where the resource could support the activity. The Proposed Action would result in an increase in pedestrian trail activity opportunities at Meadowood Farm, as well as on the Mason Neck Peninsula.

Benefits from the additional trails would include an increase in recreational opportunities for the public. Additionally, individual recreation users could derive numerous other benefits as described at the beginning of this section.

Both short- and long-term impacts would be realized from the use and construction of trails at Meadowood Farm. These impacts would include more users on the trails, which could lead to user conflicts, off-trail exploration, litter, human waste issues, soil displacement, and disturbance of wildlife. The cumulative, long-term effects could lead to permanent vegetation change/loss, soil compaction, channeling, erosion and relocation of wildlife.

In efforts to mitigate resource impacts and safety issues, BLM would designate areas and times for pedestrian trail activities. Mitigation actions could include temporary or seasonal closures of trails during nesting season, or when trail conditions would be more susceptible to damage (e.g., wet trails). Other mitigating measures could include trail layout and design, separation of incompatible uses, and trail rotation. Compatible trail activities would share trails in part or

whole. BLM would explore options to connect pedestrian trails on site with other pedestrian trails on the Peninsula.

Trails-Equestrian: The Proposed Action would allow the public to participate in equestrian trail riding on suitable, existing trails. Existing would be improved and maintained, and additional trails would be constructed where the resource could support the activity.

Benefits from the additional trails would include an increase in recreational opportunities for the public, and a choice in riding venues on the Mason Neck Peninsula. Horseback riding is currently available on the Peninsula at Pohick Bay Regional Park. As mentioned at the beginning of the Recreation Resources section, there would be numerous benefits from the types of recreational opportunities that would be offered at Meadowood Farm.

The negative consequences of increased equestrian trail activity could include more users on the trail that could lead to user and safety conflicts, soil displacement, equine and human waste issues, litter and disturbance to wildlife. The cumulative, long-term effects could include displaced visitors seeking other sites for their recreation, soil compaction, channeling, erosion and relocation of wildlife.

In efforts to mitigate impacts, BLM would designate areas and times for equestrian trail activity. BLM would monitor and evaluate probable impacts, such as noise, vegetation trampling, use levels, and wildlife habitat use on an ongoing basis. This information would be used to establish thresholds for proper use levels and to ensure public safety. Mitigation actions could include use restrictions in areas to avoid negative effects on wildlife and on the resources. Compatible trail activities would share trails in part or whole. However, BLM could separate uses that would not be compatible due to safety and user conflict issues. Other mitigating measures could include use limitations and trail rotation. In efforts to provide additional recreational opportunities, BLM would explore options to connect equestrian trails onsite with other equestrian trails on the Peninsula.

Trails-Motorized Passenger Use: Under the Proposed Action, motorized passenger vehicle use would not be allowed. Levels of use for public motorized passenger vehicle use on trails would not be affected at Meadowood Farm in the short or long term; therefore there would be no cumulative impacts on the Farm. This would not impact current recreational opportunities on the Mason Neck Peninsula.

Trails-Non-motorized Passenger Use: Under the Proposed Action, non-motorized passenger (e.g., bicycle) use of suitable, existing trails at Meadowood Farm would be allowed. Benefits from this use would include an increase in recreational opportunities for the public. Additionally, individual recreation users could derive numerous other benefits as described at the beginning of this section.

The adverse consequences associated with non-motorized passenger trail activity could include more users on the trails, which could lead to user and safety conflicts, soil displacement, human waste issues, litter and disturbance to wildlife. The cumulative, long-term effects could include displaced visitors seeking other sites for their recreational goals, soil compaction, channeling, erosion and relocation of wildlife.

In efforts to mitigate impacts, BLM would designate areas and times for non-motorized passenger trail use. BLM would manage trails to mitigate user conflicts, resource damage, wildlife disturbance, and to provide a safe recreation environment. Mitigation actions could include use restrictions in areas to avoid negative effects on wildlife and on the resources, including temporary or seasonal closures of trails during nesting season, or when trail conditions would be more susceptible to damage (e.g., wet trails). According to Chavez and Hoyer (1998), wet trail riding has been identified as problematic by resources managers, but similar damage from wet trail use may be caused by other users as well. Compatible trail activities would share trails in part or whole. However, BLM could separate uses that would not be compatible due to safety and user conflict issues. Other mitigating measures could include use limitations and trail rotation.

Recreation - Equestrian Facilities: Currently, the equestrian facilities at Meadowood Farm are used solely by the boarding operation and private boarders under a special recreation permit. Under the Proposed Action, an outdoor riding ring would be constructed, as well as a WH&B holding facility. The existing indoor riding arena and the outdoor ring would be available for scheduled educational events, such as training clinics in support of the WH&B program, public educational programs such as 4-H and Pony Club Riding Programs, and other suitable non-profit educational programs. The outdoor ring could also be available for small competitive events, such as day shows or competitions by these organizations; however, larger horse shows and events for the general equestrian public would not take place.

BLM would provide access to the facilities on a case-by-case basis, perhaps by using a permit and fee system. Groups and organizations wishing to use the facility would be required to develop a plan which must include, but not be limited to, the following components: identification of the group and its purpose, type of event, proof of adequate insurance, attendance cap (not to exceed), traffic management, safety and emergency services, provisions for restrooms and drinking water facilities (if not provided in the facility), and other information as required by BLM. This plan would be submitted with the permit request for consideration. Use of the equestrian facilities (e.g., indoor arena, outdoor riding ring), exclusive of the riding trails, would be by permit only.

Visual Resource Management: Meadowood Farm would be managed as a VRM Class III resource. The potential for impacts to the visual resource at Meadowood Farm would be increased under the Proposed Action by construction of hay storage shelters, an environmental education center and parking lots, and permanent WH&B facilities. These impacts would be reduced by proper siting of newly constructed facilities and use of building materials and/or

colors that would not contrast with the existing landscape. The guidelines for meeting the goals of VRM Class III would be applied during design and construction of new facilities. No activities under this alternative would create indirect or cumulative impacts to visual resources.

Economic and Social: There would be a marginal increase in short-term employment and income in the study areas associated with project related construction activity (e.g., horse arenas, horse stabling facilities, environmental education center) as well as some long-term employment and income changes resulting from the provision of visitor services. These employment and income changes would be negligible in the local or regional employment context in both the short and long terms.

Since there would be no permanent population changes associated with the Proposed Action, there would be no impacts to local schools, hospitals, housing, water/sewer, and other basic infrastructure elements. Likely increased visitation to the Meadowood facility from enhanced recreational opportunities would not be expected to result in traffic problems in the immediate area. However, WH&B events could lead to adverse social effects resulting from local traffic congestion and resulting traffic delays, depending on the number of people who attend these events. It is expected that several hundred people consisting of adopters and sightseers could attend adoption events. However, as more adoption events would be held it is anticipated numbers of people would stabilize. Experience over the short term with any adverse traffic issues surrounding WH&B events would be addressed and resolved by BLM management as conditions warrant. Some area residents who are interested in developed recreational opportunities could believe that the Proposed Action, as compared to Alternatives 1 and 2, would provide enhanced social benefits from increased recreation and environmental education opportunities.

The economics of boarding privately owned horses would be periodically reviewed to assure that there would be a fair monetary return to the American taxpayers.

Soils: Impacts to soils as described under Alternatives 1 and 2 would occur also under the Proposed Action. In addition, a third impact, the physical removal, leveling and mixing of the surface soil layer (A horizon) during facility construction would affect soil productivity. Impacts to soils would increase overall because of increased visitor use, additional types of recreational uses allowed, and construction activities. Of the three impacts to soils, soil compaction would increase the most under the Proposed Action. This increase would come from the construction of trails, structures and increased equine use of pastures. Where new trails and structures would be constructed, the impacts would be long term and irreparable. In construction areas where vegetation would be removed and soil disturbed, the application of mulch and seed would minimize soil loss through erosion. Use of stable surfacing material and the use of drainage control measures would prevent erosion from newly constructed facilities such as trails. No indirect or cumulative impacts to soils would occur under the Proposed Action.

Traffic/Transportation: Visitor use and participants in adoption events would impact traffic numbers on a daily and periodic basis. Local residents could experience increased travel times on Gunston Road due to the combined vehicle traffic using Meadowood Farm and other recreation areas on Mason Neck. This impact would occur primarily on weekends and holidays. During adoption events the types of vehicles entering and leaving Meadowood Farm from Gunston Road would include semi-trucks delivering livestock for the adoptions, and adopters with pick-up trucks towing horse trailers. Vehicles entering and leaving Meadowood Farm could increase travel times of residents on Mason Neck who travel on Gunston Road as part of their routine travel. To minimize impacts caused by increased numbers and types of vehicles, the BLM would work with local authorities and the Virginia Department of Transportation to manage traffic on local roads.

Water Quality, Surface and Ground: There would be impacts to both surface and ground water quality from activities identified in the RFD Scenario. Construction of trails, roads and facilities would inhibit ground water recharge. Site-specific measures would be identified to minimize impacts on ground water and surface water. These measures could include proper siting of surface disturbing features, minimizing the size of the facilities, and insuring proper drainage patterns would be incorporated into the project design. Because of the absence of potable water, a public drinking-water supply system is expected to be established on Meadowood Farm by winter 2002. Doubling pasture allocation and horse numbers from Alternative 1 would increase non-point source pollution in pastures from horse waste. There also could be impacts to water quality due to runoff from onsite disposal of manure cleaned from stables. Offsite disposal or composting of manure, or a combination of these, could help minimize water quality degradation.

Riparian/Wetland and Ponds: Increased land disturbance and recreational activities would require additional resource commitments and general project-by-project restrictions to protect riparian resources. Trail and facility construction would avoid RPAs or would be completed using boardwalks to avoid long-term impacts on riparian/wetland areas. Riparian habitat would improve as weed species would be controlled. All riparian/wetland protection and improvements would be conducted in accordance with BMPs as mentioned in Chapter 2. Also, some riparian improvement projects would be implemented to speed riparian habitat recovery where needed. Regular cooperative management of pond fisheries would be performed, which would assist in avoiding the ponds filling due to sedimentation and aquatic vegetation growth.

Wildlife: Under the RFD Scenario, the existing forest would be managed for optimum diversity of wildlife habitats in an oak-beech-hickory-pine forest with a diverse shrub-forb understory. Conversion of at least 50 acres of historic hayfields to native grassland and creation of forest edges within grassland windrows would improve the overall quality of wildlife habitat for species such as eastern bluebirds and other edge-using species. The conversion of historic hayfields to native grasses would temporarily disrupt some deer use patterns. Once established however, these grasslands would provide better habitat quality for deer.

Pasture land would be doubled from existing acreage under the Proposed Action, as would the number of equines on Meadowood Farm. Increased sedimentation and non-point source pollution caused by equines on this pasture land would negatively affect aquatic and riparian species. Increased wildlife congregation in the remaining habitat would decrease vegetative quality and quantity. Doubling pasture acreage would increase habitat for brown-headed cowbirds and starlings.

An increase in user visitation and activities, such as motorized hobby, pedestrian, and equestrian use, would disrupt some wildlife activities or temporarily displace wildlife. Wherever visitor activities would cause more than temporary displacement, (i.e., disruption of reproductive success of wildlife), seasonal, time of day, and /or use restrictions would be implemented.

Fisheries: Fisheries in streams and ponds could be improved as stream riparian resources would be improved through weed removal and riparian improvement projects. An active fisheries management program would result in maintained and improved conditions for summer fish survival and all-around health in all managed fisheries through cooperative use of local technical management expertise.

Federal and State Listed Species: There are no federally listed or state sensitive species known to exist on Meadowood Farm. The BLM is required by regulations to manage threatened or endangered species or state sensitive species and their habitat. If federally listed or state sensitive species are encountered, management actions would be taken immediately to ensure the continued existence of the species and/or their habitat.

Vegetation:

Forest: The current forest would be managed to restore hardwood diversity in areas where selective cutting affected the species mix. Some forest management practices would also be used to promote species diversity in the understory.

Historic Hayfields: At least 50 acres of historic hayfields would be converted to native grassland. Wherever possible, this would include the addition of small trees and shrubs in a wave-like pattern at the forest edges to increase ecotone diversity and provide for migratory songbirds.

Pastures: Up to 50 acres of historic hayfields would be converted to pasture. The additional pasture would be reseeded with a pasture mix of grasses and forbs. The grass in the existing and new pasture would be heavily grazed by horses, allowing the spread of clover dandelions, and cultivated grasses.

Invasive, Nonnative Species: Invasive, nonnative species would be controlled through mechanical and chemical means. Increased land disturbance and visitation activities would increase the possibility that invasive species would be inadvertently introduced from outside the

property. Also, the disturbance of existing vegetation would increase, providing opportunities for existing invasive species to spread.

Impacts of Implementing Alternative #4 (Maximum Use)

Management Objective

Meadowood Farm would be managed for a variety of recreation, environmental education, and equine purposes with emphasis on visitor use.

Reasonable Foreseeable Development (RFD) Scenario

Horses:

Meadowood Farm would hold up to a total of 150 federal and private horses and burros. The total number of animals would be a combination of WH&Bs and domestic horses. The equestrian facilities and pastures would cover approximately 150 acres, including the current 50 acres already used as pasture. Up to 50 horses would remain at the current facility (i.e., stables, current pastures, and indoor arena), which reflects the historic number of animals boarded at the facility. Additional fencing, stabling, corrals, animal shelters, hay storage shelters, and an outdoor riding ring would be constructed. Expansion of facilities would occur on historic hayfields or pasture land and would be situated to minimize visual and other resource impacts.

Wild Horses and Burros (WH&B): A permanent WH&B holding facility with a capacity for about 50 WH&Bs would be constructed separate from the domestic horse stabling. This WH&B facility would be situated on the historic hayfields or pasture land and would be located to minimize visual impacts from public roads. The facility would contain small paddocks or corrals with attached shelters and feed bunks. The paddock fencing would be either portable pipe corral panels or wood fencing with a height of 6 to 7 feet. Several smaller pastures would be constructed adjacent to the facility to house mares with foals until the foals are weaned or are old enough to be adopted, as well as animals that would be separated for rehabilitation. The facility would also be used to hold repossessed and returned equines. Educational demonstrations would be conducted in both the indoor and outdoor riding rings.

Adoption events would be held on a recurring basis (e.g., monthly) and the corrals would also be open during the business week for adoptions. Each adoption event would have specified dates and times when animals would be available for adoption by qualified adopters. During the events, adopters would be required to apply to BLM and be approved, select and pay for their adopted animal(s), and have appropriate transportation to take their animal(s) home.

Partners: Meadowood Farm would be available for about 50 federal or other equine partnerships. BLM would pursue equine partnerships that would provide the most benefit to the public and complement BLM's programs and goals for management of Meadowood Farm.

Examples of potential equine partnerships could include availability of the facility for activities such as therapeutic riding, educational clinics, and stabling of federal horses.

Boarders: Boarding of privately owned horses would be allowed under this alternative. Boarding private horses would occur under a concession or contract, or be overseen by BLM personnel. In an effort to minimize conflicts between boarders, partners, and the general public, BLM would designate areas and times for boarder, partner, and public use of the facilities.

Environmental Education:

An Environmental Education Center with parking for automobiles and buses to accommodate groups would be constructed. The facilities would be open to individuals and groups on a daily basis.

Recreation:

Camping would be allowed in designated areas.

Fishing would be allowed in support of environmental education. Public fishing would be allowed on at least one pond.

Motorized hobby activities (see glossary) would be allowed. This regulated use would be restricted to specially designated areas and times.

Existing trails would be available and improved for pedestrian and equestrian use. New trails would be constructed.

Motorized passenger vehicle use would be allowed. This regulated use would be restricted to designated areas and times. Existing trails would be improved and new trails would be constructed.

Non-motorized passenger vehicle use would be allowed. This regulated use would be restricted to designated areas and times. Existing trails would be improved and new trails would be constructed.

Meadowood Farm would be available for horse shows and equine related clinics.

An outdoor riding arena with parking areas would be constructed for public use.

Wildlife:

Wildlife habitat would not be actively managed.

Fisheries:

Fisheries in streams and ponds would be managed in cooperation with state and local conservation groups to enhance overall conditions and to enhance and maintain a quality recreational public fishery in at least one pond.

Vegetation:

Forest: Existing forested acreage would be maintained. Silvicultural practices would not be applied except to allow natural forest succession.

Pasture: Would not exceed 150 acres. An invasive/nonnative species control program would be initiated.

Historic Hayfields: Would be converted to pasture.

Riparian/Wetlands Areas including Ponds:

Would be protected and enhanced through state and local partnerships.

Impacts to Resources

Air Quality and Climate: Sources of impacts to air quality associated with the RFD Scenario would be the same as the Proposed Action. However, there would be an increase in these impacts because construction activities could increase suspended particulates during construction activities during drier periods, and the use of construction machinery, motorized passenger vehicle use and motorized hobby use could increase the regulated air pollutants referenced in Alternative 1. There would also be an increase in the regulated air pollutants due to the occasional WH&B adoption events and increased visitor use of Meadowood Farm. These increases in the amount of fugitive dust or the increases in regulated pollutants would not affect the air quality in the Mason Neck area. Both of the impacts would be sporadic, short term, and would be limited to the specific area and time that construction and recreational activities would occur.

Prescribed burning could be used under Alternative 4 to remove hazardous fuels, i.e. vegetative residue or for wildlife habitat improvement. Smoke from prescribed fires can release several “criteria air pollutants” identified by the EPA. The need for prescribed fire would be evaluated during preparation of an activity plan. Site-specific burn actions would be addressed in a detailed prescribed fire operations plan. All burning would be in compliance with Virginia’s smoke management guidelines.

Based on the RFD Scenario, indirect or cumulative impacts to air quality on Mason Neck would not occur under Alternative 4.

Coastal Zone Management: There could be direct impacts to Virginia’s coastal zone by the construction of hay storage shelters, a WH&B holding facility, environmental education center,

and new trails. In accordance with 15 CFR 930, a coastal zone consistency review would be conducted by the Commonwealth of Virginia as part of the development of an EA that would be prepared prior to the start of construction projects or other land-use plan implementation activities. No indirect or cumulative impacts to Virginia's coastal zone would occur from implementing the activities identified in the RFD Scenario.

Cultural Resources: The potential for impacts to cultural resources would increase due to the increased number of equines at Meadowood Farm and increased use of the property by the public for equestrian, pedestrian, motorized and non-motorized recreational activities. The impacts that could occur would be the same as the Proposed Action.

In accordance with the Standard Management Common to All Alternatives, cultural surveys would be conducted prior to starting ground disturbing activities. If sites with the potential of being historic or prehistoric properties would be located, consultation would take place with the State Historic Preservation Officer, the Advisory Council on Historic Preservation, and other interested people or groups as appropriate.

Minerals: The existing sand and gravel pit has been stabilized, but this would not preclude its use in the future as a source of surfacing material on existing travel ways on Meadowood Farm. This use would be minimal and the pit size would not increase. If the pit would be used, new disturbance would only occur in previously disturbed areas. No activities under this alternative would create indirect or cumulative impacts to mineral resources.

Recreation Resources: As recreational opportunities would be increased at Meadowood Farm, adverse and beneficial impacts would be realized. Benefits from this alternative would include an increase in recreational opportunities for the public. Additionally, individual recreation users could derive numerous other benefits as described at the beginning of the Recreation Resources section under Implementing the Proposed Action section.

Potential adverse impacts from this alternative could include greater user conflicts, resource damage, and more serious safety issues than those discussed under the Proposed Action. Other adverse impacts could include crowded trails, off-trail exploration, litter, equine and human waste issues, soil displacement, and disturbance of wildlife. The cumulative, long-term effects of these consequences could lead to serious accidents/injuries, permanent vegetation change/loss, soil compaction, channeling, erosion and relocation of wildlife.

Compatible trail activities would share trails in part or whole. However, BLM could separate uses that would not be compatible due to safety and user conflict issues. In efforts to mitigate resource impacts, seasonal-use restrictions would be required to avoid negative effects on wildlife, and on the resources (e.g., in the wet season). Other mitigating measures could include use limitations, trail layout and design, separation of incompatible uses, and trail rotation.

Camping: The types of impacts of camping under Alternative 4 would be the same as those identified in Alternative 2. However, the magnitude of the impacts would increase under Alternative 4 since camping would be open to the general public. There could also be an increase in user conflicts, resource damage, and safety issues. As under Alternative 2, these impacts would be minimized by proper campsite layout and design, ensuring no sensitive plant or animal species would be in the area, restricting areas where camping would be allowed to avoid additional soil compaction, and providing for human waste disposal by construction of facilities or supplying temporary waste disposal facilities. A policy of "pack it in, pack it out" would apply to all activities to minimize littering. In addition the number of individuals allowed to camp at Meadowood Farm would be restricted. Trampling of vegetation could not be avoided but this impact would be minimized by confining camping to areas designated for that purpose. Since the number of individuals allowed to camp would be restricted, allowing camping would not have indirect or cumulative impacts on resources or camping opportunities on the Mason Neck Peninsula.

Fishing: Fishing in support of environmental education would be allowed on the Meadowood Farm ponds. Additionally, limited public fishing would be allowed on at least one of the ponds at Meadowood Farm. BLM would also make accommodations to provide fishing in compliance with the 1990 Americans with Disabilities Act. This would result in some direct impacts to the areas used to access the ponds, as well as the area around the ponds. These impacts, which could include vegetation trampling, could lead to long-term negative consequences including permanent loss or change of vegetation, soil compaction, and erosion. These impacts could be mitigated by use restrictions, and site layout and design. Benefits from public fishing would include an increase in recreational opportunities for the public, a new setting for shoreline fishing, and the improved health of a managed pond and fishery.

Visual Resource Management: Meadowood Farm would be managed as a VRM Class IV resource. The change from Class III to Class IV would be based on the amount of construction expected to occur, the diverse recreational opportunities being offered, and the relatively small size of Meadowood Farm. Construction projects would include construction of hay storage shelters, an environmental education center and parking lots, permanent WH&B facilities, and trails. These impacts could be reduced by proper siting of new facilities construction and use of building materials and/or colors which would not contrast with the existing landscape. The guidelines for meeting the goals of VRM Class IV would be applied during design and construction of new facilities. No activities under this alternative would create indirect or cumulative impacts to visual resources.

Economic and Social: There would be a marginal increase in short-term employment and income in the study areas associated with project related construction activity (e.g., horse arenas, horse stabling facilities, environmental education center) as well as some long-term employment and income changes resulting from the provision of visitor services. These employment and income changes would be negligible in the local or regional employment context in both the short and long terms.

Since there would be no permanent population changes associated with this alternative, there would be no impacts to local schools, hospitals, housing, water/sewer, and other basic infrastructure elements. Likely increased visitation to the Meadowood facility from enhanced recreational opportunities would not be expected to result in traffic problems in the immediate area. However, WH&B events could lead to adverse social effects resulting from local traffic congestion and resulting traffic delays, depending on the number of people who attend these events. Several hundred people, consisting of adopters and sightseers, could attend adoption events. However, as more adoption events would be held, it is anticipated numbers of people would stabilize. Experience over the short term with any adverse traffic issues surrounding WH&B events would be addressed and resolved by BLM management as conditions warrant.

Some area residents who are interested in developed recreational opportunities could believe that Alternative 4, as compared to Alternatives 1, 2, and the Proposed Action, would provide enhanced social benefits from increased recreation (e.g., camping) and environmental education opportunities.

The economics of boarding privately owned horses would be periodically reviewed to assure that there would be a fair monetary return to the American taxpayers.

Soils: Under this alternative the types of impacts to soils described under the Proposed Action would occur. Impacts to soils would increase overall because of increased visitor use, additional types of recreational uses allowed, and additional construction activities. Of the three impacts to soils, soil compaction would increase the most under Alternative 4. This increase would come from the additional construction and use of trails, construction of structures, and increased horse use of pastures. The construction activities would also cause the mixing of the surface soil layer. Where new trails and structures would be constructed, the impacts would be long term and irreparable. In construction areas where vegetation would be removed and soil disturbed, the application of mulch and seed would minimize soil loss through erosion. Use of stable surfacing material and the use of drainage control measures would prevent erosion from newly constructed facilities such as trails. No indirect or cumulative impacts to soils would occur under this alternative.

Traffic/Transportation: The types of impacts would be similar to the Proposed Action, but greater in magnitude because more visitors and recreationists would be expected. Daily visitor use and participants in WH&B adoption events would impact traffic numbers on a daily and periodic basis. This could result in increased travel times for residents who live on Mason Neck. The types of vehicles entering and leaving Meadowood Farm would also be similar to the Proposed Action. To minimize impacts caused by increased numbers and types of vehicles, BLM would work with local authorities and the Virginia Department of Transportation to manage traffic on local roads.

Water Quality, Surface and Ground: There would be impacts to both surface and ground water quality from activities identified in the RFD Scenario. Construction of trails, roads and facilities would inhibit ground water recharge. Site-specific measures would be identified to minimize impacts on ground water and surface water. These measures could include proper siting of surface disturbing features, minimizing the size of the facilities, and insuring that proper drainage patterns would be incorporated into the project design. Because of the absence of potable water, a public drinking-water supply system is expected to be established on Meadowood Farm by winter 2002.

Tripling pasture allocation and horse numbers from Alternative 1 would increase non-point source pollution in pastures from horse waste. There also could be impacts to water quality due to runoff from onsite disposal of manure cleaned from stables. Offsite disposal or composting of manure, or a combination of these, could be applied to minimize water quality degradation.

Riparian/Wetlands and Ponds: Increased land disturbance and recreational activities would require additional resource commitments and general project-by-project restrictions to protect riparian resources. Trail and facility construction would avoid RPAs or would be completed using boardwalks to avoid long-term impacts on riparian/wetland areas. Riparian habitat would improve as weed species would be controlled. All riparian/wetland protection and improvements would be conducted in accordance with BMPs as mentioned in Chapter 2. Also, some riparian improvement projects would be implemented to speed riparian habitat recovery where needed. Regular cooperative management of pond fisheries would be performed which would assist in avoiding the ponds filling in due to sedimentation and aquatic vegetation growth.

Wildlife: Under the RFD Scenario for this alternative, the existing forest habitat would grow and change naturally, allowing for use by any wildlife species that find the habitats suitable. All of the historic hayfields would be converted to pasture; therefore, habitat for eastern bluebirds, other edge-using species, and species requiring large blocks of grassland (such as some ground-nesting birds) would be virtually eliminated. The conversion of historic hayfields to pasture would permanently alter deer-use patterns in those areas.

Pasture land would be tripled from existing acreage under this alternative, as would the number of equines on Meadowood Farm. Further increase in sedimentation and non-point source pollution caused by equines on the pasture land would increase the negative effects on aquatic and riparian species. Additional increases in wildlife congregation in remaining habitat would further decrease vegetative quality and quantity. Tripling pasture acreage would further increase habitat for brown-headed cowbirds and starlings.

Increase in user visitation and activities, such as motorized hobby, pedestrian, and equestrian use, would disrupt some wildlife activities or temporarily displace wildlife. Wherever visitor activities would cause more than temporary displacement (i.e., disruption of reproductive success of wildlife), seasonal, time of day, and/or area use restrictions would be implemented.

Fisheries: Fisheries could be improved as riparian resources would be improved through weed removal and riparian improvement projects. An active fisheries management program would result in maintained and improved conditions for summer fish survival and all-around health in all managed fisheries through cooperative use of local technical management expertise.

Federal and State Listed Species: There are no federally listed or state sensitive species known to exist on Meadowood Farm. The BLM is required by regulations to manage threatened or endangered species or state sensitive species and their habitat. If federally listed or state sensitive species are encountered, management actions would be taken immediately to ensure the continued existence of the species and/or their habitat.

Vegetation:

Forest: The current mixed hardwood forest of beech-oak with some pockets of pine would continue to mature, with the pines diminishing. The current understory of mountain laurel and holly would continue to survive. However, this forest would become highly stressed from increased visitor use, increased water runoff, and more concentrated wildlife use, resulting in an understory depleted of species diversity. Construction of buildings, parking areas, roads and trails would further fragment the forest.

Historic Hayfields: All historic hayfields would be converted to pasture.

Pastures: The additional pasture would be reseeded with a mix of grasses and forbs. The grass in the existing and new pasture would be heavily grazed by horses, allowing the spread of clover, dandelions, and cultivated grasses.

Invasive, Nonnative Species: Invasive, nonnative species would be controlled through mechanical and chemical means. Greater land disturbance and visitation activities would further increase the possibility that invasive species would be inadvertently introduced from outside the property. Also, the disturbance of existing vegetation would further increase, providing more opportunities for existing invasive species to spread.