

Appendix E. Compatibility Determinations



USFWS

Blackwater NWR manages forest to protect Bald eagles, Delmarva fox squirrel, forest interior dwelling species, and other species that depend on upland habitat

COMPATIBILITY DETERMINATION

Use: Cropland Management

Station Name: Blackwater National Wildlife Refuge

Establishing and Acquisition Authorities:

The Chesapeake Marshlands National Wildlife Refuge Complex (CMNWRC) is composed of four nationally significant wildlife areas: Blackwater NWR, Martin NWR, Eastern Neck NWR, and Susquehanna NWR with several separate divisions. Blackwater NWR includes the Nanticoke Division, and Martin NWR includes the Barren Island, Bishops Head/Spring Island, and Watts Island Divisions. Collectively, Martin NWR, Eastern Neck NWR, and Susquehanna NWR, with the respective associated divisions, are referred to as the Chesapeake Island Refuges.

The first and largest of these areas to be established was Blackwater NWR. Originally authorized for establishment by the Migratory Bird Conservation Commission on December 3, 1931, and named "Blackwater Migratory Bird Refuge," the refuge's current 28,000 acres are a showplace for the U.S. Fish and Wildlife Service's Refuge System.

On December 31, 1931, the Migratory Bird Conservation Commission authorized the Secretary of Agriculture to purchase 10,000 acres from the Delmarvia Fur Farms, Inc. of Philadelphia, Pennsylvania. On December 9, 1931, the Secretary entered into an agreement with Delmarvia Fur Farms, Inc., effective January 1, 1932, to lease 8,167.99 acres for the refuge. The Secretary subsequently determined that it was in the best interest of the Government to acquire 8,240.99 acres for the refuge from the Delmarvia Fur Farms and two other properties by condemnation. A notice of condemnation was filed August 26, 1932, and these tracts were conveyed to the Government in January 1933.

Blackwater NWR was therefore officially established under the authority of the Migratory Bird Conservation Act on January 23, 1933. Since that time, additional lands have been added to the refuge under the authorities of the Endangered Species Act, Refuge Recreation Act, North American Wetlands Conservation Act, and the Refuge Administration Act.

Table I summarizes Blackwater National Wildlife Refuge's acquisition history and the tracts that are currently being affected by the proposed uses. Unless otherwise noted, all acquisitions are fee title. This compatibility determination will also apply to additional tracts, particularly those in Blackwater's Nanticoke Division, as they are acquired.

Refuge Purpose(s):

For lands acquired under the Migratory Bird Conservation Act (16 U.S.C. § 715 d), the purpose of the acquisition is "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds."

For lands acquired under the Endangered Species Act of 1973 (16 U.S.C. § 1534), the purpose of the acquisition is "...to conserve (A) fish or wildlife which are listed as endangered or threatened species...or (B) plants."

For lands acquired under the Refuge Recreation Act (16 U.S.C. § 460K-1), the purpose of the acquisition is for "...(1) incidental fish and wildlife-oriented recreation; (2) the protection of natural resources; (3) the conservation of endangered species or threatened species..."

Appendix E. Compatibility Determinations

For lands acquired under the North American Wetlands Conservation Act (16 U.S.C. § 4401-413), the purpose of the acquisition is "(1) to protect, enhance, restore, and manage an appropriate distribution and diversity of wetland ecosystems and other habitats for migratory birds and other fish and wildlife in North America; (2) to maintain current or improved distribution of migratory bird populations; and (3) to sustain an abundance of waterfowl and other migratory birds consistent with the goals of the North American Waterfowl Management Plan and the international obligations contained in the migratory bird treaties and conventions and other agreements with Canada, Mexico, and other countries."

For lands acquired under the Refuge Administration Act (16 U.S.C. § 668ddb), the purpose of the donation is "to protect, enhance, restore, and manage wetland ecosystems and other habitats for migratory birds, endangered and threatened species, and other wildlife."

National Wildlife Refuge System Mission:

"To administer a national network of land and waters for the conservation, management, and where appropriate, the 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 (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57)."

Description of Use:

This evaluation is to determine the compatibility of cooperative farming with the purposes for which the affected tracts were acquired.

(A) What is the Use? Is the use a priority use?

The use is cropland management through a cooperative farming agreement. Cropland management is not a priority use identified by The National Wildlife Refuge System Improvement Act of 1997, but it is an integral and historical management strategy at Blackwater NWR.

Background and Rationale for the Management Activity

The approved CCP states that a priority goal to support the station's primary purpose and Service's mission is to "Protect and enhance Service trust resources and other species and habitats of special concern." The first subgoal of this priority goal is to "provide habitats to sustain 10 percent of each of Maryland's wintering waterfowl populations of Atlantic Population (AP) Canada geese, snow geese, and dabbling ducks." The refuge objectives outlined in the approved CCP for meeting the goal and subgoal include monitoring wintering waterfowl populations, restoring emergent marsh on Blackwater NWR, managing approximately 460 acres of impoundments for moist soil management, and managing approximately 420 acres of croplands on Blackwater NWR.

Due to wetland loss and degradation, natural food resources are inadequate to sustain (and certainly to increase) the current levels of waterfowl use on Blackwater NWR. Furthermore, very few "hot foods" (e.g., corn and sorghum, which are high in carbohydrates and energy) are available off-refuge; those that are, are consumed early in the winter season. When birds have to travel long distances to seek food off the refuge in severe winter weather, their energy reserves are quickly depleted. Consequently, the refuge plants row crops and cool-season grasses or forbs each year, presently as forced-account, to sustain wintering migratory waterfowl during critical periods of nutritional and physical stress. High-protein cover crops of Ladino clover and buckwheat, over-seeded with winter wheat, receive heavy waterfowl use the entire winter. Sorghum and corn provide high carbohydrates during midwinter and periods of extreme weather when food sources generally are unavailable. Japanese millet is planted in low elevation fields and in some MSUs, where early flooding in the autumn is likely. Small acreages also are planted in sunflowers for migrating waterfowl and granivorous passerines (see alternative A for details). Contractual planting of corn and sorghum crops with force account planting of the cool season grasses and forbs is recommended as the preferred option in this alternative, because it minimizes labor and equipment on the part of the refuge

while retaining the most nutritious composition of croplands to meet the seasonal needs of waterfowl. Cooperative farming is proposed as a second option, should funding not be available for contractual planting and force account responsibilities.

(B) Where would the use be conducted?

Approximately 420 acres of existing croplands (2 percent of the refuge’s total acreage) would be managed annually to achieve refuge purposes and wildlife management objectives. Figures E.1-E.7 identify fields where cropland management activities will occur. Cooperative farming would occur on up to 115 acres or 27% of the refuge’s croplands.

(C) When would the use be conducted?

Cropland management activities normally would begin in mid-May and continue until mid-October, annually.

(D) How would the use be conducted?

The preferred option in our approved CCP would involve contractual planting approximately 100 to 120 acres in corn and milo (sorghum), and approximately 300 acres in cool season grasses and forbs, consisting of ladino or crimson clover, annual rye grass, and winter wheat (over-seeded with buckwheat). A total of 100 percent of the crops would be left unharvested exclusively for wildlife utilization. Lands having Conservation Reserve Program or similar easements would be managed and maintained in accordance with NRCS guidelines and requirements. The planting of the corn and milo would be contracted each year on a competitive bid basis to a local farmer for a fixed price per acre, and would be left unharvested for use by waterfowl and other wildlife. Refuge staff, equipment, and operational dollars would be used to plant and cultivate the cool season grasses and forbs. Crop rotations would occur on a three to one ratio: three years in cool season grasses or forbs, followed by 1 year corn or milo, then back to grasses and forbs for another 3 years. The corn and milo acreage would not be plowed under in the spring, but would be left to succeed to warm season grasses after the annual rye grass, or crimson clover has died with the onset of warm weather. Only in the fall would these lands be cultivated and replanted to winter wheat or buckwheat, which later would be over-seeded back to ladino clover the following February (freezing in the seed rather than planting with normal tillage). The wheat would be allowed to mature in early summer to provide food for passerines and other wildlife.

If sufficient funding for the preferred contractual and force account activities described above were not available, our second option would be to manage the cropland program with a combination of force account activities and cooperative farming. Because of the nature of cooperative farming and the requirement for an economic incentive to obtain or retain cooperating farmers, the cropland management scheme and rotations would be significantly different than the preferred option. Crop composition and acreages would vary annually with a variety of different scenarios possible. In a scenario with 100% cooperative farming, 100 to 120 acres of corn or milo and 300 to 320 acres of soybeans would be planted annually with the refuge’s share being the entire corn crop for wildlife use. The cooperating farmer would harvest all the soybeans as his 75-percent share and his incentive for planting and leaving the 100–120 acres of corn or milo unharvested to meet refuge purposes. While this option would save operational dollars, such a program would significantly reduce the amount of high protein clover crops and “green browse.” To maintain similar benefits for wintering waterfowl and other wildlife, these important food resources would be replaced by top-seeding the harvested soybean fields with winter wheat or crimson clover in the fall, following soybean harvest. Because wintering waterfowl would totally consume these “green browse” crops, overseeding would not be economically feasible for cooperating farmers and, thus, necessitate that the work be done “force account” by refuge staff. Another more likely scenario and the one currently practiced would be for the cooperative farmer to plant up to 115 acres in soybeans on an 80/20 share (i.e. leaving 20% unharvested for wildlife) or

Appendix E. Compatibility Determinations

overseeding the acreage with winter wheat. Refuge staff would continue to plant all the corn, milo, and green browse acreage force account.

Regardless of the option, filter strips would be planted and maintained by refuge staff around each of the field units. Runoff would be directed into existing impoundment systems prior to entering natural waterways. Only annual cropland management plans that utilize BMPs and integrated pest management would be developed and approved by NRCS prior to implementing actions. Conservation tillage and no-till farming practices would be widely utilized and preferred over conventional methods. While animal waste is readily available and would be considered as a substitute to inorganic sources of fertilizers, the Service's Wildlife Disease Lab has recommended against use of organic fertilizers due to the potential of disease transmission. All crops, to the greatest extent possible, would remain unharvested to be utilized by wintering waterfowl, Neotropical migrants (birds and butterflies), endangered species, and other wildlife.

Standing crops, corn and milo, would only be manipulated (mowed or knocked down) after the waterfowl season to avoid conflicts with baiting laws. The unharvested corn crop would be aerially over seeded with annual rye grass or crimson clover to provide additional forage, soil stabilization, and improved water quality during winter. Cropland areas would be closed to public use to ensure undisturbed availability and utilization. A special effort would be made to plant corn and milo food plots in strips adjoining forest lands to provide supplemental food for Delmarva fox squirrels. Corn and milo fields would be set back from roadways by a minimum of 100 feet to minimize vehicular mortality to Delmarva fox squirrels that might be enticed to these food sources.

All cropland fields would be bordered by filter strips and buffers that contain and filter runoff. Immediately adjacent impoundment systems, that are diked to separate them and croplands from the natural wetland systems, would contain, hold, and filter all runoff before it would enter natural wetlands and waterways. No additional ditches or canals would be constructed; however, the existing infrastructure would be maintained. The 3:1 cropland rotation, in the preferred option, would eliminate the need to apply ammonium nitrate on corn crops in most cases, since the clover crops produce sufficient natural nitrogen (approximately 110 units per acre per year). The use of no-till and conservation tillage methods and equipment would significantly minimize erosion and siltation. Corn or milo crops would be followed by wheat or buckwheat cover crops in the preferred option to bind and utilize excess nitrogen created by waterfowl feces and clover rotation schemes. Similar effects would be achieved by planting winter wheat in harvested soybean fields if the second option was utilized.

Herbicide applications would consist only of previously approved, least problematic, least harmful compounds available to do the job, in accordance with Integrated Pest Management Plans (IPM). Pesticides would not be used except in the rarest of situations, when pests exceed threshold levels and are certified by the Agricultural Extension Office and IPM agent. An historical analysis of herbicide requirements in conventional versus no-till tillage and genetically modified seed use has been completed that supports the use of genetically modified crops (GMCs) to support refuge purposes and reduce use of chemicals. A request for a justifiable use of genetically modified seed has been forwarded to the appropriate approval authority. GMC's will only be utilized in the farming program after such said approval has been granted.

Annual monitoring programs would be implemented to evaluate the program's contributions to refuge purposes. Adaptive management techniques would be applied on all refuge lands.

(E) Why is the use being proposed?

There are significant statistics relating to the contributions that croplands on refuges make to waterfowl management and the achievement of refuge purposes. Publications such as Reinecke, et al. (1989); McFarland, et al. (1966); Ringelman, et al. (1989); and others, have repeatedly validated the scientific importance of cropland management to waterfowl. The success of these cropland management programs lies in the relatively large body size of waterfowl, which enables them to store fat, protein, and minerals for

later use. These reserves can then be mobilized for egg formation, migration, molt, or in times of food shortage. Although strategies for depositing and using nutrient reserves differ among species, and necessarily are dependent upon the seasonal availability of foods, cropland grains are among the most extensively exploited food resources (Ringelman 1990). Clutch size and perhaps nesting dates of mallards and Canada geese are thought to be directly related to the amount of reserves obtained on their wintering grounds. During breeding and molting periods, waterfowl require a balanced diet with high protein content. Grain crops, most of which are not very high in protein, are seldom used during these periods. However, during fall, winter, and early spring, when vegetative foods make up a large part of the diet and energy producing carbohydrates (hot foods) are the main nutritional requirement, grain crops such as corn and milo are preferred forage.

Corn and milo crops would be held standing and unflooded until made available by mowing or knocking them down during post-hunting season periods. The intended purposes of reserving these crops would be (1) to provide sources of high energy foods to build fat reserves prior to migration, (2) to provide food resources on the refuge to minimize depredation of winter wheat crops on adjacent private lands, and (3) to minimize long distance travel to food during the coldest periods of the year. Flight is the most energetic requirement for waterfowl, and by late January there are few areas left in the county where waterfowl have not already gleaned all waste grain thus necessitating long travel distances. For example, a 2.5-lb. mallard would require 3 days of foraging to replenish fat reserves following an 8-hour flight, if caloric intake were 480 kcal/day (the amount of intake from corn in an unharvested field) (Frederickson and Reid 1988). Refuge crops would be mowed or knocked down in strips at different intervals until the waterfowl migrated north to ensure a constant supply of fresh feed beginning in late January and continuing until mid-March.

Availability of Resources:

The infrastructure (cropland, dikes, drainage ditches, roads, and storage facilities) and equipment are currently available; that is, they would not need to be procured, constructed, or created. No new equipment or equipment replacement would be anticipated during the 15-year expected duration of this plan, since most equipment was replaced in 2001.

Cost Breakdown:

The following is the list of costs to the Refuge required to administer and manage the cropland management program as proposed in our preferred option utilizing a combination of force account and contractual plantings.

Refuge Planting/Maintenance(325 days @\$140/day).....	\$45,500
Contractual Planting	\$45,000
	Total.....\$87,500

Appendix E. Compatibility Determinations

The following is the list of costs to the Refuge required to administer and manage the cropland management program as proposed utilizing force account and cooperative farming.

Refuge Planting/Maintenance(195 days @\$140/day).....	\$27,300
Equipment/Seeds/Fertilizer	\$20,000
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Total.....	\$47,300

The following is the list of costs to the Refuge required to administer and manage the cropland management program as proposed utilizing entirely cooperative farming.

Refuge Planting/Maintenance(45 days @\$140/day).....	\$6,300
Equipment/Seeds/Fertilizer	\$8,000
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Total.....	\$14,300

Anticipated Impacts on Refuge Purpose(s):

The following is a summary of the environmental, socioeconomic, and cultural/historical impacts of these programs as more thoroughly described in the Environmental Assessment prepared for the Chesapeake Marshlands NWR Complex's Comprehensive Conservation Plan of which this document is an attachment.

Effects on aquatic, wetland, and terrestrial habitats would be minimal. Again, only historical croplands would be cultivated. No new drainage systems would be created, and the actions used to minimize and mitigate runoff and erosion described above would result in very minor, if any, impacts on surrounding wetlands and aquatic systems. The approved CCP includes a reduction of cropland acreage from approximately 640 to 420 acres. Restoration of 220 acres of prior converted croplands to moist soil management impoundments and forested wetlands on Blackwater NWR, and a currently unknown amount of acreage within the Nanticoke protection area, would greatly improve the utilization of these lands for wildlife. Approximately 60 acres of historical cropland on Blackwater NWR would be reforested to provide connective travel corridors thus minimizing forest fragmentation on several isolated 50-acre tracts. Similar actions would be implemented on the Nanticoke protection area lands when opportunities were identified. Approximately 160 acres of cropland on Blackwater NWR and a currently unspecified amount in the Nanticoke protection area would be converted to moist soil management to benefit a diversity of waterbirds, shorebirds, and waterfowl (see the Moist Soil Management Program for further details).

The greatest impact of a cropland management program would be on wildlife populations, specifically wintering waterfowl, and to a lesser degree Neotropical migrants and endangered species. Cropland management has been used extensively on national wildlife refuges to provide food for migrating and wintering waterfowl and to lessen depredations on private cropland.

Surveys at several refuges showed that about one-third of all feeding by waterfowl was on cultivated crops. Seventy-five percent of the geese and 30 percent of the ducks using national wildlife refuges in the Southwestern States were harbored on refuges where cropland management was practiced. Three million birds were maintained for several weeks in California on three small refuges totaling only 17,000 acres, where cropland management was practiced to minimize private cropland depredation (Givens, et al. 1964). These are significant statistics relating to the contributions that croplands on refuges make to waterfowl management and the achievement of refuge purposes. Publications such as Reinecke, et al. (1989); McFarland, et al. (1966); Ringelman, et al. (1989); and others, have repeatedly validated the scientific importance of cropland management to waterfowl. The success of these cropland management programs lies in the relatively large body size of waterfowl, which enables them to store fat, protein, and minerals for

later use. These reserves can then be mobilized for egg formation, migration, molt, or in times of food shortage. Although strategies for depositing and using nutrient reserves differ among species, and necessarily are dependent upon the seasonal availability of foods, cropland grains are among the most extensively exploited food resources (Ringelman 1990). Clutch size and perhaps nesting dates of mallards and Canada geese are thought to be directly related to the amount of reserves obtained on their wintering grounds.

During breeding and molting periods, waterfowl require a balanced diet with a high protein content. Grain crops, most of which are not very high in protein, are seldom used during these periods. However, during fall, winter, and early spring, when vegetative foods make up a large part of the diet and energy producing carbohydrates (hot foods) are the main nutritional requirement, grain crops such as corn and milo are preferred forage.

The cropland management program, as practiced in these strategies, would also recognize the importance of high protein as a nutritional requirement during prebreeding and molting periods. Efforts would be made to make these crops available during the premolt and early migration periods to build and replenish protein. Ladino clover and buckwheat would be planted to provide sought after sources of protein, particularly for Canada and lesser snow geese.

Cropland grain is an abundant, high-energy food that can be quickly consumed by waterfowl (Ringelman 1990). The best indication of the nutritional quality of foods is given by an analysis of their chemical composition. The amount of gross energy, crude protein, fat, ash, fiber, and digestible carbohydrates (NFE or nitrogen-free extract) are indices to food value. However, since waterfowl use grains primarily as a high-energy food and supplement their diet with natural foods to compensate for nutritional deficiencies (Ringelman 1990), the energy content of grains is the most commonly used basis for comparison. Unfortunately, energy content varies among varieties of the same grain, as well as by soil and environmental conditions.

Moreover, waterfowl cannot digest different grains with similar efficiencies. In recognition of this digestive efficiency, metabolizable energy, which is indicative of the energy actually derived from a food, is a better comparative measure than gross energy content. Agricultural foods (with the exception of soybeans) provide high levels of metabolizable energy. Corn and milo are planted because they produce the highest amounts of metabolized energy, 4.01 and 3.85 kcal/g, respectively, for Canada geese (values four to 10 times greater than some of the natural plants such as smartweed and pondweed) (Fredrickson, et al. 1988). It should be noted that these values, while indicative of fresh seeds, are not representative of grains underwater or exposed outdoors for an extended period. Under these conditions, energy value may decline rapidly. For example, rice will lose only 19 percent of its energy value after 90 days of flooding, but milo and corn will lose 42 percent and 50 percent, respectively, and soybeans will lose 86 percent of their energy content. Such losses underscore the need for well-timed manipulations to maintain food quality.

Observations and censuses have demonstrated that many other resident and migratory bird species would also benefit from cropland management programs. In the summer, Eastern meadowlarks and several sparrow species use the clover fields. Since the winter wheat would remain unharvested and be left to mature, wild turkeys would use these fields as preferred nesting and brooding areas. Passerines seeking seeds or invertebrates would also heavily use the mature wheat. The eastern bluebird, in particular, seems to favor these areas during most of the year. Many species of raptors, including red-tailed hawks and kestrels, are often seen hunting in these areas. The once productive corn and milo fields would be left fallow throughout the summer to naturally succeed to warm season grasslands, which would be used for nesting and food by several Neotropical bird species.

Maintaining field borders would particularly benefit sparrow species, including song sparrows (*Melospiza melodia*), swamp sparrows (*Melospiza georgiana*), field sparrows (*Spizella pusilla*), chipping sparrows (*Spizella passerina*), white-throated sparrows (*Zonotrichia albicollis*), and savannah sparrows

Appendix E. Compatibility Determinations

(Passerculus sandwichensis) (Marcus, et al. 2000). Fields with field borders contain approximately three times the sparrows than fields without borders. Second only to its importance for waterfowl, the ladino clover would provide for a Lepidopteran spectacle. Literally millions of butterflies and skippers use these sweet clover fields throughout the summer and during early fall migrations. When they are kept mowed, the clover fields are perpetually blooming. Likewise, the planting of buckwheat fields, if properly timed, can provide impressive habitat for migrating butterflies.

The Delmarva Fox Squirrel Recovery Team has repeatedly recognized the importance of cropland management programs for the recovery of the endangered Delmarva fox squirrel. One of the recommended strategies is to supplement natural food resources by planting high energy crops (corn and milo) in areas adjoining forested tracts. Croplands can also attract squirrels to areas such as roadways, where mortality can occur. When corn and milo are planted near roadways, a 100-foot buffer of ladino clover would be planted between the corn or milo and the roadway. This practice would greatly minimize the enticement for squirrels to cross the roadways since they would be reluctant to travel over these long open distances, being fearful of avian predators.

Public Review and Comment:

The action contained in this compatibility determination was submitted to the public for review and comment in the Environmental Assessment for the Draft Comprehensive Conservation Plan for the Chesapeake Marshlands NWR Complex in full compliance with NEPA. No comments regarding this action were received.

Determination: (Check One)

This use is compatible X

This use is not compatible _____

Stipulations Necessary to Ensure Compatibility:

Management will be in compliance with approved Best Management Practices and IPM plans. Cropland management has been conducted on Blackwater NWR annually since establishment in 1933. The attached cooperative farming restrictions, special regulations, and general operating practices have been structured to ensure compatibility. If monitoring determines that this use materially interferes with or detracts from fulfillment of the NWRS mission or purposes of the refuge, the use would be modified or curtailed, or eliminated.

Justification:

Cropland management has been an integral component of the development of Blackwater NWR since its establishment in 1933. In fact, expanding and changing cropland management practices first brought Canada geese to the refuge. Every year for the past 65 years, the refuge has used cropland management to produce large quantities of highly nutritious foods on relatively small areas to help offset the loss of natural foods caused by extensive marsh loss and degradation. Croplands are managed by the refuge to provide the most beneficial food sources for waterfowl and other wildlife. The proof of the success of these cropland management programs is the diversity and abundance of the wildlife that now depend on them.

Cropland management will not materially interfere with or detract from the mission of the NWRS or purposes for which Blackwater NWR was established.

Signature - Refuge Manager: /s/ Glenn A. Carowan 1/30/2006
(Signature and Date)

Concurrence - Regional Chief: /s/ Anthony D. Legér 6/26/2016
(Signature and Date)

Mandatory 15 year Reevaluation Date: June 26, 2021

Attachments:

Figures E.1-E.7: Maps of fields undergoing cropland management activities

References:

- Frederickson, L.H. and F.A. Reid.1988. Nutritional values of waterfowl foods. USFWS, Waterfowl Management Handbook, Leaflet 13.1.1, Washington, D.C.
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Appendix E. Compatibility Determinations

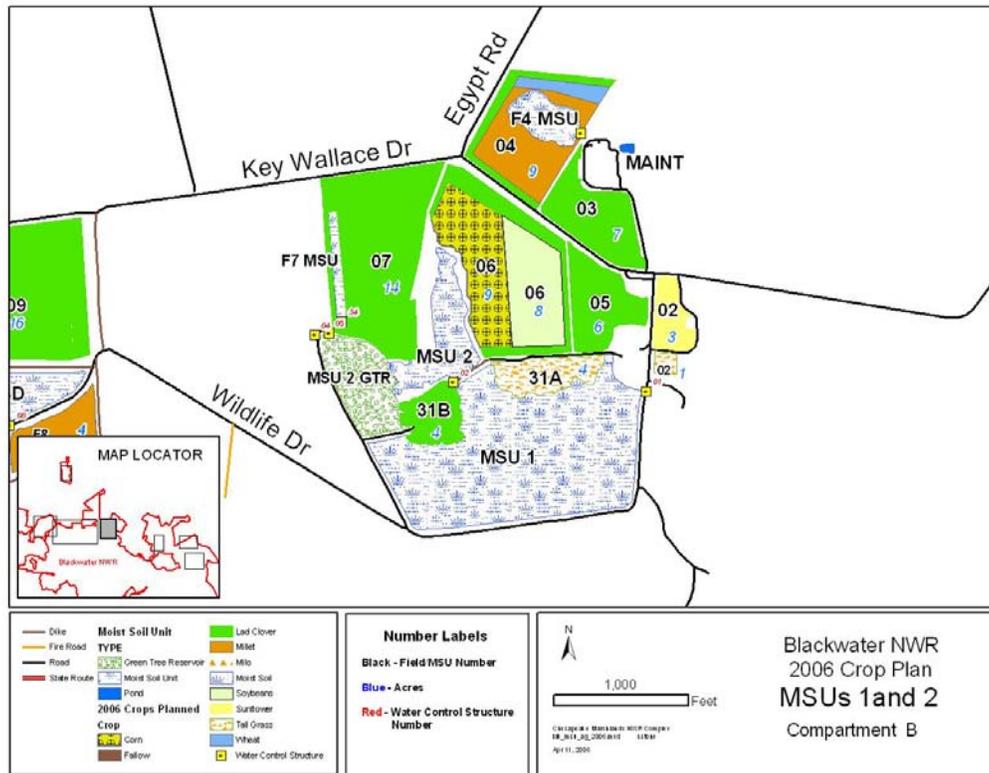


Figure E.1. Moist soil units 1 and 2

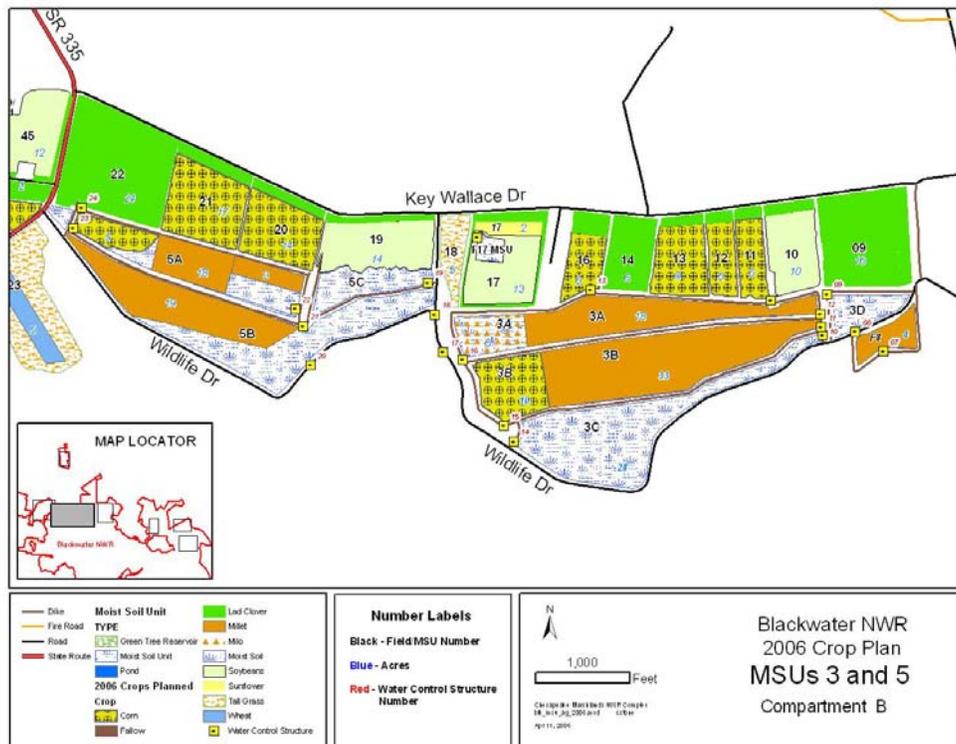


Figure E.2. Moist soil units 3 and 5

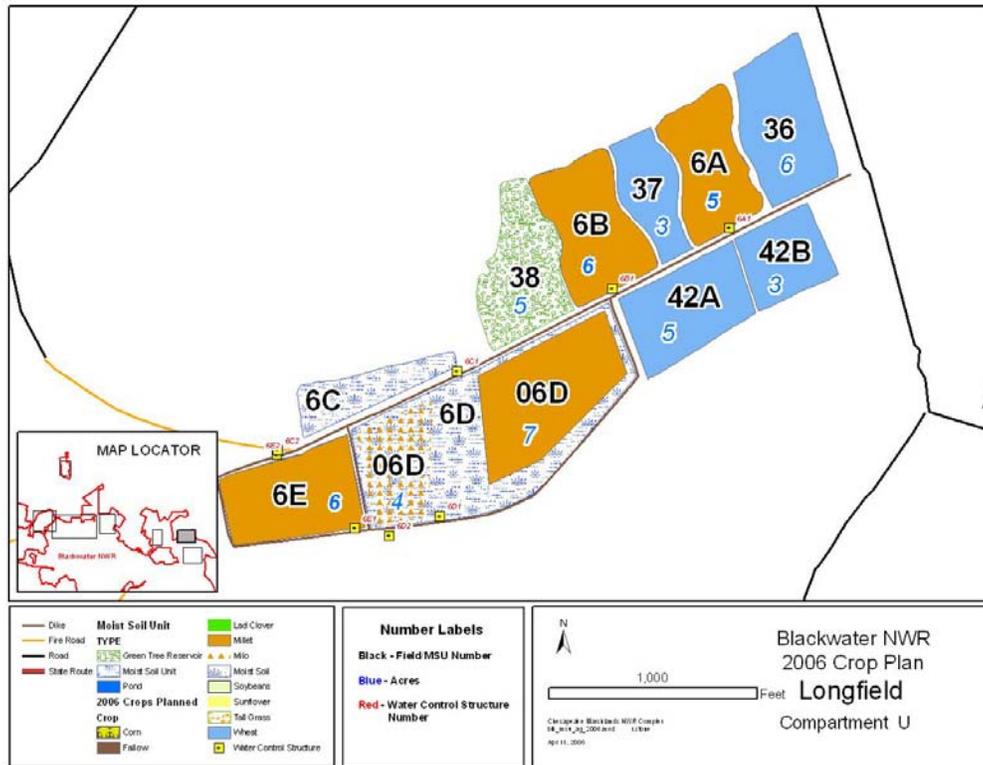


Figure E. 3. Longfield – Compartment U

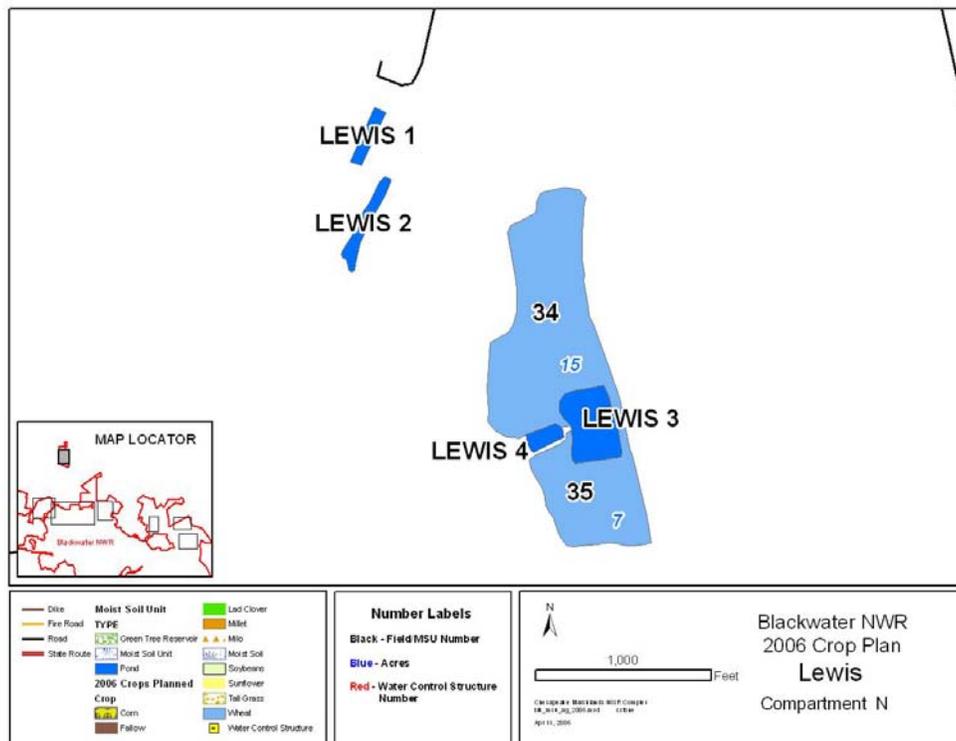


Figure E. 4. Lewis - Compartment N

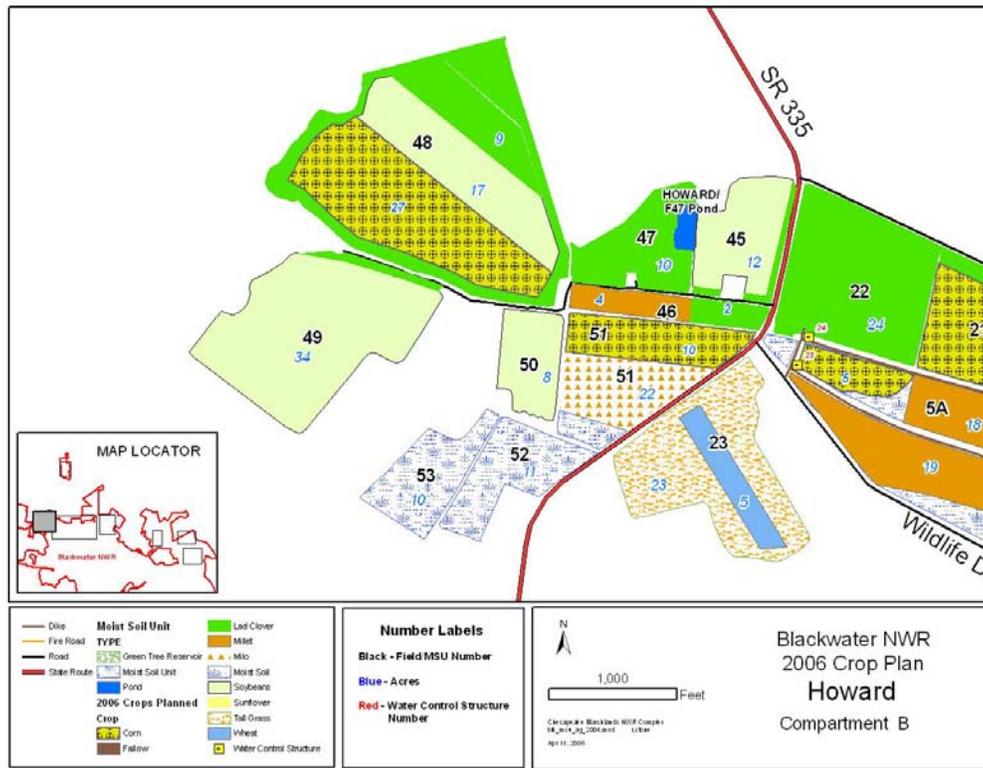


Figure E. 7. Howard - Compartment B

COMPATIBILITY DETERMINATION

Use: Fishing

Station Name: Blackwater National Wildlife Refuge (Chesapeake Marshlands NWR Complex)

Establishing and Acquisition Authorities:

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For lands acquired under the Endangered Species Act of 1973 (16 U.S.C. § 1534), the purpose of the acquisition is "...to conserve (A) fish or wildlife which are listed as endangered or threatened species...or (B) plants."

For lands acquired under the Refuge Recreation Act (16 U.S.C. § 460K-1), the purpose of the acquisition is for "...(1) incidental fish and wildlife-oriented recreation; (2) the protection of natural resources; (3) the conservation of endangered species or threatened species..."

For lands acquired under the North American Wetlands Conservation Act (16 U.S.C. § 4401-413), the purpose of the acquisition is "(1) to protect, enhance, restore, and manage an appropriate

Appendix E. Compatibility Determinations

distribution and diversity of wetland ecosystems and other habitats for migratory birds and other fish and wildlife in North America; (2) to maintain current or improved distribution of migratory bird populations; and (3) to sustain an abundance of waterfowl and other migratory birds consistent with the goals of the North American Waterfowl Management Plan and the international obligations contained in the migratory bird treaties and conventions and other agreements with Canada, Mexico, and other countries."

For lands acquired under the Refuge Administration Act (16 U.S.C. § 668ddb), the purpose of the donation is "to protect, enhance, restore, and manage wetland ecosystems and other habitats for migratory birds, endangered and threatened species, and other wildlife."

National Wildlife Refuge System Mission:

"To administer a national network of land and waters for the conservation, management, and where appropriate, the 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 (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57)."

Description of Use:

This evaluation is to determine the compatibility of fishing (and the associated facilities) with the purposes for which the affected tracts were acquired.

(A) What is the Use? Is the use a priority use?

The use is fishing (including construction of associated facilities as subsequently described). The National Wildlife Refuge System Improvement Act of 1997 identified fishing as one of the six, priority, wildlife-dependent recreational uses to be facilitated in the Refuge System, and the act encouraged the Service to provide opportunities for these uses

Background and Rationale for the Management Activity

Fishing and crabbing have been sources of food and recreation on these areas since the Native Americans were the only inhabitants. However, when Blackwater Refuge was established in the 1930's, it was considered an inviolate sanctuary for wildlife. Because the refuge owned and regulated all the waters and water bottoms within the original acquisition boundary, all interior waterways were closed during the peak waterfowl migration and wintering seasons from October 1 to March 31 to prevent disturbance. Fishing was prohibited October 1 to March 31 for the same reason.

The waters on Blackwater Refuge are unmarked, shallow, and often revert to tidal mud flats at low tide making fishing very, very difficult. Because of the very shallow waterways, increasing salinities, and excessive turbidity resulting from marsh loss, fish populations are very low and the sizes of most fish species are small. Because public fishing opportunities that are not adversely influenced by these problems abound throughout Dorchester County, fishing and crabbing have not historically been active recreational pursuits at Blackwater Refuge.

The navigable waters of the Nanticoke River would not be subjected to refuge regulations should lands be acquired as a Division of Blackwater Refuge. Fishing and associated boating activities would be solely under the jurisdiction of the State of Maryland. Similarly, jurisdiction for regulating these activities on the Chesapeake Island Refuges would reside completely with the State of Maryland since the Service owns only to mean high water. Access to the river or to the waters of the Chesapeake Bay would be the only issue associated with these activities that the Service could regulate.

However, even with difficult access problems, the public expressed their desire during the CCP scoping process for more boat ramps and fishing opportunities (particularly access to the upper Blackwater River which is not subject to refuge jurisdiction). Increased fishing opportunities were therefore proposed during the CCP through the construction of a canoe ramp on Rt. 335 with a parking area, development of an

accessible boardwalk/pier along Key Wallace Drive on the Little Blackwater River, and improved mapping and marking of the Blackwater River channel. The historical, seasonally closed area (October 1 thru March 31) would be expanded from 5,788 acres to 6,223 acres in accordance with new legislation promulgated by Maryland DNR. Improved signage and printed materials, explaining Blackwater Refuge rules and regulations, would be made available to the visitor. Canoeing and boating activities would be monitored, and if necessary be restricted to reduce disturbance to wildlife and impacts to habitat.

(B) Where would the use be conducted?

Fishing will occur on navigable and non-navigable waterways of the Blackwater, Little Blackwater, and Nanticoke Rivers and tributaries. However, authorization to control recreational fishing within the boundary of Blackwater National Wildlife Refuge (including the Nanticoke Division) is applicable only to those waters which are defined as "non-navigable," where title was vested in the United States in fee simple absolute, or where the State did not exert its claim during original acquisition (approximately 3,900 acres of waterways). Essentially, this means that the refuge has the authority to regulate fishing only on tracts (14), (14a-i), (14a-I,II), (14a-III), (14e-I), (16,a), (18), (19), (24,a-c), and (29). (See table E.1 for further details.) The refuge is not authorized to regulate fishing or other waterborne activities within the navigable waters of the State or within areas where water bottoms are State-owned. Therefore, for the purpose of explanation and definition, non-navigable waters within Blackwater Refuge include all refuge waters except: (1) the Blackwater River partially downstream of its confluence with the Little Blackwater River, (2) where the Service owns only to the centerline of the Blackwater River above and below the Highway 335 bridge, and (3) where the Government owns only to the centerline of the Little Blackwater River and Meekings Creek. Therefore, the compatibility of recreational fishing will be evaluated only according to effects on the purpose(s) for which these tracts were acquired. The construction of associated facilities, boat ramps, parking areas, and boardwalks/piers, will be assessed in reference to their respective tracts.

Shoreline access from refuge lands to waters within the Service's jurisdiction and control will not be authorized except for two fresh water, land locked ponds used for special refuge fishing events and environmental education programs on Tract 100u (Briggs Pond) and Tract 37 (Key Wallace Pond), respectively.

Access to the approximately 3,900 acres of refuge-regulated waters will be limited to one existing, off-refuge, public boat ramp at Shorter's Wharf bridge adjacent to Tract 52; a new proposed canoe/kayak ramp on Tract 100m adjacent to Star Route 335 near the Blackwater River bridge; or from any other "off-refuge" location. (NOTE: Fishing on the refuge will be further restricted by the very shallow tidal waterways that average less than 1.5 feet deep, except for the long meandering, unmarked Blackwater River channel which is approximately 3 feet in depth. Few visitors attempt to navigate their small boat or canoe any distance into this uncharted area because of these conditions. Even experienced refuge employees find it difficult to navigate refuge waterways.)

The proposed new canoe/kayak ramp will be constructed from a series of 12" x 2" x 8' concrete logs which will be designed to be used for canoe, kayak and non-motorized boats for wildlife/wildlands photography, wildlife observation, and fishing (all priority public uses), with an adjacent 350' x 48' parking area (space for about 10 vehicles) that will be constructed by Maryland Department of Transportation within the State's right-of-way (an area not subject to compatibility). The ramp will be constructed on lands owned by the U.S. Government (Blackwater NWR) while the parking area will be constructed on lands regulated by the Maryland Department of Transportation. The exact location for these facilities will be west of and adjacent to the State Route 335 bridge, and will provide safe access to the navigable (non-refuge regulated) waterway of the upper Blackwater River.

An accessible fishing pier/boardwalk (approximately 4' X 600') and associated parking area (200' X 25') are proposed for construction on Tract 14 to gain safe fishing access to the non-regulated waters of the Little Blackwater River. The proposed pier/boardwalk will be constructed on water bottoms owned by the State of Maryland (not subject to compatibility) and emergent marsh and uplands owned by the U.S. Government

(Blackwater NWR). The pier will extend from the immediately adjacent parking lot on refuge uplands approximately 200 feet over refuge marshland and then another 400 feet over State owned water bottoms and waters, along the south side of Key Wallace Drive, almost to the Little Blackwater Bridge. The associated parking area would be constructed in an adjoining refuge agriculture field.

(C) When would the use be conducted?

Fishing in refuge regulated waters would be allowed daily, from dawn to dusk (i.e. daylight hours only), April 1 to October 1, unless there is a conflict with a management activity or extenuating circumstance that would necessitate deviations from these procedures. Fishing during this time period would be further restricted by weather and summer insect infestations, factors that virtually eliminate all uses during June thru August, often extending into September. Fishing on the two freshwater ponds would be further limited to an annual event at Briggs Pond, and on special requests for environmental education programs at Key Wallace Pond. Since the proposed boardwalk/pier would be constructed over “navigable waters,” fishing would not be regulated by the Service but by the State of Maryland in the impacted Little Blackwater River along Key Wallace Drive and the Little Blackwater Bridge area. Fishing in the upper Blackwater River would also be totally regulated by the State.

(D) How would the use be conducted?

Fishing and crabbing will be authorized and regulated according to provisions in 50 CFR, Subchapter C, Part 33 and consistent with State regulations. Fishing and crabbing will be restricted to opportunities from boats which provide the only access to refuge regulated waters of the Blackwater/Little Blackwater River systems. There will be no bank fishing or crabbing except for special fishing events and environmental education programs at Briggs Pond and Key Wallace Pond, and the proposed pier/boardwalk on the Little Blackwater River (regulated by the State of Maryland). Boat launching will not be permitted on the refuge except canoes and kayaks at the proposed canoe/kayak ramp near the Rt. 335 Blackwater River bridge. The uses described above will be regulated by distribution of refuge leaflets and state fishing and crabbing regulations at the Visitor Center. Law enforcement patrols and compliance checks by refuge officers will be used to enforce the provisions of 50 CFR, Subchapter C, Parts 26, 27, and 33, as applicable. Unmarked channels and depth of shallow water will limit the speed and distance traveled into the refuge by small motor boats. As previously mentioned, all uses on refuge-regulated waters will be expressly restricted April 1 to October 1. Staff and volunteers at the visitor center and the refuge office will also give instructions to visitors on how these uses are to be conducted. A boating, fishing and crabbing leaflet will be distributed at the Visitor Center.

(E) Why is the use being proposed?

Fishing will be conducted to provide compatible recreational opportunities for visitors to enjoy the resource and to gain understanding and appreciation for fish and wildlife. These uses will also provide wholesome, safe, outdoor recreation in a scenic setting, with the realization that those who come strictly for recreational enjoyment will be enticed to participate in the more educational facets of the public use program, and can then become advocates for the refuge and the Service.

Availability of Resources:

Additional staff would provide interpretive fishing, crabbing, and boat safety programs; National Fishing and Boating Week activities; preparation of canoe trails, maps, kiosk information, and signs; posting of navigation signs and boundary signs; and law enforcement of fishing, boating, and crabbing regulations within Blackwater Refuge.

Cost Breakdown:

The following is the list of costs to the Refuge required to administer and manage the fishing programs.

Service Costs

Interpretive programs (45 hrs @ \$30/hr).....	\$ 1,350
National Fishing & Boating Week Event (9 hrs @ \$30/hr).....	\$ 270
Preparation of signs, maps, trails, info (90 hrs @ \$30/hr).....	\$ 2,700
Law enforcement of regulations (40 hrs @ \$24/hr).....	\$ 960
Monitoring of canoeing and boating activities (20 hrs @ \$16/hr).....	\$ 320
Brochures.....	\$ 5,000
Signs	\$ 5,000
Canoe Ramp.....	\$ 1,000
Total	\$ 16,600

Non-Service Costs Provided by Partnerships, Grants, and Donations

Construction of canoe ramp & parking area	\$ 60,000
Construction of boardwalk/fishing pier & parking area.....	\$200,000
Total	\$260,000

Anticipated Impacts on Refuge Purpose(s):

The following is a summary of the environmental, socioeconomic, and cultural/historical impacts of these programs as more thoroughly described in the Environmental Assessment prepared for the Chesapeake Marshlands NWR Complex's Comprehensive Conservation Plan of which this document is an attachment. Most of the construction impacts associated with facilities will occur on non-Service lands not regulated by the Service and not subject to compatibility. Impacts from fishing are anticipated to be minimized by closely monitoring impacts.

The continuation of the very limited number of fishermen using canoes (approximately 7 visits per year) will have very little, if any, effect on the refuge's wildlife, waterways, and adjacent habitats. Small motor boats could potentially affect the submerged aquatic vegetation, could create limited shoreline erosion from their wakes, and could potentially increase turbidity if there were sufficient numbers of visits. Zieman (1976) stated, "In shallow waters the most common form of rhizome disturbance is from the propellers of motor boats." Only an estimated 70 recreational fishermen per year currently use motorized boats, but most fishermen remain close to the Blackwater River channel where depths are greater and scouring of the water bottom is less likely. Because of the higher salinity and constant wind generated turbidity of the silt laden refuge waters, submerged aquatic vegetation (SAV) is almost nonexistent, therefore eliminating Zieman's concerns about destruction of SAV rhizomes (at least at Blackwater).

At Blackwater Refuge, fishermen can potentially interfere with migratory waterbirds present April 1 to October 1. Studies on boating disturbance of nesting waterfowl (Atkinson & Willes, 1969; Bouffard, 1982; Brickley, 1976; Cook, 1987; Coulter & Miller, 1968) and migratory waterbirds (Erwin, 1989) indicate that boating causes flushing of nesting birds and possible disturbance to nesting. However, Hartman (1972) found the wood duck, a prominent nesting waterfowl at Blackwater, quietly swam away instead of flushing. Evenson et al (1974) concluded that in spite of disturbance, ducks were never seen leaving the lake. In addition, Speight (1973) determined that the effects of waterfowl disturbance depended more on frequency of human presence than number of people present at one time.

Fishing can also potentially cause death or serious injury to migratory birds by using lead sinkers that can become ingested, or by discarding hooks, monofilament line, or other litter that can trap or entangle birds and other wildlife.

Appendix E. Compatibility Determinations

The concern, therefore, is whether or not these disturbances are sufficient to adversely affect the subject purposes for which the refuge was established. Since fishing and crabbing are limited to April 1 to October 1 when aggregations of migratory waterfowl are not present, and is further limited by access, weather, infestation of insects, and shallow water which limits water craft size and type, the major evaluation criteria will be the frequency of human presence.

Fishing in refuge regulated waters from a boat averages about one visit per day in April and May, and one visit per week from June through September. This equates to about 70 fishing visits annually. The daily frequency of human presence on approximately 3,900 acres of regulated waterways is therefore almost zero causing negligible wildlife disturbance. Since the limiting factors are not likely to change, the frequency of visitor use on refuge-regulated waters is also unlikely to change. The change will be in access to non-refuge regulated waters where the use is regulated by the State.

Fishing and crabbing on Blackwater Refuge waters, if authorized during the fall and winter, would have a negative impact on the migratory waterfowl and nesting bald eagles. Thus, Blackwater Refuge will continue to be closed to fishing and crabbing on refuge waters October 1 - March 31. The increase from 5,788 acres to 6,223 acres of closed area (marsh that has been changed to open water) will prevent increased visitor disturbance to migratory waterfowl. Although the fishing and crabbing facilities would be increased, the shallow water and closure during 6 months of the year would contribute to having little to no impact on fish and crabs from fishing and crabbing visitors.

Although there are 34 million anglers in the US, few would come to the Blackwater Refuge to fish simply because Blackwater Refuge is not noted for its sport fishing.

The proposed accessible boardwalk/ pier, kiosk, and parking area near the Little Blackwater Bridge would provide a popular fishing area not found anywhere else in the County. It would draw many people who do not own or have access to a boat to fish. It would eliminate the parking problem and safety hazards along the County roadway, and thus, deterioration of the roadway and erosion control from illegal parking. It would also provide an accessible fishing area where presently there are none on the Blackwater Refuge and few, if any, in Dorchester County. For the most part of the year, the pier would be used not for fishing but for wildlife observation.

Interpretive signs, maps, and river channel markers will be provided to increase safety and prevent physical impacts by allowing the fisherman/boater to follow the channel instead of getting lost in the unmarked shallow water. The continued closure of boating October 1 - March 31 and the proposed increase in the size of the seasonal closed area at Blackwater Refuge would have a positive physical impact on the environment. Since there would be no additional facilities proposed for the Nanticoke Division or Chesapeake Island Refuges, there would be no impacts to physical resources.

There would be no cultural or historical resource impacts expected.

Public Review and Comment:

This compatibility determination was submitted for public review and comment as an appendix to the Environmental Assessment for the Draft Comprehensive Conservation Plan for the Chesapeake Marshlands NWR Complex in full compliance with NEPA.

Determination: (Check One)

This use is compatible X

This use is not compatible _____

Stipulations Necessary to Ensure Compatibility:

Fishing on Blackwater Refuge has been conducted for many years. The continued closure of boating October 1 - March 31 and the proposed increase in the size of the seasonal closed area at Blackwater Refuge have been implemented to ensure compatibility. If the monitoring described under Availability of Resources indicates that this use materially interferes with or detracts from fulfillment of the National Wildlife Refuge System mission or the purposes of the refuge, we would curtail or eliminate the use.

Special Regulations governing our fishing programs will be codified in the Code of Federal Regulations, Title 50 and will be subject to Maryland State regulations and the following special refuge conditions:

1. We allow fishing and crabbing from April 1 through September 30 during daylight hours only.
2. We restrict fishing and crabbing to boats and the Key Wallace roadway across the Little Blackwater River.
3. We require a valid Maryland sport fishing license. We do not require a refuge permit.
4. We require all fish and crab lines to be attended.
5. We prohibit boat launching from refuge lands except for canoes/kayaks at the canoe/kayak ramp located near the Blackwater River Bridge on Route 335. A public launching ramp is available at Shorter’s Wharf.
6. We prohibit the use of air boats on refuge waters.

Justification:

Recreational fishing is compatible because of the extremely limited visitation and the very limited direct and indirect effects on the refuge's 3,900 acres of waterways or approximately 17% of the refuge that was acquired for the purpose "as an inviolate sanctuary, or other management purpose, for migratory birds." The restrictions that Blackwater Refuge places on these activities; the public outreach; the enforcement and educational efforts; the shallow waters, and difficulty in navigation which severely limits opportunities for use, all combine to keep these uses compatible.

Fishing will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the Refuge was established.

Signature - Refuge Manager: /s/ Glenn A. Carowan 1/30/2006
(Signature and Date)

Concurrence - Regional Chief: /s/ Anthony D. Legér 6/26/2016
(Signature and Date)

Mandatory 15 year Reevaluation Date: June 26, 2021

Appendix E. Compatibility Determinations

Attachments:

Table E.1. Land Acquisition History

Closed to boating and thus fishing areas October 1 - March 31 (figure E.8)

References:

- Atkinson-Willes, G. 1969. Wildfowl and recreation: a balance of requirements. *Br. Water Supply*. 11: 5-15.
- Bouffard, S. H. 1982. Wildlife values versus human recreation: Ruby Lake National Wildlife Refuge. *Trans. N. Am. Wildlife National Resour. Conf.* 47:553-558.
- Buckley, P. A., and Buckley, F. G. 1976. Guidelines for protection and management of colonially nesting waterbirds. *N. Atlantic reg. Off., NPS, Boston, Mass.* 54pp.
- Cooke, A. S. 1987. Disturbance by anglers of birds at Grafham Water. *ITE Symposium*. 19:15-22.
- Coulter, M. W., and Miller, W. R. 1968. Nesting biology of black ducks and mallards in northern New England. *Vermont Fish and Game Dep. Bull.* 68(2):74pp.
- Erwin, R. M. 1989. Responses to human intruders by birds nesting in colonies: experimental results and management guidelines. *Colon. Waterbirds*. 12(1):104-108.
- Hartman, G. W. 1972. The biology of dump nesting in wood ducks. M.S. thesis, University of Missouri-Columbia. 66pp.
- Speight, M. C. D. 1973. Outdoor recreation and its ecological effects: a bibliography and review. University College London, England, *Discuss. Pap. Conserv.* 4. 35pp.
- Ziemer, J. C. 1976. The ecological effects of physical damage from motor boats on turtle grass beds in southern Florida. *Aquat. Bot.* 2:127-139.

Table E.1. Land acquisition history (Blackwater NWR)

<i>Date</i>	<i>Tract No.</i>	<i>Acres</i>	<i>Tract Name</i>	<i>Authority¹</i>
1/13/33	18	1.00	Graveyard Tract	MBCA
1/13/33	19	72.00	Blackwater R.	MBCA
1/23/33	14,a,-I,-II,-III,b-g,i	8,167.99	Delmarvia Fur Farms	MBCA
12/01/42	16,a	355.18	Kuehnle	MBCA
8/02/45	24,a-c	2,203.21	Seward	MBCA
4/21/51	29	416.94	Smith	MBCA
6/22/72	37	408.40	Luthy	MBCA
6/23/72	38	1.15	Brooks	MBCA
6/29/72	31	1.28	Turner	MBCA
6/27/75	45,R	175.10	Spicer	ESA
5/15/78	45b-d	1,610.47	Jarrett	ESA
9/28/78	45a-e	852.84	Jarrett	ESA
10/09/84	58,-I	489.50	Handley	ESA
4/19/85	53,-I	863.00	Herman Robbins Est.	MBCA
4/20/64	41,R	0.00	State of MD Easement	MBCA
11/05/76	2	7.14	State of MD Exchange ²	80 STAT. 926
3/02/77	14d	(9.89)	State of MD Exchange ³	16 U.S.C. 668dd
8/11/87	54	71.40	Schmidt	RRA
10/21/87	55,-I	237.20	Wm. Robbins	RRA
11/02/88	99,R	445.00	Paul Handley Est.	MBCA
11/09/88	52	297.20	Rufus Robbins	MBCA
4/09/91	100	454.20	Pascal	MBCA
10/21/91	51,-I	562.70	Gregg	MBCA
12/24/91	100a-i	176.75	Barren Island	MBCA
12/30/92	101	797.78	Williams	MBCA
12/28/92	100m	459.47	Howard	RAA
12/30/92	100j	380.00	Bishops Head	RAA
12/30/92	100k	52.00	Spring Island	RAA
2/28/94	100n	856.00	Madison (Ewing)	NAWCA

Appendix E. Compatibility Determinations

<i>Date</i>	<i>Tract No.</i>	<i>Acres</i>	<i>Tract Name</i>	<i>Authority¹</i>
8/10/94	59	201.00	Mills	MBCA
11/2/94	103	299.95	Burton	MBCA
2/7/96	100t	173.85	Elliott	MBCA
12/28/95	104a	324.34	Valiant	MBCA
5/23/96	100r	55.23	Rasche	MBCA
8/6/96	100u	1,163.06	Linthicum	MBCA
7/29/96	100p,q	431.26	Lakes	MBCA
12/16/97	100Ae	149.73	Williamson	MBCA
9/24/99	108	74.88	Spicer	MBCA
9/24/99	107r	748.26	Spicer	MBCA
7/26/99	100Af	26.50	Long	MBCA
3/29/99	105,a	174.48	LeCompte	MBCA
3/28/00	100Ag	64.73	Riggins	MBCA
6/29/72	31	1.28	Turner	MBCA
3/15/00	54a	141.60	Schmidt	MBCA
2/6/02	100Ah	109.81	Newcomb	MBCA
2/20/02	100Ai	89.25	Newcomb	MBCA
6/26/93	102	0.11	Wooten	MBCA
7/8/00	106	149.06	Stanley	MBCA
6/28/00	111	139.10	Elliott	MBCA
1/4/00	113	215.80	Lewis	MBCA

¹MBCA: Migratory Bird Conservation Act; ESA: Endangered Species Act; RRA: Refuge Recreation Act; NAWCA: North American Wetlands Conservation Act; RAA: Refuge Administration Act

²Received in an exchange with the State of Maryland for land of equal value

³Given in an exchange with the State of Maryland for land of equal value

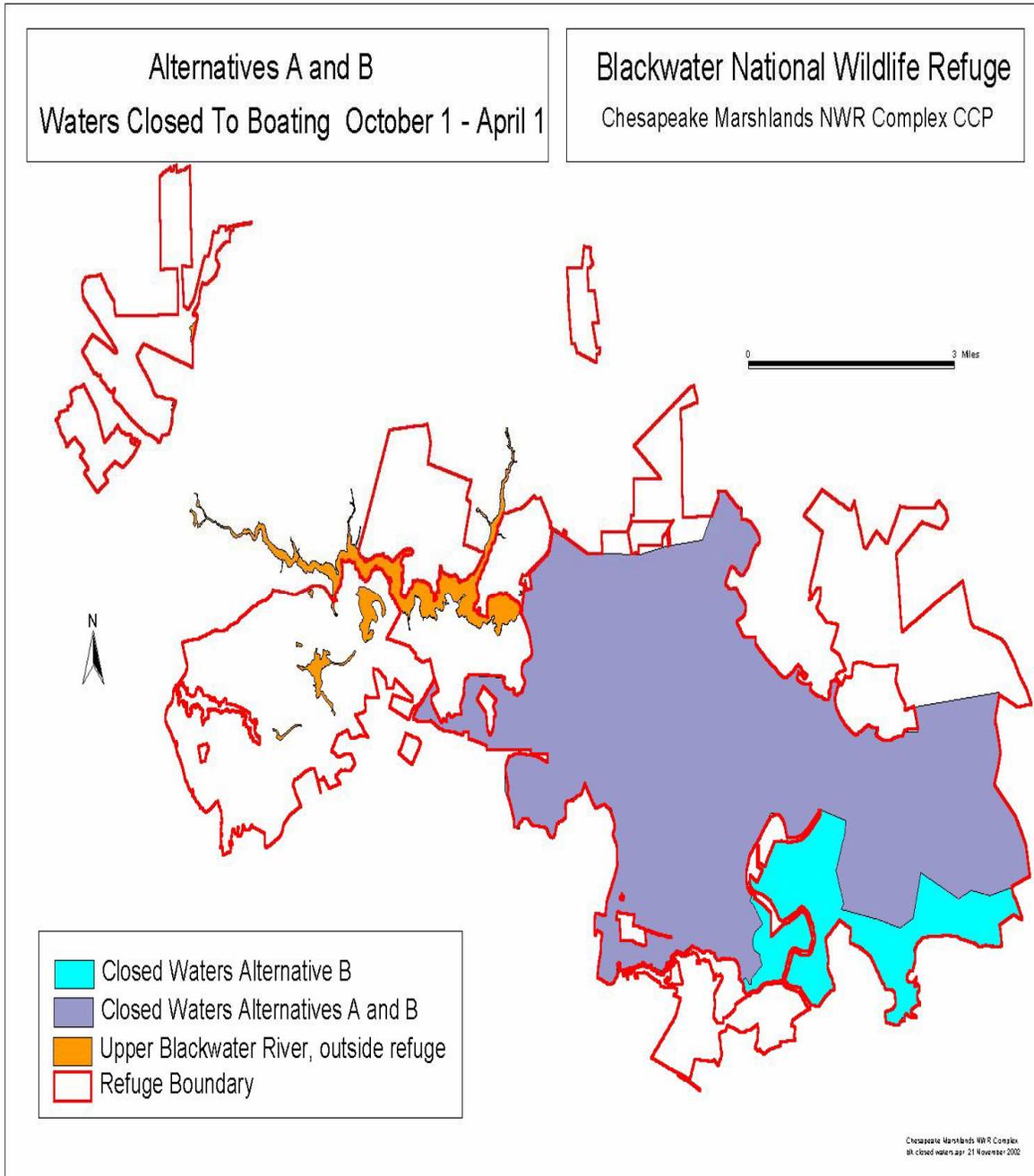


Figure E.8. Areas closed to boating

COMPATIBILITY DETERMINATION

Use: Harvesting of Forest (wood) Products

Station Name: Blackwater National Wildlife Refuge

Establishing and Acquisition Authorities:

The Chesapeake Marshlands National Wildlife Refuge Complex (CMNWRC) is composed of three nationally significant wildlife areas: Blackwater NWR, Martin NWR, and Susquehanna NWR with several separate divisions. Blackwater NWR includes the Nanticoke Division, and Martin NWR includes the Barren Island, Bishops Head/Spring Island, and Watts Island Divisions. Collectively, Martin NWR, Susquehanna NWR, and the respective associated divisions are referred to as the Chesapeake Island Refuges.

The first and largest of these areas to be established was Blackwater NWR. Originally authorized for establishment by the Migratory Bird Conservation Commission on December 3, 1931, and named "Blackwater Migratory Bird Refuge," the refuge's current 28,000 acres are a showplace for the U.S. Fish and Wildlife Service's Refuge System.

On December 31, 1931, the Migratory Bird Conservation Commission authorized the Secretary of Agriculture to purchase 10,000 acres from the Delmarvia Fur Farms, Inc. of Philadelphia, Pennsylvania. On December 9, 1931, the Secretary entered into an agreement with Delmarvia Fur Farms, Inc., effective January 1, 1932, to lease 8,167.99 acres for the refuge. The Secretary subsequently determined that it was in the best interest of the Government to acquire 8,240.99 acres for the refuge from the Delmarvia Fur Farms and two other properties by condemnation. A notice of condemnation was filed August 26, 1932, and these tracts were conveyed to the Government in January 1933.

Blackwater NWR was therefore officially established under the authority of the Migratory Bird Conservation Act on January 23, 1933. Since that time, additional lands have been added to the refuge under the authorities of the Endangered Species Act, Refuge Recreation Act, North American Wetlands Conservation Act, and the Refuge Administration Act.

Table I summarizes Blackwater National Wildlife Refuge's acquisition history and the tracts that are currently being affected by the proposed uses. Unless otherwise noted, all acquisitions are fee title. This compatibility determination will also apply to additional tracts, particularly those in Blackwater's Nanticoke Division, as they are acquired.

Refuge Purpose(s):

For lands acquired under the Migratory Bird Conservation Act (16 U.S.C. § 715 d), the purpose of the acquisition is "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds."

For lands acquired under the Endangered Species Act of 1973 (16 U.S.C. § 1534), the purpose of the acquisition is "...to conserve (A) fish or wildlife which are listed as endangered or threatened species...or (B) plants."

For lands acquired under the Refuge Recreation Act (16 U.S.C. § 460K-1), the purpose of the acquisition is for "...(1) incidental fish and wildlife-oriented recreation; (2) the protection of natural resources; (3) the conservation of endangered species or threatened species..."

Appendix E. Compatibility Determinations

For lands acquired under the North American Wetlands Conservation Act (16 U.S.C. § 4401-413), the purpose of the acquisition is "(1) to protect, enhance, restore, and manage an appropriate distribution and diversity of wetland ecosystems and other habitats for migratory birds and other fish and wildlife in North America; (2) to maintain current or improved distribution of migratory bird populations; and (3) to sustain an abundance of waterfowl and other migratory birds consistent with the goals of the North American Waterfowl Management Plan and the international obligations contained in the migratory bird treaties and conventions and other agreements with Canada, Mexico, and other countries."

For lands acquired under the Refuge Administration Act (16 U.S.C. § 668ddb), the purpose of the donation is "to protect, enhance, restore, and manage wetland ecosystems and other habitats for migratory birds, endangered and threatened species, and other wildlife."

National Wildlife Refuge System Mission:

"To administer a national network of land and waters for the conservation, management, and where appropriate, the 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 (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57)."

Description of Use:

This evaluation is to determine the compatibility of utilizing commercial forest management practices to create and restore seven forest cores each having a minimum of 865 acres needed to support 11 of the most highly area sensitive forest interior dwelling bird species, many of which are neotropical migrants.

(A) What is the Use? Is the use a priority use?

The commercial harvesting of forest products will be performed for the primary purpose of improving wildlife habitat and ensuring that a diversity of forest habitat types are perpetuated for many generations to come. The specific types of commercial harvest which will be performed include timber stand improvements such as thinnings and release cuttings which could result in the sale of poles, pulpwood or firewood; regeneration cuts such as seed tree, selection or shelterwood cuts which would yield products ranging from pulpwood to saw timber; and salvage cuts performed as a result of storm, insect or disease damage which could result in the sale of any or all of the above mentioned forest products. Commercial management practices are the preferred method over using force account due to the fact that the refuge system does not own the equipment necessary to perform the tasks properly without causing significant negative impacts to the sites. Nor does the Refuge have the manpower to either run equipment or harvest trees using chainsaws. Commercial timber management is the most economical, safe and environmentally sound method of achieving many of our proposed forest management objectives. It is also imperative that fund generated from the sale of forest products be returned to the refuge in order to ensure proper restoration of the forest and help support the management and/or restoration of additional forest habitats since there is no actual funding provided from the Service to support forest management activities on refuges.

Background and Rationale for the Management Activity

Blackwater National Wildlife Refuge is currently 36 percent forested and is comprised of some of the largest remaining contiguous tracts of mature forests on the Delmarva Peninsula. The forests of Blackwater are also home to several federally endangered plant and animal species such as the Delmarva fox squirrel (*Sciurus niger cinereus*), Southeastern Bald Eagle (*Haliaeetus leucocephalus*), Swamp pink (*Helonias bullata*), and Sensitive joint-vetch (*Aeschynomene virginica*) as well as many other Fish and Wildlife Service trust species (see attached Complex's CCP for a full species list). Other equally ranked species groups of concern are Neotropical Migratory songbirds, specifically Forest Interior Dwelling species (FIDs). FIDs generally require large expansive tracts of interior forest for breeding. BNWR consists of and protects some of the last remaining large contiguous tracts of forested land in Dorchester County. The

upland and wetland forested areas surrounding BNWR continue to be cleared and converted to residential areas, agriculture lands or pine monocultures. Therefore, it is essential that this habitat type be protected, maintained, and actively managed to promote healthy populations of fish, wildlife and plants. Forest management objectives and strategies will focus primarily on the enhancement of forested habitats for the above-mentioned trust resources.

In addition to performing forest management to enhance habitat for trust resources and promoting a healthy and diverse ecosystems, the FWS and BNWR have been subject to increased public scrutiny. Locally, BNWR has been criticized for the lack of forest management performed on its land. Much of the forested land acquired by BNWR was and/or is, in less than desirable conditions as a result of historical, as well as previous land owners' poor forest management practices and the lack of planning for future habitat conditions. A large percentage of the earlier acquired forested land (1933 - 1969) was either recently cleared or in an early stage of succession (<30 years). Much of the typical loblolly pine/oak and loblolly pine/hardwood forests that once dominated the landscape have been converted to low quality mixed hardwood stands through a harvest technique called "high grading." High grading is the removal of the most commercially valuable trees from a stand, leaving a residual stand composed of trees of poor condition or undesirable species composition. High-grading is not considered silviculture due to the dysgenetic effects and long term economic and forest health implications (Helms, 1998). High-grading is "taking the best and leaving the rest" (Jastrzembski, 1999). In most cases the preferred timber species was, and continues to be, loblolly pine for saw timber, pulp wood and poles. A viable hardwood market is essentially non-existent on the Eastern Shore, thus resulting in either some degree of residual canopy or extremely heavy slash loads which have detrimental effects on natural regeneration of loblolly pine as well as preferred mast producing hardwoods. At the time of purchase, the rehabilitation of these tracts was left to natural processes. Some of these stands have regenerated successfully and matured into healthy stands containing both pine and hardwoods in the canopy, while other stands have not been as successful in their response to the disturbance and have not regenerated. This in turn resulted in a conversion in cover type or possibly habitat type. More recently (1970 - present) BNWR has been acquiring a higher percentage of lands containing mature forests. However, there are still a significant number of stands that were harvested (clear-cut or high graded) or mismanaged prior to acquisition which are in need of intensive silvicultural treatment in order to restore a healthy forest.

The overarching goal of the proposed Forest Management Program at Blackwater NWR (to be expanded to include the Nanticoke Division) will be to maintain and increase the size of 7 contiguous, mature forest cores from a minimum of 400 acres to as large as 865 acres. Management strategies will include reforestation, strategic land acquisition, regrowth of cutover areas, timber stand improvement of existing stands, and regeneration cuts. The latter, will in most cases, target forest stands that are exhibiting signs of declining health; to a lesser extent, regeneration cuts will also be used to influence species and age class diversity. Blackwater NWR also contains 1270 acres (15 %) of recently cut over stands ranging from 0 to 15 years in age and 227 acres (3%) of immature stands ranging in age from 16 to 40 years old. With proper management, these stands will eventually develop into quality DFS and FIDs habitat, some of which will become part of an existing core or become cores on their own.

Both even and uneven-aged systems will be employed to enhance and expand the core areas and create new cores. A wide variety of silvicultural techniques may be applied within each core to maintain forest health and desired species and age class composition. Silvicultural prescriptions known as Timber Stand Improvements will be crucial in managing the cores and include the following practices: thinnings, release cuttings, salvage cutting and sanitation cutting. In most of these stands, mast production could be significantly improved through release cuttings, understory reduced through burning and stress reduced through thinnings. Other management techniques such as single tree and group selection, shelter-wood regeneration cuts, and pesticide/herbicide applications will also be utilized to improve forest stands within and outside core areas. Seed tree harvests may also be performed outside or within a core but only if adjacent (*i.e.*, contiguous) forested land of similar size and quality can be incorporated into the core as they reach maturity or are acquired. Areas in which forest management activities result in gaps in the canopy

greater than 30 meters wide will be excised from the core until such time that the gaps have closed up. Consequently, the core can be envisioned as dynamic, moving about in both space and time. Once a core has been established (minimum of 400-acres), our goal will be to maintain that acreage regardless of the forest management activities, with the exception of catastrophic events (i.e., weather, insect, disease). Forested areas which are not part of a core will be more intensively managed to maximize forest health and promote optimal survivability and growth for the purpose of incorporating them into existing or new cores. This may require that some of the previously mismanged (i.e., high-graded), neglected or degraded (i.e. gypsy moth mortality) areas be completely cleared and restored to a healthier more vigorous stand of a desired species composition.

Well-managed forests are healthy forests. Healthy forests filter pollutants from the air, produce oxygen that we breathe, cool off the land, and improve the quality of our water. Well-managed forests are beautiful. The most appealing forests you have seen, those that are inviting to walk through, are probably forests that have been recently thinned. Timber harvests are essential to our way of life. Not only for the wood and paper products they provide, but also for the beautiful, healthy forests they help create (Jastrzembski, 2000).

Silviculture involves managing and handling the forest in view of its silvics. Silviculture imitates a natural change such as a windthrow, beetle infestation, or fire. However, silvicultural methods harvest forests products for human use rather than wait on nature to burn them, eat them, or blow them down. Silviculture can be practiced at any time in the life of a timber stand. Southern pine management is an excellent example of silvicultural treatments throughout the life of a stand. However, in Appalachian hardwoods, 90 to 100% of silviculture is decided and carried out at the time of a timber harvest (Jastrzembski, 2000).

Some tree species thrive in shade; sugar maple, beech, hemlock, dogwood, red maple and basswood are good examples. These species can live, grow, and reproduce in shade and semi-shade conditions. Many tree species prefer or require full sunlight; yellow-poplar, walnut, some oaks, loblolly pine, and hickory are good examples. These species require full sunlight to reproduce, after which they grow best in full sunlight or as part of the overstory canopy of the forest. They also tend to be the fastest-growing species and, to a great extent, the most valuable species. Still other species such as white pine, white ash, and some oaks, are intermediate in their sunlight requirements.

Additionally, as with all forest communities, the woodlands of BNWR are impacted by a variety of both exotic and indigenous forest pests and diseases. The susceptibility to both insects and disease is directly related to stand conditions and forest health. Forest insect pests in particular have the ability to key in on tree stress and therefore targets stressed or unhealthy forests first. Once established, these pests can reach epidemic levels and spread to healthy forests. There are several natural processes occurring on and around BNWR which are negatively affecting forest health. Accelerations in sea level rise, other permanent alterations in drainage and climate are processes which we cannot control. However, nearly all other stressors as well as insect or disease outbreaks can be prevented or managed by improving forest health through silviculture.

(B) Where would the use be conducted?

The following cores were delineated based on the criteria relating to minimum breeding area requirement for FIDs as described in the Environmental Assessment prepared for the Chesapeake Marshlands NWR Complex's Comprehensive Conservation Plan and the Forest Management Plan for Blackwater NWR of which this document is an attachment. The criteria describes cores of having to be a minimum of 400 - contiguous acres of forests which are greater than 40 years old (ie. mature). The current refuge land base has been delineated to create four cores of 400-acres or greater and two cores less than 400-acres which exhibit the greatest potential for becoming cores. A seventh core will be established in the near future through land acquisition. Figure E.9 below demonstrates the size and location of the four current cores. Figure E.10 displays all seven cores in their 'unmanaged' condition as well as the projected or desired future condition of all seven cores. Although all cores are representative patches of contiguous mature

forest of a minimum size and developmental stage, each core is dynamic in the fact that they are essentially revolving in both space and time. Although the general location and minimum size of a core will not change, the actual boundaries of, and forest conditions within a core, may shift as management activities are carried out or new lands are acquired. A core may not always consist of the same physical forested acres. For example: As stands within a core reach the point of over-maturity and declining health, these stands may be harvested (removed from the core), but only when adjacent parcels of forested land of equal or greater value can be incorporated into the core to offset the decrease in patch size and effective area. Once four of the seven cores reach the optimum size of 865-acres, that acreage will then be maintained as the core’s minimum size. The proposed management for each of the seven current and potential cores as well as other stands within core compartments will be prioritized based on what types of management are most likely to be accomplished with the least amount of conflicts. In most cases, the ranking for proposed forest management aimed at improving the integrity of the core will be timber stand improvement, reforestation/restoration, regeneration cutting, and controlling problem vegetation to release regeneration. A series of priority management strategies will be described both narratively and most importantly, geographically. Geographically displaying these management strategies within and around the designated core areas will provide a better understanding of the ecological significance of the management prescriptions proposed.

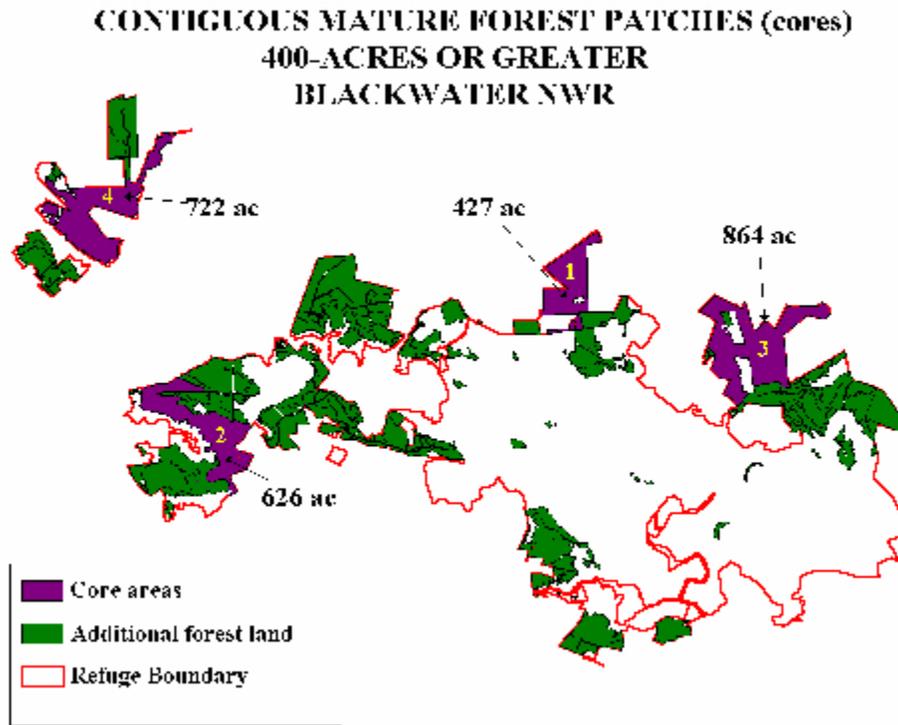


Figure E.9. Map of four currently established forest cores.

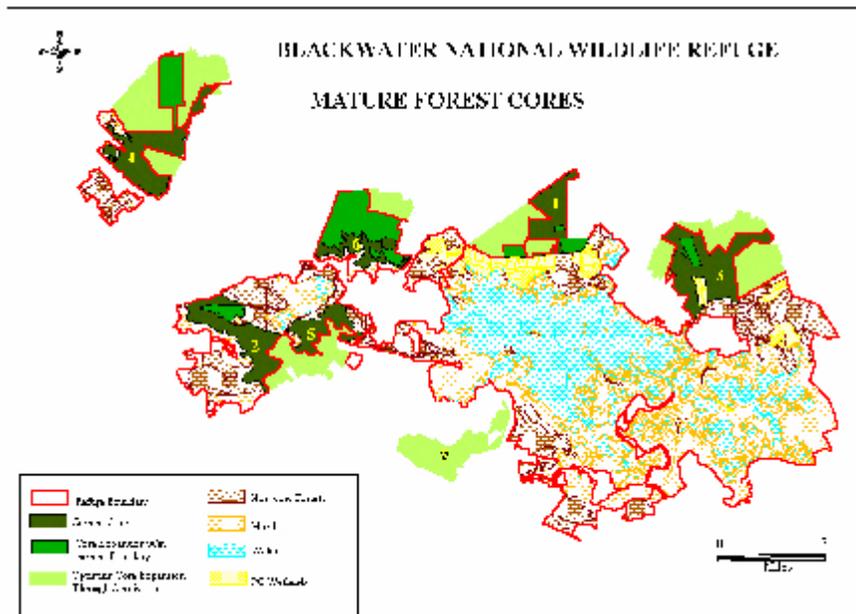


Figure E.10. Map of all seven cores displaying current or unmanaged conditions as well as desired future conditions.

A.) Core 1

Core 1 is a subset of forested habitats within compartment D. Core 1 was delineated by grouping all contiguous mature and over-mature stands within the compartment. The current core is comprised of 427 contiguous acres of mature and over-mature loblolly pine/hardwood forest. A more detailed description of the forests in this compartment can be found in the Affected Environment Section of this plan and the Forest Management Plan. A closed canopy road extends South to North bisecting the entire core and a secondary closed canopy road also exists in the western part of the core. The fact that these roads are narrow and are closed canopy makes them an insignificant detriment to the integrity of the core. The core is however, negatively impacted by a 9-acre abandoned field which serves in part as the refuge's bone yard. The current effective area of Core 1 within the 100-meter buffer is 209-acres and the perimeter to area ratio is 86 (figure E.11). The following forest management prescriptions have been determined to be the highest priority for improving the quality of this core. The proposed actions and consequences will be described and geographically displayed.

1.) Timber Stand Improvement.

The highest ranking management recommendation consists of performing TSI in the 71-acre stand of immature loblolly pine and hardwoods directly adjacent to the core. The stand is dominated by very dense 30-year-old pines and hardwoods with a remnant canopy of over-mature pines. In addition to an overstocking of pine, the stand also contains a high percentage of sapling and pole size oaks of various species. The future of this oak component is severely limited by the high degree of competition from pines and less-desirable, more vigorous hardwoods. The effects of competition on oak ability to become established in the canopy are already evident. Due to their slower rates of growth and density of the stand, the oaks quickly being suppressed. In order to promote and ensure the establishment of both pines and oaks in the upper canopy of this stand prior to becoming incorporated into the existing core, it is recommended that a 'Crop tree release' be performed in this stand to reduce competition and improve growth and vigor of preferred mast producing species hardwoods and pine.

By significantly decreasing the competition for resources throughout the stand and targeting a specific number of preferred tree species for release will improve tree growth and mast production and ensure that this stand will be a healthy and beneficial addition to the core. The increase in tree

growth and mast product will provide tremendous benefits for DFS as well. By adding this particular stand, the overall size of the core is increased by 16.71 percent, and the effective area is increased by 16.67 percent (34.76-acres). The perimeter to area ratio is also decreased from 86.08 to 80.47 (6.5 % decrease). By adding such a significant parcel to the core, it will allow for the regeneration or restoration of some of the older, less vigorous and unhealthy portions of the core without significantly impacting the effective area of the core. This management prescription will not result in any changes to species competition, but will directly affect stem density and stand structure for the benefit of DFS, FIDs and all wildlife. Figure E.12 below demonstrates the consequences of implementing prescription A and how the core would be improved by the addition of this 71-acre stand. Since the age of this stand is slightly over 30-years and our definition of mature forests states an age of 40-years, this 71-acres stand will be incorporated into the core in less than 10-years. This map also provides excellent visual explanation of the consequences of each prescription.

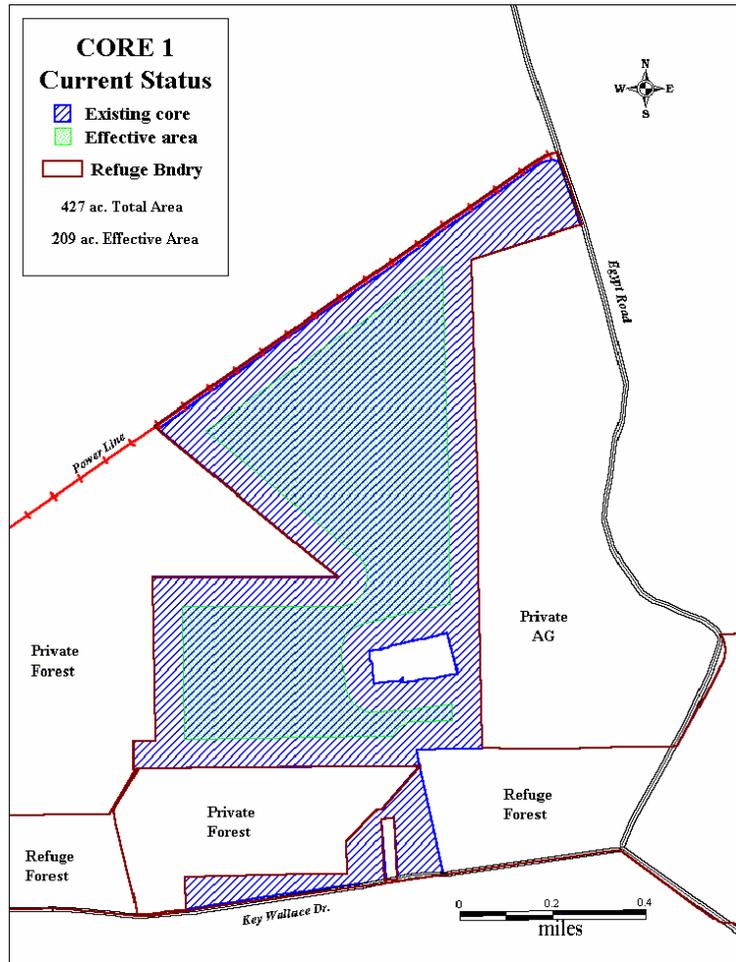


Figure E.11. Core 1

2.) Regeneration Harvests

Techniques to enhance the natural regeneration of both hardwood and pine species under a mature canopy will be performed on approximately 250-acres of mature and overmature forested habitat within this core over the next 15-years. The proposed acreage is based on current conditions and current land base. As this core expands as a result of land acquisition, the proposed treatment acres may also increase.

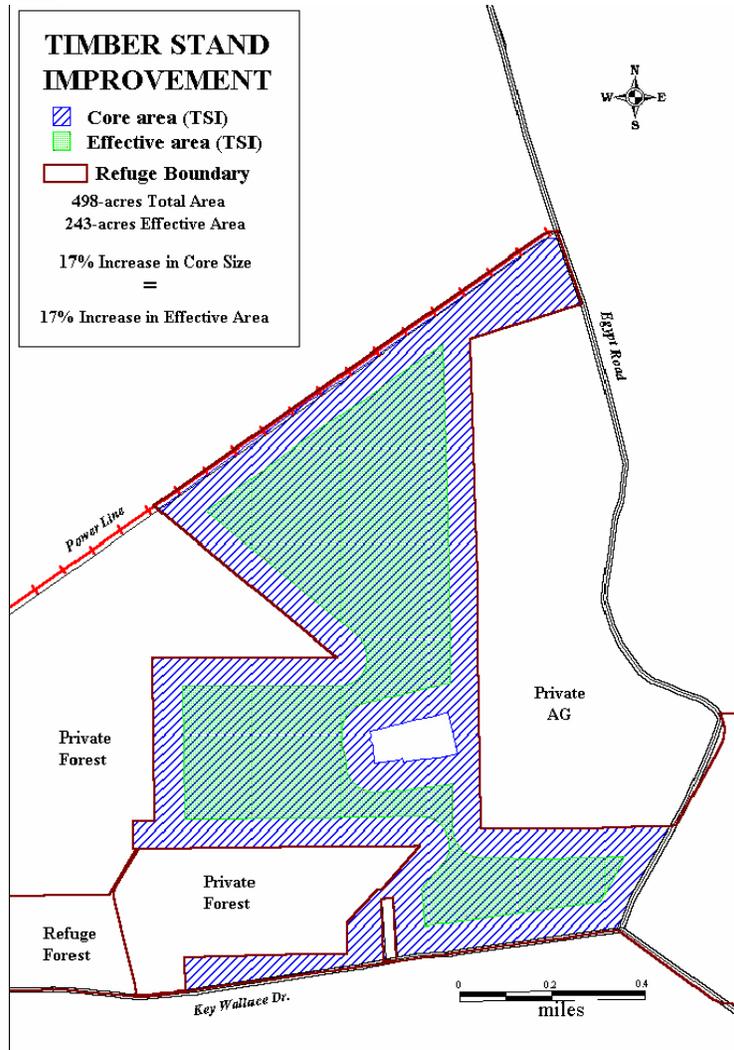


Figure E.12. Core 1 and the consequences of performing TSI and enhancing 71-acres of immature

B.) Core 2

Core 2 comprises 617 contiguous acres of mature forest within compartment M. This assemblage of connected pine, pine/hardwood, and mixed hardwood stands comprises possibly the most diverse assemblage of mature forested habitats on Blackwater refuge (figure E.13). This core is highly variable with respect species composition, age class, and stand conditions. A more detailed description of these forested stands can be found in the Affected Environment Section of Environmental Assessment prepared for the Chesapeake Marshlands NWR Complex's Comprehensive Conservation Plan of which this document is an attachment and the Forest Management Plan. This core also exhibits some of the greatest potential for expansion through silviculture and land acquisition. However, due to its somewhat linear shape, the current 'effective area' of the core is only 294-acres. The most significant ecological factor which does, and will continue to, detract from this core is the vast areas of salt induced tree mortality. In 1987/88, more than 165 acres of large hardwoods and pines were lost due to storm tides

and prolonged salt water intrusion. The following forest management prescriptions have been determined to be the highest priority for improving the quality of this core. Some of the prescriptions are to be carried out directly within the current core, while, others will be performed in forested habitats adjacent to the core which will eventually improve the integrity of the core. The proposed actions and consequences will be described and geographically displayed.

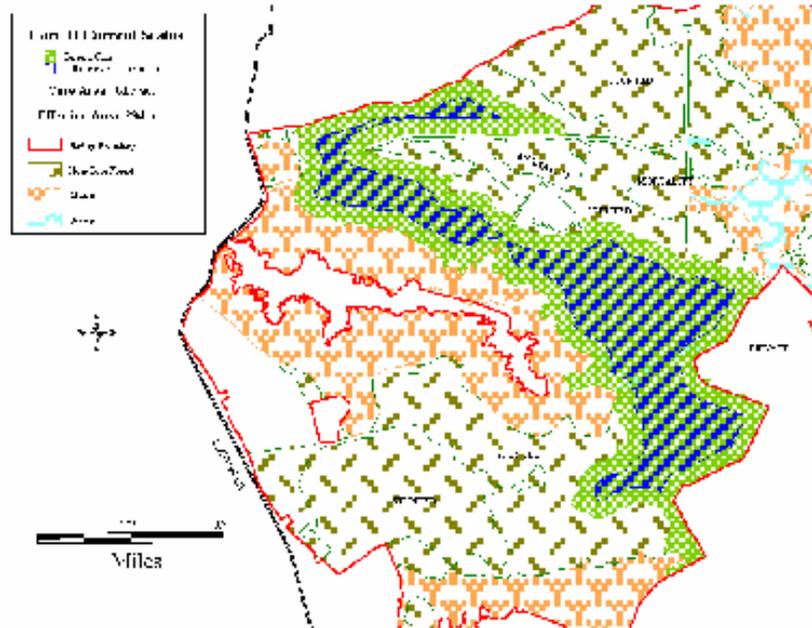


Figure E.13. Core 2

1.) Timber Stand Improvement.

Timber stand improvement is currently proposed on only 120-acres within this core due to the fact that the majority of the stands within the current core are mature to overmature and are more in need of regeneration harvesting than thinning or crop tree release. As this core expands as a result of land acquisition, the proposed treatment acres may also increase.

2.) Regeneration Harvests

Techniques to enhance the natural regeneration of both hardwood and pine species under a mature canopy will be performed on approximately 375-acres of mature and overmature forested habitat within this core over the next 15-years. As this core expands as a result of land acquisition, the proposed treatment acres may also increase.

C.) Core 3

Core 3 comprises 864 contiguous acres of mature hardwood dominated forest within compartment U. This expansive tract was previously harvested where the large valuable pines were extracted and the more numerous hardwoods were left. This assemblage of high-graded stands not only turns out to be the largest block of mature hardwoods on the refuge, it is also currently the largest mature forest core with the greatest amount of effective area, 445-acres (figure E.14). In its current state, this core provides potential breeding habitat for 9 of the 11 priority FID species which we are managing for. Much of the remaining pine within the core is becoming over-mature and is of lower quality as a result of being suppressed for most of their lives. The majority of the hardwoods, particularly oaks, are also old and stressed due to the sudden changes brought on by the harvest and subsequent ingrowth of more vigorous hardwoods such as maple and gum. Past gypsy moth infestations have also taken their toll on the oaks in this area. Very little to no regeneration is occurring in many of these stands. The increased amount of sunlight reaching the forest floor following the harvest resulted in extremely dense

understories which preclude natural regeneration and may have negative impacts to DFS populations. The following forest management prescriptions have been determined to be the highest priority for improving the quality of this core. Some of the prescriptions are to be carried out directly within the current core, while others will be performed in forested habitats adjacent to the core which will eventually improve the integrity of the core. The proposed actions and consequences will be described and geographically displayed.

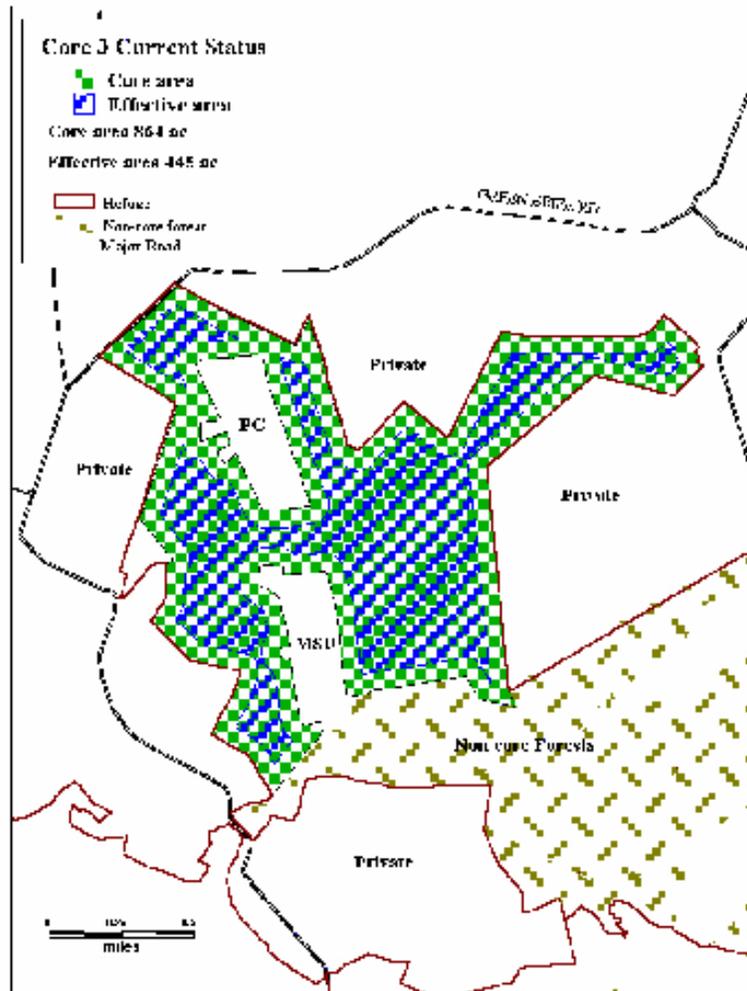


Figure E.14. Core 3

1.) Timber Stand Improvement.

Timber stand improvement is currently proposed on approximately 250-acres within this core. The preferred method of TSI will be crop tree release or a combination of this and one other TSI method. As this core expands as a result of land acquisition, the proposed treatment acres within the core may also increase.

2.) Regeneration Harvests

Techniques to enhance the natural regeneration of both hardwood and pine species under a mature canopy will be performed on approximately 300-acres of mature and overmature forested habitat within this core over the next 15-years. As this core expands as a result of land acquisition, the proposed treatment acres may also increase.

D.) Core 4

Core 4 comprises 722-acres of contiguous mature forests within compartment T. The effective area of core 4 is 355-acres and has a perimeter to area ratio value of 92 (figure E. 15). The current core area consists predominantly of a mixture of pine and hardwood which tapers to a pine dominated forest as it gets lower in elevation and closer to the marsh. A more detailed description of the forests in this compartment can be found in the Affected Environment Section of the Environmental Assessment prepared for the Chesapeake Marshlands NWR Complex’s Comprehensive Conservation Plan of which this document is an attachment. The current core size of 722-acres should provide potential breeding habitat for 5 of the 11 area sensitive FIDs.

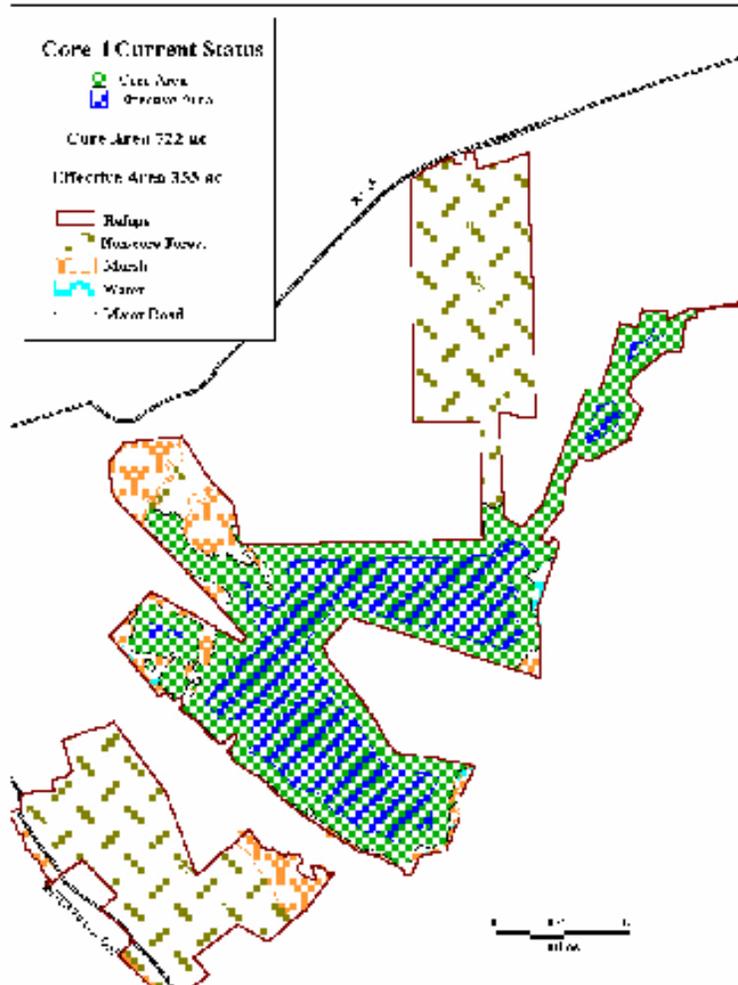


Figure E.15. Core 4

1.) Release Cutting / TSI

Approximately 292-acres of mature loblolly pine timber had been harvested from this compartment prior to acquisition in 1994. The harvest was in the form of a clear-cut, but in areas where the hardwood was denser than pine, the pine was selectively removed and the lower-grade hardwoods were left. Many of these remnant trees were of poor health and form to begin with and continue to show signs of declining health. Although a more detailed stocking inventory needs to be performed, preliminary observations revealed that the majority of this area currently contains an adequate stocking of loblolly pine regeneration. However, the shading from the residual trees has been a significant hindrance to the growth and establishment of a new vigorous stand of trees. Oak regeneration is virtually absent from the stand, most likely due to the dense growth of more

vigorous hardwood vegetation and possibly the lower prevalence of oaks in the original canopy. These factors coupled with the competition from other woody vegetation and the lack of proper management has been a significant setback in the establishment of a new stand. Other areas which served as logging decks during the operations currently contain no regeneration of any tree species. The compaction of the soil and residual debris has precluded the germination of stored or newly fallen seed. The growth and establishment of pine seedlings and saplings is currently hampered by the dense shrub competition and in some areas, shading from residual canopies. Therefore, the regeneration within these stands is in dire need of release. By ensuring the successful regeneration of these stands and their inclusion into the core we will increase the overall size of the core by 292-acres (40%) to 1015-acres. While the effective area will be increased by 173-acres (49%) to 528-acres (figure E.16). The perimeter to area ratio value will subsequently be decreased by 12-percent from 92 to 81. Despite the significant increase in core size as a result of this activity, effective area will still be compromised due to the narrow band of forest which connects these restored lands to the original core. This wooded corridor is bordered by clear-cuts and contains no effective area for FIDs. The total effective area of the newly established core is actually not contiguous and is separated from the original core by this narrow wooded corridor. This factor will only be mitigated through the acquisition and reforestation of the adjacent lands. However, by increasing the overall size of the core to 1015-acres, the new core will potentially provide breeding habitats for all 11 species of the area sensitive FIDs listed.

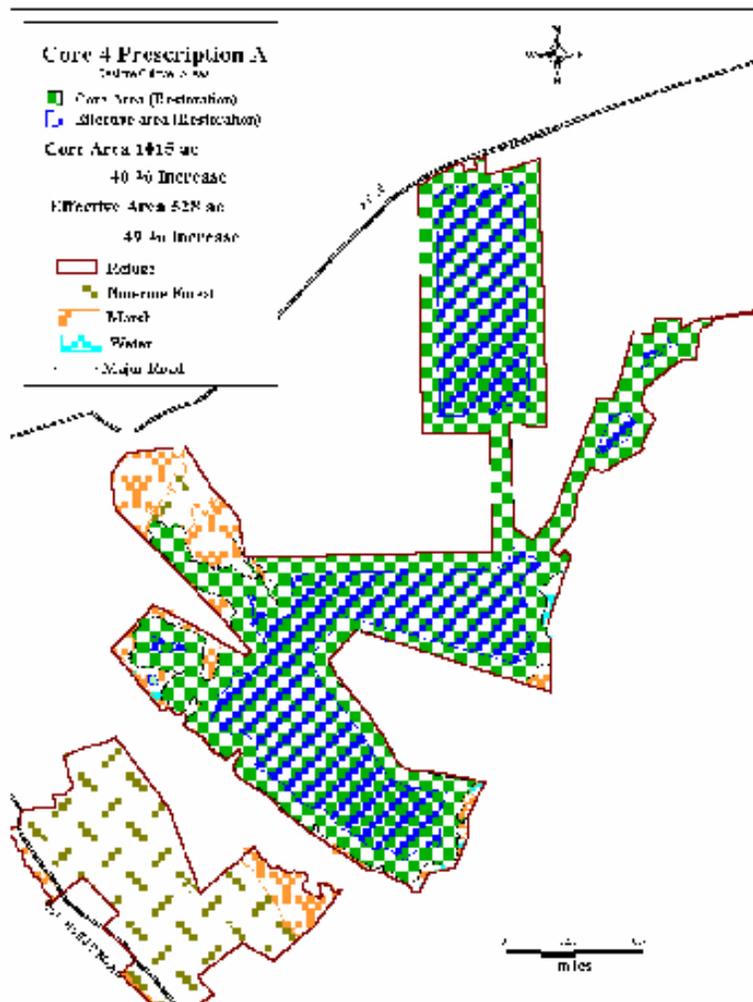


Figure E.16. Core 4 with consequences of performing Release Cut.

2.) Timber Stand Improvement .

Timber stand improvement is currently proposed on approximately 100-acres within this core. The preferred method of TSI will be crop tree release or a combination of this and one other TSI method. As this core expands as a result of land acquisition, the proposed treatment acres within the core may also increase.

3.) Regeneration Harvests

Techniques to enhance the natural regeneration of both hardwood and pine species under a mature canopy will be performed on approximately 100-acres of mature and overmature forested habitat within this core over the next 15-years. As this core expands as a result of land acquisition, the proposed treatment acres may also increase.

E) Core 6

Core 6 is located within compartment R and is currently only 283-acres in size (figure E.17). Due to its linear shape and expansive clear-cut within its boundary, the current effective area for FIDs is only 10-acres. This assemblage of mature forest stands consists primarily of pure pine forests which are located within the 'Critical Areas' and a previously high-graded overmature hardwood dominated stand. The Critical Area can be defined as a zone of protection which may extend out to 1000 feet from the mean high tide delineation along tidal wetlands and waterways. These 'Critical; Areas' are protected and governed through the Maryland Critical Area Act and regulations are enforced by the Critical Areas Commission. Therefore, no management activities will be proposed on forested areas within the designated 'Critical Area'. The only management which will be implemented within the current core boundaries will be a very light selection harvest to promote natural regeneration within this stand. The entire future of this core hinges on the management of the surrounding immature and regenerating stands. The primary management objective will focus on enhancing these adjacent lands to someday include them into the core. The current forest conditions in this compartment are a result of timber harvesting which occurred over a 25-year period. The time factor coupled with the different harvest techniques performed under various site conditions has resulted in a highly diverse forest with respect to age class, species composition and stand conditions. A more detailed description of the forests in this compartment can be found in the Affected Environment Section of the Environmental Assessment prepared for the Chesapeake Marshlands NWR Complex's Comprehensive Conservation Plan of which this document is an attachment.. In order to perpetuate the growth and development of stands within this compartment for the goal of establishing a core, an equally diverse combination of forest management strategies will be required. The specific commercial management practices which will be performed in the near future are discussed below.

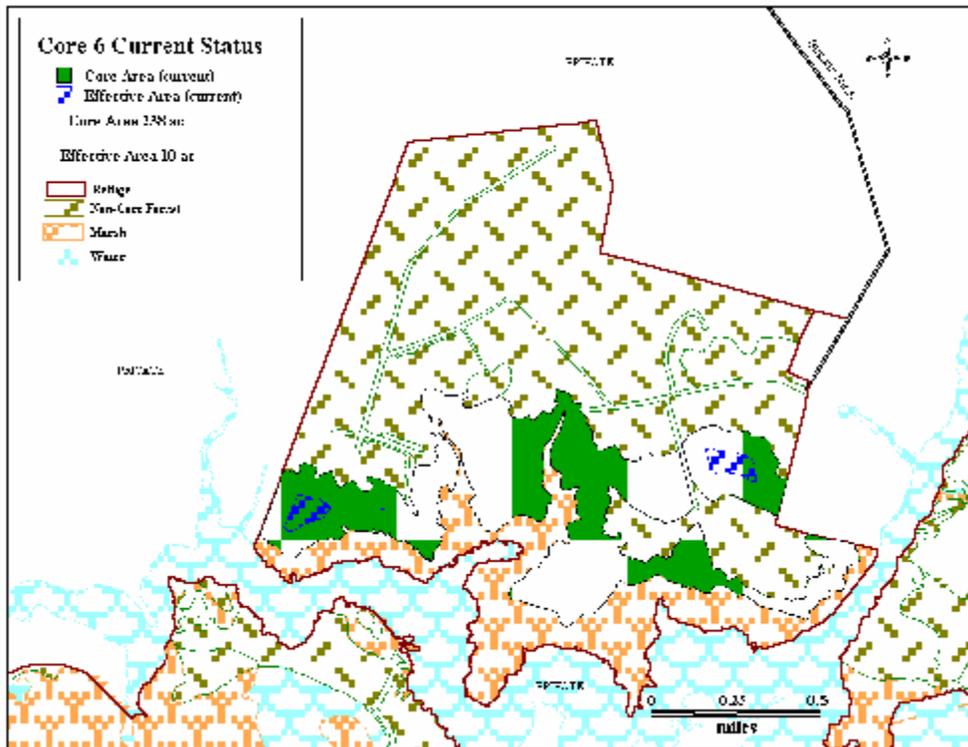


Figure E.17. Core 6

1.) Timber Stand Improvement

Timber stand improvement is currently proposed on approximately 87-acres within this core. It is highly likely that the preferred method of TSI will be a thinning within the 35-40-year-old pure pine stands directly North of and adjacent to the current core. The objective of this thinning will be to reduce the total basal area of the stand to between 80 and 90 square feet per acre, thus enhancing growing conditions for the remaining trees. The long term benefits to the quality of these stands will be most evident at maturity when they will be added to the core. By adding these stands to the core, the overall size of the core will be increased by 31-percent to 370-acres, while, the effective area is increased by 97-acres or 870-percent (figure E.18). Despite the tremendous percentage increase in effective area, the size of the core remains below the minimum size requirements and will provide potential breeding habitat for only 5 out of the 11 highly area sensitive FID species.

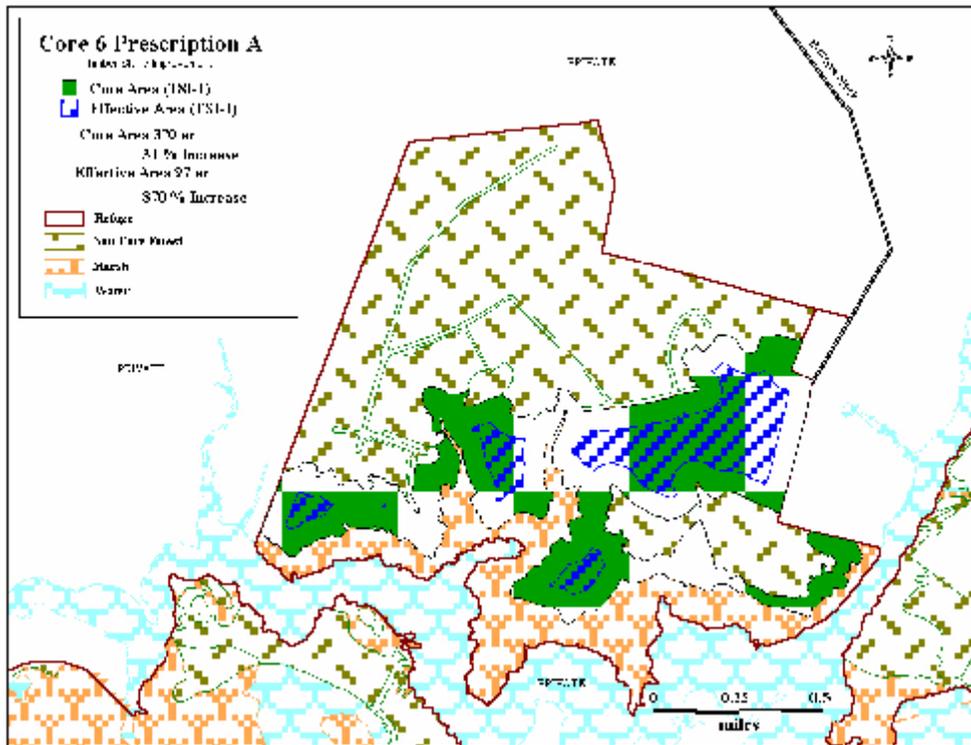


Figure E.18. Core 6 with consequences of TSI.

2.) Release cutting

Approximately 150-acres or more of mature loblolly pine timber was harvested from this compartment prior to and post-acquisition throughout 1994 to 1999. The harvest was in the form of a clear-cut or the selective removal of residual trees left during previous harvest operations. A 66-acre clear-cut is located directly within the current core, therefore regeneration of this stand is a high priority. Although a more detailed stocking inventory needs to be performed, preliminary observations revealed that the majority of this area currently contains an adequate stocking of loblolly pine regeneration. However, dense growth of competing shrubs, vines, and *Phragmites* has significantly impacted the growth and establishment of pine regeneration. Oak regeneration is virtually absent from the stand, most likely due to the dense growth of more vigorous hardwood vegetation and possibly the lower prevalence of oaks in the original canopy. These factors coupled with the competition from other woody vegetation and the lack of proper management have been a significant setback in the establishment of a new stand. Since the original stand was a predominantly pine forest, it will be our intent to manage this area for similar future conditions. If it turns out that loblolly pine stocking levels are more than adequate throughout much of the stand, and oak regeneration is not occurring, management strategies will focus on improving the growth of the existing pine regeneration. As previously stated, the growth and establishment of pine seedlings and saplings are currently hampered by the dense shrub competition and in some areas, shading from residual canopies. Therefore, the regeneration within these stands is in dire need of release. The actual inclusion of these lands to the current core will not take place for another 35-years when the stand has reached maturity. By not managing these areas, we will increase this time frame considerably. The actual impacts of including these areas in the core have been analyzed and illustrated below in figure E.19.

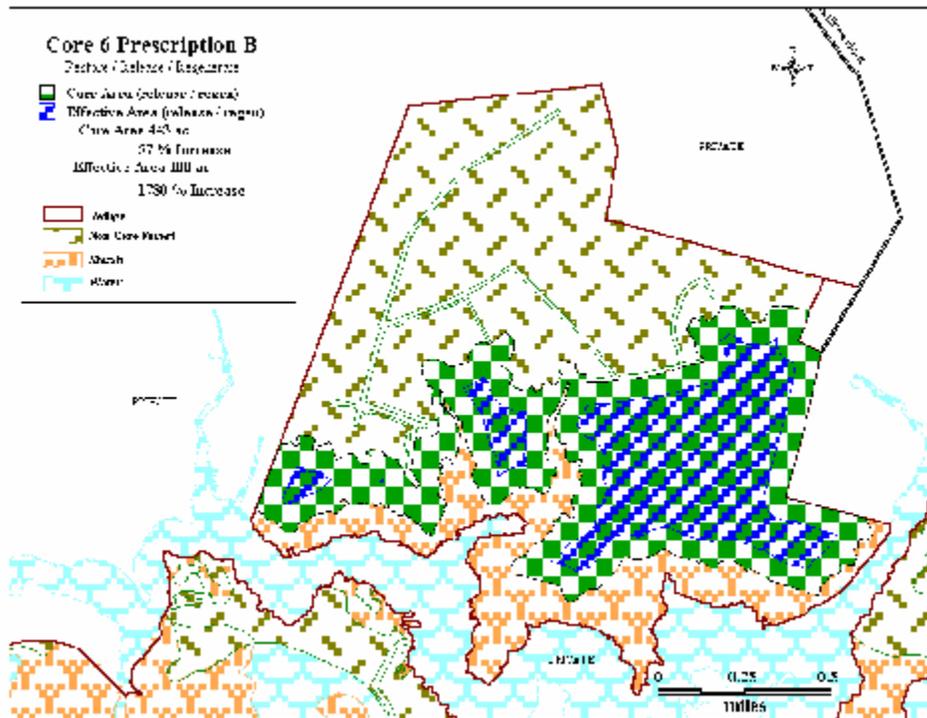


Figure E.19. Core 6 with consequences of Release.

3.) Timber Stand Improvement 2 .

A variety of timber stand improvement techniques will be used within the next 15-years to improve growing conditions for preferred species on approximately 580-acres of previously harvested land. These areas were virtually clear-cut with the exception of some small hardwood dominated pockets which were high-graded. These previously pine dominated areas have since regenerated to a hardwood dominated forest consisting of mostly red maple and sweet gum. Due to the dense and vigorous growth of these early successional species, pine regeneration is sparse and oak regeneration is almost non-existent. The age of the newly established stand is 10 to 15 years. Due to the lack of management during the early stages of stand regeneration, management at this stage will be extremely labor intensive and very expensive. By enhancing conditions of these acres along with the cut-over areas discussed under the previous prescription and ensuring that they eventually become part of the core will significantly increase this core's ability to provide potential breeding habitat for FIDs. By including these areas (in addition to the 87-acres of immature pine stands) we will collectively increase the overall size of the core by 671-acres (237%) to 954-acres. Whereas the effective area will be increased by 642-acres, or an unbelievable 6,420-percent, to 652-acres (figure E.20). The perimeter to area ratio value will subsequently be decreased by 76-percent from 58 to 14. The resulting 954-acre core will provide potential breeding habitats for at least 9 of the 11 area-sensitive FIDs listed.

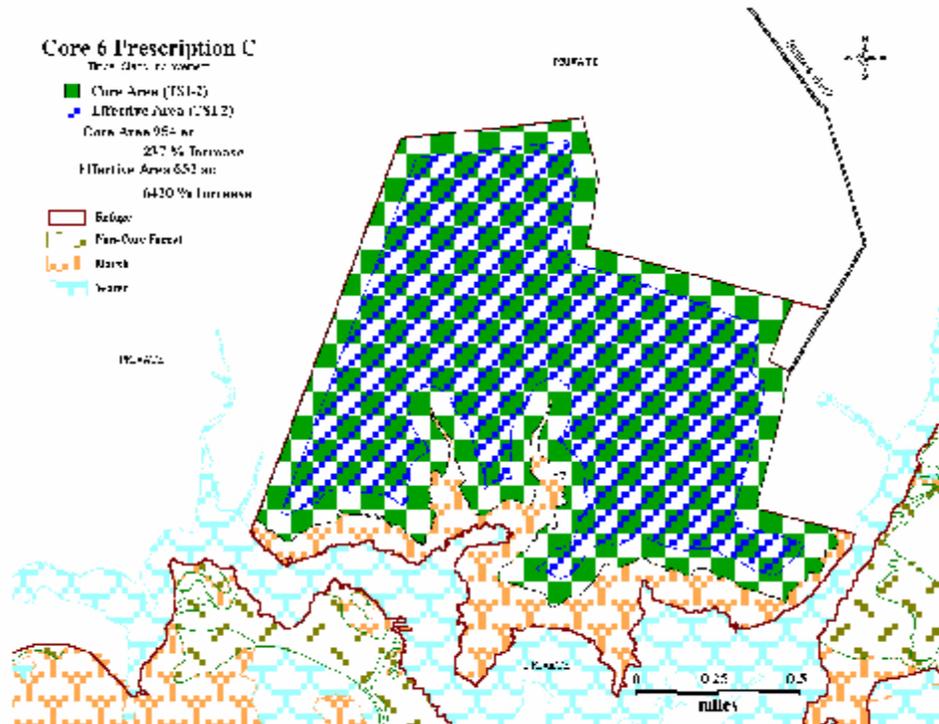


Figure E.20. Core 6 with consequences of TSI 2.

4.) Regeneration Harvests

Techniques to enhance the natural regeneration of both hardwood and pine species under the mature canopy of high graded stands may be performed on approximately 58-acres of overmature forested habitat within this core over the next 15-years. As this core expands as a result of land acquisition, the proposed treatment acres may also increase.

The management prescriptions which will be proposed on non-core forest habitats are of somewhat less significance and will not be described in as great a detail. Additional forest management will continue to be performed within the current refuge boundary as well as newly acquired lands, however many of these specific management needs cannot be projected at this time without additional inventories and data collection. Future and ongoing management of the forest habitats will be driven by the same management goals and objectives which led us to the development of the following management strategies.

(C) When would the use be conducted?

To assist in the determination of management needs, it is imperative that a continuous inventory and monitoring program be implemented throughout the refuge to evaluate forest conditions. Once management recommendations are made, any of the previously mentioned strategies may be utilized to achieve the desired results. With the limited amount of data pertaining to specific forest stands and their condition, it is impossible to make management prescriptions for all forest lands on the refuge for a 15-year period. Therefore, all of the management recommendations are based on current knowledge of stand conditions for those areas. As more information is gathered, we will develop more management prescriptions and at the same time the priority of new and existing prescriptions may change. The above mentioned prescriptions only include those which are currently of highest priority. The prioritization of silvicultural prescriptions and subsequently, commercial timber harvesting, is subject to change due to factors such as acquisition of new lands, insect, disease or storm damage or availability of funding. Generally, Commercial Timber Stand Improvements will be performed within immature stands less than 40

years of age which are characterized as having very high stand densities, undesirable species composition or undesirable species dominance (e.g. oaks being suppressed by gum and maple). Commercial regeneration cuts will generally be performed in overmature stands (80 to 100 plus years old for loblolly pine) which exhibit significant decreases in annual growth and/or are showing signs of heart rot or other diseases. The types of commercial harvests performed will be those which maximize the potential for natural regeneration of the stand and do not focus on the quality or quantity of saw timber removed. Stands will be harvested during a period when disturbance to the soil will be at a minimum yet also allow for the maximum seed germination and ultimate regeneration. Timber harvests will not be performed during the primary breeding season for Delmarva Fox Squirrels and Bald Eagles (if nests are within or directly adjacent to harvest area). Timber harvest will also be limited but not prohibited during the breeding season for FIDs which occurs during the Months of April through August. Since this period also includes some of the best months to perform mechanical forest management activities as dictated by soil and hydrological conditions it will be impossible to completely avoid performing commercial timber harvest during FIDs breeding season. Due to the traditionally wet winters and springs the majority of forest management practices will be performed during the months of July through December. Performing commercial timber harvests within existing cores will be significantly more restrictive.

(D) How would the use be conducted?

Forest stands subject to commercial silvicultural prescriptions will first be inventoried to collect the appropriate data relative to the type of activity being prescribed. For example; for stands slated for TSI, data such as basal area, trees per acres, age, and species composition would be vital to justifying and monitoring the action. Whereas, variables such as age, species composition, basal area, trees per acre and volume of forest product in the whole stand, as well as that which will be harvested, will be collected prior to performing any harvest. The procedure for conducting pre-commercial and commercial Timber Stand Improvements on the refuge will be heavily influenced by the availability of funds (primarily for pre-commercial) and the current market status for the types of forest products produced as a result of the activity (e.g. poles, pulpwood, chips or firewood). For these harvests, a desired future condition will be specified by the refuge forester. This information, along with all other job specifications, will be provided in a special use permit (which is the accepted form of contract for performing timber harvests on National Wildlife Refuges). A copy of the permit or statement of work will then be sent out to local and regional timber harvesting companies. Contracts will either be awarded to the highest bidder (if the stand and market allow for the sale of yielded products).

As for harvest which result in the removal of saw timber, a more formal approach will need to be taken. Once again the proposed stand will be inventoried to acquire essential data (specifically overall merchantable volume). This data will also be provided in a special use permit along with a statement of work including all of the particulars and stipulations which must be adhered to. This will then be sent to local and region potential contractors inviting them to visit the proposed harvest site and perform their own inventories and subsequently submit sealed bids for the forest products expected to be harvested.

(E) Why is the use being proposed?

The primary focus of management prescriptions will be toward the establishment, protection and enhancement of the 'core management areas' for their benefits as habitat for DFS, bald eagles and FIDS. Through silvicultural practices, the desired future conditions will be a more healthy forested ecosystem with a guarantee that a minimum of seven mature forest cores will be maintained at an optimum size, effective area, perimeter to area ratio, species composition and overall health by the year 2015. A detailed description for each of the established and potential cores within the current refuge boundary and the proposed prescriptions and resulting future conditions are discussed below along with additional high priority management recommendation for non-core habitats. These specific management prescriptions represent only the highest priority management needs. The forest management on BNWR will not be limited to these high priority areas (cores). Instead it will focus on utilizing the previously described silvicultural techniques to enhance the overall quality of forest habitats throughout BNWR. All additional prescriptions or management recommendations can be collectively grouped under the umbrella of

conducting forest management for the improvement, maintenance and perpetuation of healthy and diverse assemblages of both contiguous and disjunct forested habitats in order to achieve refuge forest management goals and objectives.

In addition, as previously mentioned, commercial management practices are the preferred method over using force account due to the fact that the refuge system does not own the equipment necessary to perform the tasks properly without causing significant negative impacts to the sites. Nor does the Refuge have the manpower to either run equipment or harvest trees using chainsaws. Commercial timber management is the most economical, safe and environmentally sound method of achieving many of our proposed forest management objectives. It is also imperative that fund generated from the sale of forest products be returned to the refuge in order to ensure proper restoration of the forest and help support the management and/or restoration of additional forest habitats since there is no actual funding provided from the Service to support forest management activities on refuges.

1.) Commercial Timber Stand Improvements

Commercial Timber Stand Improvements (TSI) which includes, but are not limited to crop tree release, thinning and improvement cutting may be performed on as much as 2800-acres of immature and mature stands on Blackwater Refuge and the Nanticoke Division which are stressed due to overcrowding and competition for resources. These intermediate cuttings will result in improving the growth of an existing crop of trees, but will not result in stand replacement. The selective removal of less preferred, overstocked, intermediated and co-dominant vegetation will allow the expansion of the crowns and root systems of remaining trees. The vacancies created in the growing space will not be large or permanent enough to allow height growth of any new trees that become established as a result of the treatments. When a forest is young, it always contains many more trees than it will when it is mature. One thousand or more young saplings may initially compete for a foothold on a single acre of land. Fifty years later that same 1-acre of land will only support a few hundred trees. Performing *thinnings* of various types in overstocked stands will free up nutrients and other resources and promote faster growth rates, greater mast production and healthier trees. Thinning overcrowded stands will significantly reduce competition and decrease stress. In a crowded forest, trees tend to grow very tall due to competition with its neighbor for sunlight. Tall trees in a crowded forest usually have very thin trunks. All new growth goes toward obtaining height, not girth. While crowded trees are constantly competing with each other, they also depend on each other for support. Tall, thin trees cannot support the weight of their own branches by themselves. The interwoven branches of crowded trees provide support for one another. Openings which naturally occur in a forest due to one or more trees falling will result in several thin-trunked trees losing their support. In an opening, a thin-trunked tree will suddenly find itself being buffeted by the wind, causing the trunk to sway. In response to the bending, the tree will add wood to its stem to stabilize itself. Growth hormones allow the tree to direct the growth to the stem when environmental conditions require it. The fact that trees can concentrate growth in a specific region of the tree in response to external environmental conditions is valuable knowledge to a forest manager. By thinning forests, we as land managers mimic nature by following the process of natural selection. By cutting out the weak, crooked, and over-crowded trees, the strongest trees can reach their fullest potential. A thinned forest is typically healthier than a crowded forest. Once thinned, the remaining trees will expend less energy competing with other trees which will enhance their ability to fight off invasions of insects or disease. The trees that remain after a thinning will grow sturdy, thick trunks and few will be lost to windfall.

Wildlife will benefit from these thinnings due to both the increased growth and mast production as well as the abundance of new food available on the forest floor. Most of the plants used by wildlife for food grow on the forest floor and require sunlight (Jastrzembski, 2000). Thinning forest stands will temporarily increase the amount of sunlight hitting the forest floor which will allow for the germination of many new plants. The resulting plant diversity in the understory is especially aesthetically pleasing to hikers, hunters, and photographers. When properly performed, thinnings will benefit the entire forest ecosystem and enhance the many values we receive from our forests. Thinning will also help to

reduce the risk of oak decline by reducing competition for moisture and nutrients and promote better physiological condition of the remaining trees. Silvicultural practices designed to encourage species best adapted to the site can help reduce the effects of drought or frost. Removal of weak and dying trees may also reduce or delay buildups of two-lined chestnut borers.

Release cuttings (crop tree release) will result directly in increased growth rates and mast production and may also be used to regulate or modify species composition in a young stand. Precommercial crop tree releases will increase tree diameters and help ensure survival. Released trees will become mature sooner and/or attain a larger size at maturity. Crop tree selection efforts will always focus on healthy trees with well-formed crowns and should include species from both the red and white oak groups along with beech and pine. The crop tree species diversity will promote a more consistent mast crop (Whiteman and Onken, 1994). Crop tree selection will also focus on mast production, providing dens and timber quality. Crop tree release will consist of cutting only trees that are directly competing with crop trees. The process will not consist of selecting crop trees and cutting all other trees in the stand. Therefore, an acceptable level of species diversity and richness will be maintained. Mast producing hardwoods, when released, will be able to respond by increasing both height and diameter growth and most importantly crown diameters. Hardwood mast production can be maximized and a sparse understory can be maintained by promoting large crown development of mast producers in the overstory. Mast production in immature stands (average dbh < 12inches) is likely to be very limited. Although these stands can have an open understory, they typically are overcrowded and as a result have smaller crowns. A 12-inch dbh tree will generally produce 225 percent more mast than it did when it had a 10-inch dbh. Generally mast production increases with the diameter of the tree until it reaches 22-24 inches dbh, at which time mast production starts to decline as the tree becomes over-mature. The rate at which immature stands reach the desired conditions for DFS can be expedited by identifying potential hard and soft mast crop trees and performing a release cutting around these trees to encourage crown development (Onken and Whiteman, 1994).

Loblolly pines that have developed in a suppressed condition respond in varying degrees to release. Increases in diameter growth after release are related to live-crown ratio and crown growing space. Trees of large diameters generally respond less than trees of small diameters. Trees with well-developed crowns will usually respond best to release. Trees long suppressed may grow much faster in both height and diameter after release but may never attain the growth rate of trees that were never suppressed (Baker and Langdon, 1990).

Once again, the majority of these practices will be performed on a commercial basis whenever possible due to the specific nature of the types of equipment needed to perform the task properly. The Service simply does not have the equipment or personnel necessary to achieve the desired results economically with the least environmental impacts.

2.) Commercial Stand Replacement / Regeneration Harvests.

In order to ensure the long term existence of core areas, stand replacement or regeneration must be an ongoing management objective. A common characteristic of mature and overmature forest stands on Blackwater is generally a closed canopy and, as a result, a sparse understory. Also due to the closed canopy and lack of sunlight, there exists little or no natural regeneration of preferred tree species such as oak. Techniques to enhance the natural regeneration of both hardwood and pine species under a mature canopy may be employed on as much as 2033-acres of mature and overmature forested areas on Blackwater Refuge over the next 15-years. Harvesting methods which are performed for the purpose of stimulating the germination of stored seeds or sprouting of root stocks and eventual stand replacement include, but are not limited to, single tree selection, group selection, shelterwood, and strip and patch clearcuts. The most frequently utilized methods would be single tree selection and shelterwood techniques due to the minimal impacts to the forest canopy and the lesser effects on the integrity of the cores. Performing these prescriptions would have no direct impacts on the size, effective area or perimeter to area ratio of the core. Additional techniques such as group selection, strip and patch cuts

and seed tree harvests would only be utilized when it has been determined that they are the only or best option for regenerating an over-mature or unhealthy stand. Within core areas, these methods will only be performed when lands of equal or greater quality in terms of acres, age and species composition can be added to the core to offset the temporary impacts to the size and perimeter to area ratio of the core. A minimum post-harvest basal area will be the target when preparing prescriptions for these areas. Performing regeneration harvests in some of the mature and over-mature stands throughout the complex will reduce the potential for forested habitats to become stagnant. As trees become over-mature and reach the end of their life, as is the case with many pines in these stands, their growth rates slow considerably and mast or seed production is severely reduced. The selective removal of dominant and co-dominant canopy trees which showing signs of declining health will allow necessary light to reach the forest floor to facilitate seed germination and free up additional resources to enhance the growth of new regeneration. In most cases the resulting natural regeneration will likely be dominated by pine, red maple, sweet gum and possibly beech. Due to the many complications related to the germination of oak seeds such as parasitism, predation and other various site conditions, it is likely that oak regeneration will be minimal. The planting of oak or other hard mast producing species may be required in these openings in order to ensure their replacement and continued occupancy of the stand. Additional future silvicultural treatments may be required to ensure survival and optimum growth of new trees, thus increasing their chances of achieving dominance in the stand. Creating openings in the canopy will not only enhance natural regeneration but will also enhance growth and mast production of remaining trees, much like a crop tree release. The perpetuation of the stand through promoting regeneration and the associated improvements in mast production will have significant long-term benefits for DFS. Future implementation of TSI techniques will ensure that the species composition of these stands is not significantly altered.

Availability of Resources:

The Proposed Preferred Alternative in the Comprehensive Conservation Plan for the Chesapeake Marshlands NWR Complex recommends one supervisory forester, one field forester and two forest technicians to adequately achieve the proposed forest management objectives for Blackwater and the Nanticoke Division.

The current staff of only one permanent forester is far from the minimum staff needed to implement such a large and complex forest management plan. Money generated from the sale of forest products will be deposited in the ‘expense of sales’ account under the code 6860 for distribution back into the refuge system. It is expected that a significant percentage of the funds generated by the sale of timber on Blackwater NWR will be returned to the refuge the following year for the purpose of supporting and sustaining the forest the refuge’s forest management program, and performing activities such as regeneration and restoration, follow-up inventories, additional stand inventories, timber marking and any related road work.

When appropriate and applicable, tasks such as forest regeneration and road rehabilitation may be included in the contract as an end product and will be included as part of the bid. This would alleviate any additional management costs to the government associated with this specific activity. However it would not eliminate the majority of preliminary site preparation and some minor road maintenance.

Also when appropriate and available, the reforestation of the site will be performed through partnerships, grants and volunteers which will also result in no significant costs to the government.

It is anticipated that all harvesting will be performed near or from existing roads. Since we would not be constructing any new facilities or improvements on refuge property for this specific use, there would be no significant construction costs associated with this use. However, funding for the maintenance of roads and water control structures will be necessary.

Contract development & administration and monitoring costs associated with maintaining statistical information on timber harvesting activities will be assumed refuge forestry staff.

Cost Breakdown:

The following is the list of costs to the Refuge required to administer and manage the proposed commercial forest management practices on an annual basis.

Refuge Personnel Costs	
Forest Inventories (50 days @ 8 hrs/day@\$25/hr.).....	\$10,000
Marking Timber (45 days @ 8hrs/day@\$25/hr.).....	\$ 9,000
Contact Development (28 days @ 4hrs/day@\$25/hr.).....	\$ 2,800
Contract administration (30 days @ 4 hrs/day@25/hr.).....	\$ 3,000
<hr/>	
Total.....	\$24,800

Anticipated Impacts on Refuge Purpose(s):

All anticipated and potential environmental, socioeconomic, and cultural/historical impacts resulting from the above mentioned activities can be found in the ‘ Consequences’ Section of the Environmental Assessment prepared for the Chesapeake Marshlands NWR Complex’s Comprehensive Conservation Plan of which this document is an attachment. The consequences specific to forest management activities can be found on pages 4-42 through 4-110 of the CCP’s Environmental Assessment.

Public Review and Comment:

This compatibility determination will be submitted for public review and comment as an appendices to the Environmental Assessment for the Draft Comprehensive Conservation Plan for the Chesapeake Marshlands NWR Complex in full compliance with NEPA.

Determination: (Check One)

This use is compatible X

This use is not compatible ____

Stipulations Necessary to Ensure Compatibility:

All commercial forest management activities will be performed in accordance with recommendations and guidelines described in Both the Endangered Species Recovery Plan for the Delmarva fox Squirrel and the"Management Guidelines for Bald Eagles in the Chesapeake. Below is a list of additional stipulations which apply to the overall forest management program and will be followed when carrying out all forest management activities.

- Forestry management decisions will be based upon the best available dendrological and biological information.
- Forestry management objectives and strategies will focus on conservation of entire communities of native wildlife and plants to contribute to the biological integrity of the ecosystem and purposes of the refuge as appropriate at the local, regional, and landscape level.
- Forestry prescriptions will have a landscape context, consistent with the mission of the Refuge System and individual refuge purpose and will explicitly link to national, regional, and eco-regional wildlife management objectives.
- Forestry prescriptions will attempt to restore or mimic natural regimes and processes to achieve habitat objectives by recreating and/or maintaining a desired forest condition for Service trust resources as required by the Integrity Policy.

- Forestry management actions will eliminate, reduce, or create unfavorable conditions for exotic and invasive species.
- Each forest community objective will include monitoring protocol(s) and use the process of adaptive management to assess and modify management strategies to achieve objectives.
- Biological goals will be established for each forest each management unit. Biological goals may include elements from the following: ecosystem processes, wildlife-habitat relationships, hydrology, connectivity, viability of special species, and/or hydrogeomorphic processes.
- The Forestry Management Program will have restoration objectives, where appropriate, to guide the desired future forest conditions.
- The overarching management philosophy/objective is to create a forest management program that improves ecosystem health and conserves biodiversity which simultaneously contributes to the forestry industry and local economy of the Eastern Shore.
- Forest management practices will focus on improving forest health, increasing tree growth and vigor, reducing stress, increasing hard and soft mast production, promoting desirable species composition and facilitating the natural regeneration of desirable tree species throughout the refuge on appropriate sites.
- Desired future conditions of the station's forests will be managed to enhance ecological and structural diversity where feasible and prudent by using a variety of silvicultural techniques and by retaining a diversity of vegetation and unique structural features.
- Best Management Practices will be employed that meet or exceed state and federal standards for the protection of endangered species, forest interior dwelling species of neotropical migratory songbirds, water quality, wetlands, and other aquatic resources, including the retention of forested buffers.
- Silvicultural treatments will ensure that air quality will not be degraded by burning only when prescribed burning is an appropriate silvicultural technique for the improvement of forest conditions or aesthetics in visually sensitive areas or when required by law for hazard abatement.
- Management actions will ensure future forest growth and sustainable productivity by reforesting all harvested areas in a timely manner consistent with ecological conditions.
- Silvicultural forestry management will maintain soil and site productivity by minimizing soil disturbance and by recycling harvest residues for soil nutrient enhancement.
- Under a landscape-level lense, the forestry plan will conserve fish and wildlife resources through targeted research and management of the habitat/wildlife relationships, retention of late successional areas, judicious control of road access, timber harvest management and cooperation with state and federal fish and wildlife agencies.
- The Forestry Management Program shall have visual quality objectives, recognizing and managing for aesthetic values near communities and major travel corridors by using appropriate design standards and harvest methods.
- The Plan shall cooperate with adjacent landowners to address and minimize potential impact of forest management activities.

Appendix E. Compatibility Determinations

- Implementation of the Plan shall have features which will ensure the application of new scientific, social and economic information to improve silvicultural and management practices and enhance environmental and financial performance.
- During any forest management practice, all den and cavity trees will be retained and protected from damage to the best of our ability.
- During any silvicultural treatment, neither DFS den trees nor adjacent trees should be cut. The foliage of adjacent trees shades the bole of the den tree, thus keeping the den cooler. In order to promote additional den sites, trees interfering with crop tree crown development should not be felled, but rather left standing and killed by girdling or by using systemic herbicides.

The following recommendations that apply to commercial timber harvesting are from the FIDS/Forestry Task Force Chesapeake Bay Critical Area Timber Harvest Plan Guidelines (June 1999). We will make every effort to adhere to these when applicable and appropriate to achieving management objectives.

- Reforest existing openings in forest tracts, especially those located in forest interior areas.
- Reforest existing nonforested areas along the edge of a forest tract. Select areas which maximize the forest area: edge ratio and total forest tract size.
- Allow existing woods roads to reforest or reduce their width so that canopy closure is maintained over the road.
- Establish a core area where little or no harvesting occurs; select areas at least 5 acres in size and locate them, if possible, in the most interior part of the forest and adjacent to other areas with little or no harvesting (*e.g.*, Critical Area Buffer, steep slopes).
- Retain a no-cut buffer of at least 100' along each side of of perennial streams, rivers and extensive forested wetlands (corridors will be maintained out to 300').
- Increase the width of riparian forest corridors to at least 300' and, ideally, to > 600'.
- Conversion of riparian hardwood or mixed hardwood-pine forest on perennial streams to loblolly pine is not permitted.
- Conversion to pine forest (*i.e.*, forests in which loblolly pine comprises > 60% of the total basal area) is acceptable in isolated, small forest tracts (<100 acres) lacking mature mixed hardwood-pine stands; within 300' of existing permanent forest edges; adjacent to existing loblolly pine stands, and in narrow (<600' wide) forest peninsulas that extend out into a nonforested area. In all cases, some hardwoods would be retained in understory, midcanopy and overstory.
- Maximize pole stage or older.
- Retain >8 snags per acre that are > 8" dbh
- Retain dead and downed wood debris on forest floor during harvest operations.
- Single tree selection will be the preferred harvest strategy in the interior.
- Timber harvesting (not TSI) will be avoided in 'Core Areas' during 1 April - 1 September, which is the breeding season for most FIDS.

Justification:

The justification for performing silvicultural prescriptions such as commercial timber harvesting is described in great detail throughout both the Alternatives section and Consequences section of the Environmental Assessment prepared for the Chesapeake Marshlands NWR Complex Comprehensive Conservation Plan of which this document is an attachment, as well as in the Forest Management Plan for Blackwater NWR.

The overall impact of performing timber harvest on Blackwater NWR and the proposed Nanticoke Division will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the Refuge was established. Also, in accordance with 50 CFR 29.1, the commercial harvesting of timber, as an economic use, will contribute to the administration of Blackwater NWR and the mission, purposes, goals, and objectives of both the Refuge and the NWRS. Through authorized commercial

and force account silvicultural practices, the desired future conditions will be a more healthy forested ecosystem with a guarantee that a minimum of seven mature forest cores will be maintained at the optimum size, effective area, perimeter to area ratio, species composition and overall health by the year 2015 to achieve our wildlife management goals and objectives. As previously mentioned, commercial management practices are the preferred method due to the fact that the refuge system does not own the equipment necessary to perform the tasks properly without causing significant negative impacts to the sites. Nor does the Refuge have the necessary manpower to effectively accomplish timber removal. Commercial timber management is the most economical, safe, and environmentally sound method of achieving many of our proposed forest management objectives.

Signature - Refuge Manager: /s/ Glenn A. Carowan 1/30/2006
(Signature and Date)

Concurrence - Regional Chief: /s/ Anthony D. Legér 6/26/2016
(Signature and Date)

Mandatory 10 year Reevaluation Date: June 26, 2016

Attachments:

None

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COMPATIBILITY DETERMINATION

Use: Trapping- Furbearer Management

Station Name: Blackwater National Wildlife Refuge

Establishing and Acquisition Authorities:

The Chesapeake Marshlands National Wildlife Refuge Complex (CMNWRC) is composed of three nationally significant wildlife areas: Blackwater NWR, Martin NWR, and Susquehanna NWR with several separate divisions. Blackwater NWR includes the Nanticoke Division, and Martin NWR includes the Barren Island, Bishops Head/Spring Island, and Watts Island Divisions. Collectively, Martin NWR, Susquehanna NWR, and the respective associated divisions are referred to as the Chesapeake Island Refuges.

The first and largest of these areas to be established was Blackwater NWR. Originally authorized for establishment by the Migratory Bird Conservation Commission on December 3, 1931, and named "Blackwater Migratory Bird Refuge," the refuge's current 28,000 acres are a showplace for the U.S. Fish and Wildlife Service's Refuge System.

On December 31, 1931, the Migratory Bird Conservation Commission authorized the Secretary of Agriculture to purchase 10,000 acres from the Delmarvia Fur Farms, Inc. of Philadelphia, Pennsylvania. On December 9, 1931, the Secretary entered into an agreement with Delmarvia Fur Farms, Inc., effective January 1, 1932, to lease 8,167.99 acres for the refuge. The Secretary subsequently determined that it was in the best interest of the Government to acquire 8,240.99 acres for the refuge from the Delmarvia Fur Farms and two other properties by condemnation. A notice of condemnation was filed August 26, 1932, and these tracts were conveyed to the Government in January 1933.

Blackwater NWR was therefore officially established under the authority of the Migratory Bird Conservation Act on January 23, 1933. Since that time, additional lands have been added to the refuge under the authorities of the Endangered Species Act, Refuge Recreation Act, North American Wetlands Conservation Act, and the Refuge Administration Act.

Table I summarizes Blackwater National Wildlife Refuge's acquisition history and the tracts that are currently being affected by the proposed uses. Unless otherwise noted, all acquisitions are fee title. This compatibility determination will also apply to additional tracts, particularly those in Blackwater's Nanticoke Division, as they are acquired.

Refuge Purpose(s):

For lands acquired under the Migratory Bird Conservation Act (16 U.S.C. § 715 d), the purpose of the acquisition is "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds."

For lands acquired under the Endangered Species Act of 1973 (16 U.S.C. § 1534), the purpose of the acquisition is "...to conserve (A) fish or wildlife which are listed as endangered or threatened species...or (B) plants."

For lands acquired under the Refuge Recreation Act (16 U.S.C. § 460K-1), the purpose of the acquisition is for "...(1) incidental fish and wildlife-oriented recreation; (2) the protection of natural resources; (3) the conservation of endangered species or threatened species..."

For lands acquired under the North American Wetlands Conservation Act (16 U.S.C. § 4401-413), the purpose of the acquisition is "(1) to protect, enhance, restore, and manage an appropriate distribution and diversity of wetland ecosystems and other habitats for migratory birds and other

fish and wildlife in North America; (2) to maintain current or improved distribution of migratory bird populations; and (3) to sustain an abundance of waterfowl and other migratory birds consistent with the goals of the North American Waterfowl Management Plan and the international obligations contained in the migratory bird treaties and conventions and other agreements with Canada, Mexico, and other countries."

For lands acquired under the Refuge Administration Act (16 U.S.C. § 668ddb), the purpose of the donation is "to protect, enhance, restore, and manage wetland ecosystems and other habitats for migratory birds, endangered and threatened species, and other wildlife."

National Wildlife Refuge System Mission:

"To administer a national network of land and waters for the conservation, management, and where appropriate, the 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 (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57)."

Description of Use:

This evaluation is to determine the compatibility of furbearer management programs with the purposes for which the affected tracts were acquired.

(A) What is the Use? Is the use a priority use?

The use is furbearer management to authorize the take of muskrats and nutria and the incidental take of red fox, raccoon, skunk, opossum, and gray fox.

Background and Rationale for the Management Activity

When the refuge was surveyed prior to acquisition in 1933, it was noted that the production of furbearers in the Blackwater area, primarily muskrats were unsurpassed on the East Coast. The original acquisition of approx. 8,000 acres was from an investment partnership, "Delmarvia Fur Farms," which hired a number of local trappers to harvest muskrats and other furbearers during the winter months. After acquisition in 1933, "Delmarvia Fur Farms" continued to lease the land for several years. In 1935, a total of 38,000 muskrats were harvested from the property. After the lease arrangement had expired, the refuge continued to utilize local trappers to harvest muskrats and partnered with these trappers in marketing pelts to commercial fur buyers. The refuge utilized trapping as a method to control furbearer populations and protect the marsh vegetation from destruction which occurs when herbivore populations are not maintained. Significant areas of marsh loss occurred on the refuge marshes when extremely high muskrat populations occurred in the late 1930's. Trapping was also utilized to control predator populations (fox, raccoons, skunk, and opossums) which was consistent with current policy at that time for increasing waterfowl populations. In the early 1970's, refuge trapping leases were selected by lottery and 3 trappers were selected for 3 year contracts. This process later evolved to public bidding for annual leases of 10-17 trapping units which were drawn utilizing natural features as boundaries.

The current program is similar today, and allows for the taking of muskrat, nutria, raccoon, fox, skunk, and opossum during the period of January 1 thru March 15 consistent with Maryland seasons. Surveys are conducted prior to the season to determine population levels, and furbearer management recommendations are submitted as required by policy.

This program has been historically dependent upon the international fur markets as to the interest and funds it is capable of generating. When markets were strong in the early 1970's, the refuge received in excess of \$15,000 in annual bids and 30+ bidders competed for 10-15 trapping units. As the markets diminished due to the unpopularity of wearing furs in the late 1970's and 80's, interest in the program also declined. Currently the refuge has a cadre of 10-15 local trappers which bid \$2,000-4,000 annually for trapping rights.

Management of nutria populations, which were introduced to the area in the 1930's and 1950's, has also been impacted greatly by this market driven program. When fur markets were high and nutria pelts generated \$5+, refuge trappers contributed greatly to curbing this destructive rodent's impact on refuge marshes. However, when markets crashed and nutria trapping was not economically feasible for refuge trappers to continue the level of control required to control populations, Blackwater instituted the first of its kind trapping rebate program which offered refuge trappers \$1.50 in return for each nutria harvested up to the amount of the trappers' bid price. Over 53,000 nutria have been harvested by refuge trappers under this rebate program since 1991.

(B) Where would the use be conducted?

Furbearer management activities will be conducted primarily in refuge marshlands, with no-trapping restrictions around eagle nests, roads, public use areas, and other sensitive sites. The main emphasis will be on trapping muskrats and nutria. There will be some incidental take of raccoons, opossums, and red foxes. Some upland activities may be permitted but will be restricted by methods and access due to conflicts with endangered species, waterfowl use, and public use activities. Population levels will determine annual use of areas, and rotational trapping may be utilized if populations do not warrant trapping on an annual basis.

(C) When would the use be conducted?

Furbearer management activities will always occur during the framework of the Maryland trapping season of December 15 thru March 15. Normally, trapping will occur between the dates of January 1 and March 15 due to conflicts with other management programs.

(D) How would the use be conducted?

After population surveys are conducted and annual furbearer management programs are approved, refuge regulations and seasons will be developed and publicly announced. A news release will announce the opening of refuge trapping units for public bidding. Trapping units will be opened for inspection during set dates, and an annual public meeting will be scheduled to review regulations and restrictions for that year. A public bid opening will be scheduled where bids are opened and the highest bids are selected under policies currently established. Once prospective trappers have paid their bid amount, a special use permit will be issued which notes restrictions and uses permitted. Trappers will be permitted to access areas at designated locations and authorized trapping activities will be permitted. These uses may be altered under special circumstances, and all trapping activities and equipment must cease and be removed from the refuge by designated dates on the special use permit. A harvest report will be mailed to the participants. The report must be completed and returned by a set date or the user will forfeit his/her opportunity to participate in the program the following year.

(E) Why is the use being proposed?

Furbearer management (trapping) is a bonafide management activity which has been used historically to manage and control furbearer populations. This highly regulated effort accomplishes these management goals to maintain populations consistent with the carrying capacity of their habitats with a minimum of cost. Herbivore populations naturally experience peaks and valleys of population levels. Refuge marshlands are documented to be currently stressed by rising sea levels, increased salinity, and land subsidence. It has been noted that further impacts from excessive herbivory causes permanent vegetation loss. The Refuge and the Corps of Engineers are undertaking a major marsh restoration effort in the Blackwater marshes. It is imperative that furbearer populations remain under control to facilitate that effort. This program will also facilitate the current efforts to control the nutria population which is ongoing by the MD DNR, Blackwater NWR, and the USDA.

The furbearer management program has historically provided an economic benefit to members of the local community. Trappers are generally watermen and/or farmers who are unemployed during the late winter months. Currently, the income levels generated are at a all time low, and thus minimal interest in this program exists except in a hard core cadre of local trappers. Culturally, we would like to preserve this local occupation.

Availability of Resources:

The Comprehensive Conservation Plan for the Chesapeake Marshlands NWR Complex recommends two full-time law enforcement officers (one at Blackwater and one for the Nanticoke Division) to conduct this and other hunting/trapping programs. One full-time officer was hired in FY2003. Combined with the existing two collateral duty refuge officers, there will be sufficient personnel to ensure compliance with regulation, protection of the resources, and public safety when all these positions are filled.

There will be no major management actions required for this program. Population surveys will be conducted. This typically will take 2-3 days for two personnel. Personnel will need to be assigned for duty for the information meeting to discuss the annual program and for the bid opening.

There should be no significant administration and management costs for the government associated with this specific proposed use. Minimum administrative time will be required for annual program development, news release, issuing the special use permits, documenting nutria harvest, issuing harvest reports, and submitting nutria rebate reimbursements.

There would be no special equipment, facilities or improvements necessary to support this management activity.

Since we would not be putting in any facilities or improvements on refuge property for this specific use, there would be no significant maintenance costs associated with this use.

Cost Breakdown:

The following is the list of costs to the Refuge required to administer and manage the furbearer program.

Refuge Personnel Costs

Conduct Furbearer surveys (6 days@8 hrs/day@\$24/hr.)..	\$1,152
Administrative time (9 days@8 hrs/day@\$24/hr.).....	\$1,720
Material costs	\$ 100

Total \$ 2,972

Anticipated Impacts on Refuge Purpose(s):

The environmental, socioeconomic, and cultural/historical impacts of these programs are thoroughly described in the Environmental Assessment prepared for the Chesapeake Marshlands NWR Complex's Comprehensive Conservation Plan, of which this document is an attachment.

Public Review and Comment:

This compatibility determination will be submitted for public review and comment as an appendices to the Environmental Assessment for the Draft Comprehensive Conservation Plan for the Chesapeake Marshlands NWR Complex in full compliance with NEPA.

Determination: (Check One)

This use is compatible X

This use is not compatible

Stipulations Necessary to Ensure Compatibility:

Trapping programs, virtually identical to the one being proposed, have been conducted on Blackwater NWR for more than 70 years. The attached restrictions, special regulations, and general operations have been structured to ensure compatibility. If the monitoring described under Availability of Resources indicates that this use materially interferes with or detracts from fulfillment of the National Wildlife Refuge System mission or the purposes of the refuge, we would curtail or eliminate the use.

Special Regulations governing our trapping programs are addressed under Part 25-Administrative Provisions of Subchapter C -The National Wildlife Refuge System of 50 CFR and will be subject to Maryland State regulations and special refuge regulations which are contained in the annual trapping program package.

Justification:

Furbearer management activities will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established.

Signature - Refuge Manager: /s/ Glenn A. Carowan 1/30/2006
(Signature and Date)

Concurrence - Regional Chief: /s/ Anthony D. Legér 6/26/2016
(Signature and Date)

Mandatory 10 year Reevaluation Date: June 26, 2016

Attachments:

Special Regulations and Restrictions

Trapping Units and Burn study areas (figure E.21)

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Appendix E. Compatibility Determinations

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ATTENTION BLACKWATER NWR TRAPPING BIDDERS

PLEASE NOTE ITEMS OF INTEREST FOR THE 2003 TRAPPING SEASON:

- * 1 Trapping units A, B, E, M, Q, R & S have been removed from the trapping program due to the nutria eradication study.
- * 2 Due to errors committed during the 2002 nutria rebate program, several trappers are still owed funds earned during the 2002 trapping season. Those funds will be reimbursed from the 2002 trapping bids before other rebates are awarded.
- 3 Portions of trapping units G & P & M will continue in the long-term burning study. Portions of these units are set up in no burn, annual burn, 3-5 year burn and 10-year burning areas. See

attached map. Only the annual burn areas of the burn study area will be burned in 2003. Trappers are encouraged to trap the non-burned areas at normal rates.

- 4 Trappers not fulfilling nutria rebate amount of bid by March 1, 2003, will relinquish funds to a general account which will be available to all refuge trappers.
- 5 Significant numbers of nutria have been tagged or radio collared. Any trappers finding one of these animals is encouraged to bring the animal to the refuge so necessary information can be collected.
- 6 Trapping will begin on January 1, 2003, for muskrat, nutria, skunk, raccoon, opossum, and fox on all units.
- 7 All croplands, woodlands, and impoundments in the area between the Wildlife Drive and Key Wallace road are closed to trapping to prevent waterfowl disturbance.
- 8 Use of Conibear type size 220 traps will not be permitted within 100 feet of the paved portion of the state/county highway on units D, F, J, K, and O. Use of Conibear type size 110 traps are permitted along roadways provided traps are set below marsh level.
- 9 One individual may be awarded two units; only one unit will be awarded if bidder makes written statement to that effect on trapping bid.
- 10 A nutria rebate program will be available to refuge trappers again this year, for nutria killed on the refuge units. Trappers will be reimbursed \$1.50 for each nutria tail turned in to the refuge office, not to exceed the amount of the trapping bid. Nutria can be taken by hunting or trapping. Permittees taking nutria by trapping must notify the refuge office in advance and tails must be turned in daily. Permittees taking nutria by hunting must notify the refuge office on the morning of the hunt and turn in tails at the refuge office by 3:30 p.m. of the same day. All tails must be fresh. No frozen tails will be accepted. This rebate will not apply under any other circumstances.
- 11 All trappers note: Refuge staff will be actively taking nutria on all trapping units. All prospective trappers should bid with this in mind. This intensive effort to remove nutria is necessary to attempt to reduce nutria populations in order to slow extensive damage to marsh vegetation by this exotic animal.
- 12 A meeting with all interested trappers will be held at 7:00 p.m. on Wednesday, December 11, 2003 at the Refuge Headquarters. A review of refuge regulation changes will be conducted.
- 13 All refuge trappers should note that rabies continues to be documented in the Blackwater area. Trappers should take necessary precautions such as pre-exposure shots, wearing gloves while skinning game, etc. Rabies can occur in any warm blooded animal from deer to squirrels, etc.
- 14 Only those refuge lands identified on the attached map are open to trapping. Trappers should consult refuge staff with any questions regarding trapping areas.
- 15 To prevent disturbances to the eagle roosts located adjacent to Pool 4 (Kuehnle Tract-Trapping Unit K&L). Access will be permitted only between the hours of 8:00 a.m. to 4:00 p.m.

* New for 2003

BLACKWATER NATIONAL WILDLIFE REFUGE
2003 TRAPPING SEASON
INSTRUCTIONS TO BIDDERS

1. Inspection of the units will be allowed December 10 through December 12, between the hours of 9:00 a.m. and 3:00 p.m. A public meeting will be held at 7:00 p.m. on December 11 at the refuge's Headquarters in order to familiarize all prospective trappers with the State and Federal regulations governing the trapping of furbearers on the refuge. Applications must be in the Blackwater Refuge office by 1:00 p.m. on December 18. A public bid opening will be held at the refuge's Visitor Center at 1:00 p.m. on December 18. The mailing address is:

MUSKRAT BID
REFUGE MANAGER
BLACKWATER NATIONAL WILDLIFE REFUGE
2145 KEY WALLACE DRIVE
CAMBRIDGE, MD 21613

2. You may submit bids for more than one unit. A bid deposit of \$100 is required at the time of bid submission in the form of a bank money order, cashier's check, or postal money order made out to the U.S. Fish and Wildlife Service. Personal checks or cash cannot be accepted. Remaining amount of bid must be received on or before December 31, 2002. If a successful bidder defaults on a bid before full payment is made, then the \$100.00 bid deposit is forfeited. The defaulted bidder will then be ineligible to bid on refuge trapping privileges for three years.
3. Although you may submit bids for all units, only two units will be awarded to any one individual. High bid will be the unit awarded. If an individual desires only one unit of marsh, a statement to that effect on the bid form will direct refuge personnel to exclude the applicant's bid after the first unit is awarded.
4. No bids or bid changes can be made by telephone.
5. The bid invitation has a summary of the contract, but does not contain all the requirements. The successful bidders for each unit must review and sign the formal contract.
6. A list of units and details of ingress and egress using refuge lands and waters is available at the refuge office.
7. Bid form, general and special conditions are available on request. Each bidder must complete the Application for Refuge Fur Trapping Permit, Form 3-2001, which will also serve as the bid. Be sure to review, sign and complete both sides of this form.
8. Trapping will begin on January 1, 2003, provided full payment has been made, for trapping of muskrat, nutria, raccoon, opossum, skunk, and fox on trapping units.
9. If after full payment has been made and before trapping begins on January 1, 2003, a bidder requests a permit be voided and refund be made, the following will occur:

The bidder and refuge manager will sign an agreement to that effect, stating that the unit will be re-bid and refund will be the new bid price (not

to exceed the original bid) minus \$100.00 penalty to cover administrative costs and re-advertising the unit.

10. A nutria study rebate program will be available to refuge trappers again this year, for nutria killed on the refuge units. Trappers will be reimbursed \$1.50 for each nutria tail turned in to the refuge office, not to exceed the amount of the trapping bid. Nutria can be taken by hunting or trapping. Permittees taking nutria by trapping must notify refuge office in advance and tails must be turned in daily. Permittees taking nutria by hunting must notify refuge office on the morning of the hunt and turn in tails at the refuge office by 3:30 p.m. of the same day. All tails must be fresh. No frozen tails will be accepted. This rebate will not apply under any other circumstances. These restrictions are necessary to ensure that reimbursements are made only for nutria taken on Blackwater Refuge.
11. Trappers not fulfilling nutria rebate amount of bid by March 1, 2002, will relinquish funds to a general account which will be available to all refuge trappers.
12. Refuge staff will be actively taking nutria on all trapping units. Bidders should keep that in consideration when bidding.

BLACKWATER NATIONAL WILDLIFE REFUGE
2003 TRAPPING SEASON
SPECIAL CONDITIONS APPLICABLE TO ALL UNITS

1. All trapping activity must comply with State and special refuge regulations, including boating regulations. Trapping of muskrat will begin on January 1, 2003 and end on March 15, 2003.
2. Fur animals authorized to be taken on the refuge may be taken only with ordinary steel traps or with other traps which have been approved by the refuge manager. The refuge manager may require the permittee to locate his traps in designated parts of his trapping unit (see special conditions for each unit). Unless specifically waived by the refuge manager, the permittee shall visit and inspect each of his traps within the refuge at least once every 24 hours, but he shall not run his traps or visit traps between sunset and one-half hour before sunrise of the following day. Permittees must advise refuge manager daily by phone or in person if sickness or any other reason, including weather conditions, prevents compliance with the 24 hour inspection regulation. At the close of the trapping season, the permittee shall take up all his traps and remove them from the refuge. The permittee may cut on the refuge, for use as trap stakes or drags, only such species of brush or timber as the refuge manager shall designate.
3. Birds and mammals, other than those covered by and taken under this permit, that are found alive in the traps by the permittee shall immediately be liberated. Any such unauthorized birds and/or mammals found dead or mortally injured in the traps shall immediately be turned over to the refuge manager or his representative. Trappers should record any incidental catches of non-target species, as this will be part of the information requested by the refuge at the close of the season.
4. This permit is not transferable, and no privilege hereunder may be sublet or made available to any person or interest not a party hereto without the approval of the refuge manager. Permittee must be present on area when trapping is carried out. One helper will be allowed. If helper is less than eighteen years of age, written authorization from the refuge manager is required.
5. Ingress and egress from the refuge shall be only by routes of travel designated by the refuge manager.
6. The permittee shall, not later than fifteen days after the conclusion of trapping on the refuge, submit to the refuge manager a report in which are correctly stated the number of each species of animals taken on the refuge.
7. All furbearers, except otter may be taken. setting any trap in the vicinity of otter sign and/or activity is prohibited to prevent the accidental taking of otter. Use or possession of Conibear type 330 is prohibited. Foothold traps normally used for otter are prohibited. Any foothold trap with a jaw spread of more than four inches must be approved by the refuge manager. Use or possession of snares of any description is prohibited. Bait sets with foothold traps are not permitted. The use of foothold trap sets around an animal carcass -- draw station -- are prohibited.
8. Approved foothold traps may be set for nutria in open marsh. Only one trap per set may be used.
9. Use of Conibear type size 220's and foothold traps are prohibited in upland areas of the refuge with the exception that approved foothold traps will be permitted for use with dirt hole sets for fox on wooded islands in the interior of the refuge provided no other restrictions are in place. See maps at refuge office for locations.

10. All successful permittees from the period of the bid award may enter his unit during daylight to check for trespass. Permittee must notify the office prior to entering upon the refuge units.
11. NO MARSH BURNING IS PERMITTED BY THE TRAPPER. All burning will be done by refuge personnel. Burning will be carried out as soon as possible after January 1. Trappers should take into account when bidding that some of the units may not be completely burned. Trapping Units G and P will have sections of marsh which will be burned on an annual burn, 3-5 year burn, 10 year burn and a no burn rotation. (See figure E. 21).
12. All bidders must have obtained the age of majority in the State of Maryland which is eighteen (18) years of age.
13. Failure by the permittee or his helper to comply with any of the above provisions or the violation by him of any of the refuge regulations or of any State law or regulation applicable to trapping on said refuge, not only shall render him subject to prosecution under said laws and regulations, but shall constitute cause for the revocation of this permit and for refusal of a permit for trapping fur animals during the next following open season or for any other use of privilege on the refuge for which a permit may be required by regulations. This permit may be terminated at any time by agreement between the issuing officer and the permittee; it may be revoked by the issuing officer for non-use.
14. Permittee is responsible for knowing his/her refuge trapping unit boundary. Care should be taken to prevent trespass on adjacent units and private lands. Refuge cannot grant permission for access across private lands.
15. No trapping will be permitted within 200 yards of any eagle nest on or adjacent to the refuge. Permittee should check on those areas with an old nest and possibly any new nest since last trapping season. Trapping may be permitted in these areas once it has been determined by the refuge staff that the nest is not active for that year.
16. Parking areas and access routes will be designated by the refuge manager.
17. Permittees supplied with keys to refuge gates are responsible to return keys within fifteen (15) days after conclusion of trapping on the refuge. Permittee is responsible for closing refuge gates upon entering and exiting refuge and is responsible for keeping refuge keys in his/her custody at all times.
18. The refuge manager reserves the right to restrict traffic on any refuge access roads due to weather, wet conditions, eagle nest construction, etc. Permittees are responsible for any damage they cause to refuge roads during bad weather, wet conditions, etc.
19. Off road vehicles (ATV, marsh buggies, trail bikes, etc.) are prohibited for use on refuge lands.
20. Air boats and air boat use are prohibited on refuge waterways.
21. Permittees are authorized to carry a .22 caliber firearm to dispose of all trapped furbearers, except muskrats and otter.
22. Permission may be received from the refuge manager authorizing additional helpers and dogs for taking nutria. Permittee must be present during nutria hunt. Permittee is responsible for the helpers and their activities. This regulation will be strenuously enforced during this trapping year.
23. Refuge staff members will be taking an active role in taking nutria on all refuge units.

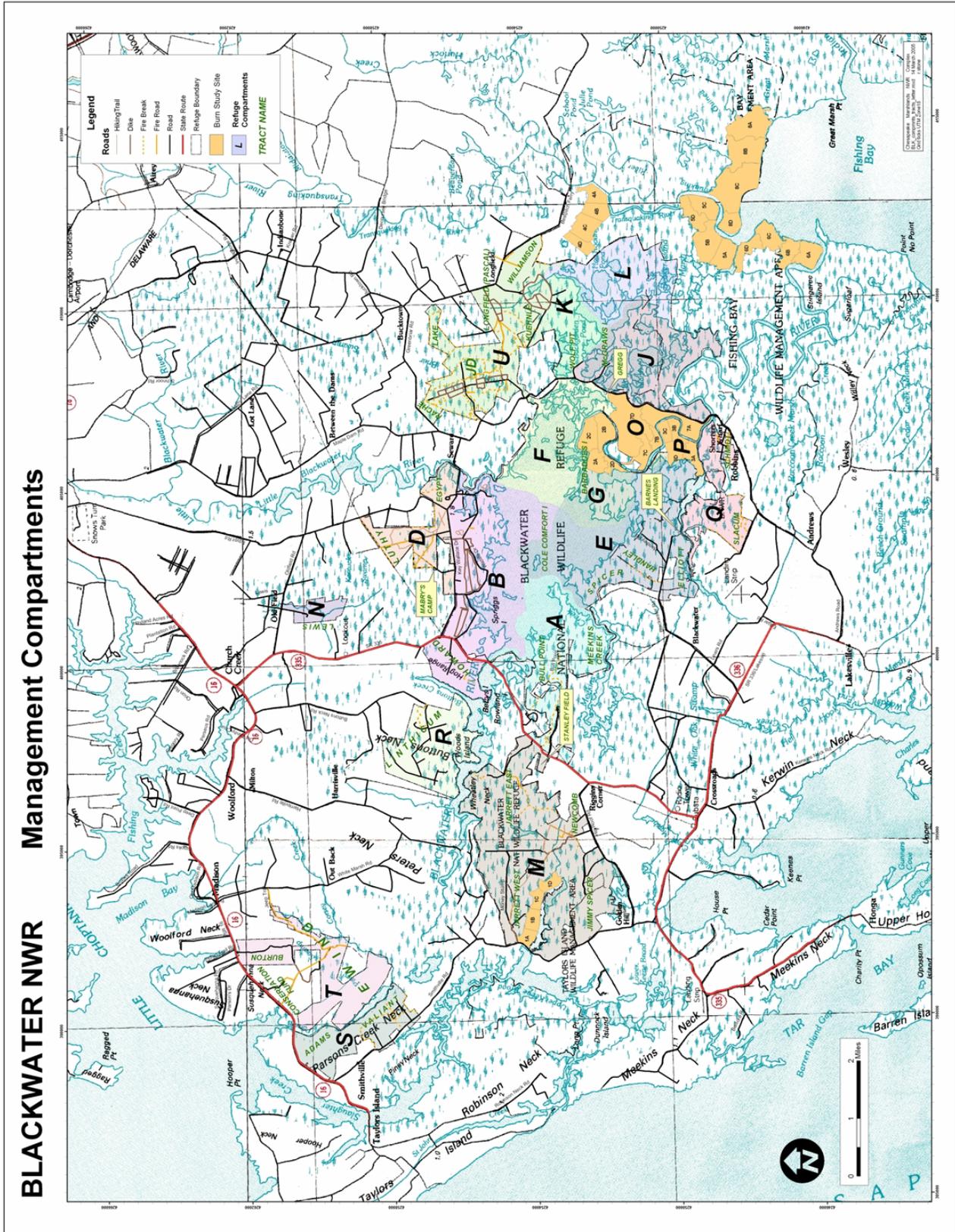


Figure E. 21. Trapping units and Burn study sites

2003 TRAPPING SEASON
SPECIAL CONDITIONS FOR EACH UNIT

In addition to the general refuge regulations, there are specific conditions that apply to units listed below.

UNIT "D"

- (1) No foothold traps will be permitted within 100 yards of the paved portion of the county road.
- (2) No trapping will be permitted within 200 yards of eagle nest on adjacent land.
- (3) Trapping will be permitted in the uplands of this area by use of live traps only.
- (4) Use of Conibear type size 220 traps will not be permitted within 100 feet of the paved portion of the county highway. Use of Conibear type size 110 are permitted along roadway provided traps are set below marsh level.

UNIT "F"

- (1) No foothold traps will be permitted within 100 yards of the paved portion of the county road.
- (2) Use of Conibear type size 220 traps will not be permitted within 100 feet of the paved portion of the county highway. Use of Conibear type size 110 are permitted along roadway provided traps are set below marsh level.
- (3) No trapping will be permitted within 200 yards of eagle nest on this unit.

UNIT "G"

- (1) No trapping will be permitted within 200 yards of any eagle nest on this unit.
- (2) Consult refuge manager regarding fox trapping on islands located on this unit.
- (3) A refuge burn study area is located in this unit. The annual burn section of the study area will be burned.

UNIT "J"

- (1) No trapping will be permitted within 200 yards of any eagle nest on this unit.
- (2) Consult refuge manager regarding fox trapping on island locations on this unit.
- (3) No leghold traps will be permitted within 100 yards of the paved portion of the county road.

Appendix E. Compatibility Determinations

- (4) Use of Conibear type size 220 traps will not be permitted within 100 feet of the paved portion of the county highway. Use of Conibear type size 110 are permitted along roadway provided traps are set below marsh level.

UNIT "K"

- (1) No trapping will be permitted within 200 yards of eagle nest on this unit.
- (2) Trapping will be permitted in the uplands of this area by use of live traps only. Consult this area by use of live traps only. Consult refuge manager regarding fox trapping on islands located on this unit.
- (3) NO leghold traps will be permitted within 100 yards of the paved portion of the county road.
- (4) Use of Conibear type size 220 traps will not be permitted within 100 feet of the paved portion of the county highway. Use of Conibear type size 110 are permitted along roadway provided traps are set below marsh level.
- (5) To prevent disturbance to eagles utilizing the roost area, road access will be permitted only between the hours of 8:00 am to 4:00 pm.

UNIT "L"

- (1) Trapping will be permitted in the uplands of this area by use of live traps only. Consult refuge manager regarding fox trapping on islands located on this unit.
- (2) Part of the woodland area of this unit will be closed to protect an eagle roosting area. Consult refuge manager for area definition.
- (3) To prevent disturbance of eagles utilizing roost area, road access will be permitted only between the hours of 8:00 a.m. to 4:00 p.m.

UNIT "O"

- (1) Use of Conibear type size 220 traps will not be permitted within 100 foot of the paved portion of the county highway. Use of Conibear type size 110 are permitted along roadway provided traps are set below marsh level.
- (2) No leghold traps will be permitted within 100 yards of the pave portions of the county road.

COMPATIBILITY DETERMINATION

Use: Big Game Hunting for White-tailed Deer, Sika Deer, and Eastern Wild Turkey

Station Name: Blackwater National Wildlife Refuge

Establishing and Acquisition Authorities:

The Chesapeake Marshlands National Wildlife Refuge Complex (CMNWRC) is composed of three nationally significant wildlife areas: Blackwater NWR, Martin NWR, and Susquehanna NWR with several separate divisions. Blackwater NWR includes the Nanticoke Division, and Martin NWR includes the Barren Island, Bishops Head/Spring Island, and Watts Island Divisions. Collectively, Martin NWR, Susquehanna NWR, and the respective associated divisions are referred to as the Chesapeake Island Refuges.

The first and largest of these areas to be established was Blackwater NWR. Originally authorized for establishment by the Migratory Bird Conservation Commission on December 3, 1931, and named "Blackwater Migratory Bird Refuge," the refuge's current 28,000 acres are a showplace for the U.S. Fish and Wildlife Service's Refuge System.

On December 31, 1931, the Migratory Bird Conservation Commission authorized the Secretary of Agriculture to purchase 10,000 acres from the Delmarvia Fur Farms, Inc. of Philadelphia, Pennsylvania. On December 9, 1931, the Secretary entered into an agreement with Delmarvia Fur Farms, Inc., effective January 1, 1932, to lease 8,167.99 acres for the refuge. The Secretary subsequently determined that it was in the best interest of the Government to acquire 8,240.99 acres for the refuge from the Delmarvia Fur Farms and two other properties by condemnation. A notice of condemnation was filed August 26, 1932, and these tracts were conveyed to the Government in January 1933.

Blackwater NWR was therefore officially established under the authority of the Migratory Bird Conservation Act on January 23, 1933. Since that time, additional lands have been added to the refuge under the authorities of the Endangered Species Act, Refuge Recreation Act, North American Wetlands Conservation Act, and the Refuge Administration Act.

Table I summarizes Blackwater National Wildlife Refuge's acquisition history and the tracts that are currently being affected by the proposed uses. Unless otherwise noted, all acquisitions are fee title. This compatibility determination will also apply to additional tracts, particularly those in Blackwater's Nanticoke Division, as they are acquired.

Refuge Purpose(s):

For lands acquired under the Migratory Bird Conservation Act (16 U.S.C. § 715 d), the purpose of the acquisition is "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds."

For lands acquired under the Endangered Species Act of 1973 (16 U.S.C. § 1534), the purpose of the acquisition is "...to conserve (A) fish or wildlife which are listed as endangered or threatened species...or (B) plants."

For lands acquired under the Refuge Recreation Act (16 U.S.C. § 460K-1), the purpose of the acquisition is for "...(1) incidental fish and wildlife-oriented recreation; (2) the protection of natural resources; (3) the conservation of endangered species or threatened species..."

For lands acquired under the North American Wetlands Conservation Act (16 U.S.C. § 4401-413), the purpose of the acquisition is "(1) to protect, enhance, restore, and manage an appropriate distribution and diversity of wetland ecosystems and other habitats for migratory birds and other

Appendix E. Compatibility Determinations

fish and wildlife in North America; (2) to maintain current or improved distribution of migratory bird populations; and (3) to sustain an abundance of waterfowl and other migratory birds consistent with the goals of the North American Waterfowl Management Plan and the international obligations contained in the migratory bird treaties and conventions and other agreements with Canada, Mexico, and other countries."

For lands acquired under the Refuge Administration Act (16 U.S.C. § 668ddb), the purpose of the donation is "to protect, enhance, restore, and manage wetland ecosystems and other habitats for migratory birds, endangered and threatened species, and other wildlife."

National Wildlife Refuge System Mission:

"To administer a national network of land and waters for the conservation, management, and where appropriate, the 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 (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57)."

Description of Use:

This evaluation is to determine the compatibility of deer and spring turkey hunting programs with the purposes for which the affected tracts were acquired.

(A) What is the Use? Is the use a priority use?

The use is Big game hunting for white-tailed deer, sika deer, and Eastern wild turkey. The National Wildlife Refuge System Improvement Act of 1997 identified hunting as one of the six, priority, wildlife-dependent recreational uses to be facilitated in the Refuge System, and the act encouraged the Service to provide opportunities for these uses

Background and Rationale for the Management Activity

In the 1930's when Blackwater Refuge was first established as a refuge for migratory birds, especially wintering waterfowl, hunting in Dorchester County was a means of providing food for the table as well as an accepted popular form of recreation. Most of the area was rural and the local population hunted on their own land and also allowed others to hunt their property. The Blackwater Refuge was considered a sanctuary for wildlife and protected from poachers. Few visitors came to Blackwater Refuge.

A 1949 amendment to the Duck Stamp Act permitted hunting on 25 percent of the lands purchased for the National Wildlife Refuge System with Duck Stamp funds, but Blackwater Refuge remained closed to hunting (Note: Later amendments authorized up to 40%). After World War II, Americans traveled the nation's back roads and discovered their National Wildlife Refuges. Interest developed in using refuges for recreation other than hunting. Although most wanted to share with their families the sights and sounds of wildlife and the wonders of the living world, many citizens wanted to use their refuges to sail, swim, camp, water ski, ride horses, sun bathe, and rock climb. Guidance in the first Refuge Manual (1943) left the door open to uses for the cause of building public support, but conflicts between wildlife and public uses could be forecast. In the 1957 Refuge Manual, guidance on how to decide which public uses to allow hinted towards a wildlife first priority, but sent mixed signals. However, the Refuge Recreation Act of 1962 and the Refuge Administration Act of 1966 placed into law the concept that refuges would be closed to all recreation uses, until a manager could determine that a proposed use was compatible with the refuge's establishing purpose and that sufficient funds were available to administer those uses. Refuge managers were responsible for making these compatibility determinations. Usually decisions were made locally, and in many cases, were based on local pressures and interests. The first formal compatibility determination for big game hunting on Blackwater Refuge was approved on August 26, 1994.

Waterfowl hunting has always been a major recreational activity in Dorchester County, but when hunters discovered the abundance of deer and especially the exotic sika that could not be found elsewhere, they

swarmed to the area. Interest in hunting on Blackwater Refuge increased. When the farming community complained that the ever increasing population of deer on Blackwater Refuge seriously depredated their crops, interest in promoting hunting on Blackwater Refuge increased even more. To assist with the crop situation and provide recreation, Blackwater Refuge began a deer hunting program in 1985. Although the current program allows most of the hunters that apply to participate, hunters, during the CCP scoping meetings, indicated a desire for increased opportunities to deer hunt. They also requested a turkey hunt.

(B) Where would the use be conducted?

Deer and turkey hunting will occur on approximately 10,430 acres (currently and increasing with additional acquisitions) or approximately 38% of the existing refuge. Hunting areas are located in upland forest and forested wetland habitats away from public use areas, high density waterfowl use areas, and away from the majority of marsh and open water (figures E.22 and E.23). Portions of the marshes adjacent to forested wetlands are hunted for sika deer; however, these areas are not intensively used by waterfowl as evidenced by our biweekly aerial waterfowl surveys.

Spring turkey hunting will occur on approximately 7,485 acres in 10 areas (Areas B1, D, M2, N, R, S, T, U1, U2, and U3, figure E.22) (27% of the existing refuge). Like deer hunting, turkey hunting areas are located in upland forest and forested wetland habitats away from public use areas, high density waterfowl use areas, and away from the majority of marsh and open water.

(C) When would the use be conducted?

Hunting for white-tailed and sika deer would be permitted for a minimum of 53 days (45 days of archery hunting generally beginning the last Saturday in September, continuing consecutively until mid-November, and ending with a late archery season beginning the first Saturday in January and ending the third Saturday in January; 2 days of muzzleloading rifle or shotgun hunting the third Friday and Saturday in October; two days of youth only shotgun hunting the second and fourth Saturdays in November; and 4 days of shotgun hunting the first and second Mondays and Fridays of the state-wide firearms season), all within State seasons, and consistent with State weapons/bag limits/hunting hours. Deer hunting will be permitted on the aforementioned dates from one-half hour before sunrise to one-half hour after sunset.

Hunting for turkeys (gobblers only) will be authorized on Tuesdays and Saturdays for 5 weeks (10 days) during the State season (April 18 to May 16), on a quota basis, in compliance with state hunting regulations, and from one-half hour before sunrise until noon on designated hunt days. Turkey hunting would require a permit determined by a lottery system issued to 14 hunters per day (140 hunters). Scout days would be authorized the day before each hunt day. New areas would be evaluated and considered as they are acquired that would not conflict with public use areas or endangered and threatened species (bald eagle) and would not have a negative impact on other wildlife and habitat resources or public safety. A youth only quota hunt will be authorized the first Saturday of the State season.

(D) How would the use be conducted?

During the spring turkey and deer archery seasons, hunters would “walk in” from existing designated parking areas, and all vehicle access would be prohibited. During the firearms seasons, vehicles would be restricted to designated roadways and existing parking areas. There would be no off-road vehicles or ATV use allowed during any hunting season. There would be no access allowed by boats during any of the big game hunting seasons. The first section of the Wildlife Drive would only be closed the first day of the shotgun hunt, leaving the second part of the Wildlife Drive open for public use. Hunting opportunities would be provided to a minimum of 3,000 hunters annually on a first come, first served, mail in system (non-quota for the archery season, but with quotas for the firearms hunts). Hunters would be restricted to zoned areas for safe distribution, with a ratio of no more than 1 hunter per 20 acres, although some areas may have only 1 hunter per 40 acres.

Blackwater Refuge would honor the commitments related to Blackwater Refuge acquisitions where the Service assured the public that the historical tradition of hunting deer would be permitted if compatible with

the objectives of Blackwater Refuge. With the acquisition of additional property, the refuge would open other areas suitable to hunting with the number of hunters per acre the same, and would increase the number of total hunters accordingly. Check stations would be operated by staff and volunteers during muzzleloader and shotgun hunts to obtain age, sex, species, and weight data. Deer killed during the archery season would be required to be checked at a specified Maryland DNR certified checking station. An annual hunt program would be prepared and submitted for review prior to July 1. Summaries of the biological information would be published in the refuge's Annual Narrative Report. Administrative fees would be charged for the permits. Senior citizens and youth would receive a 50% discount on these fees. Fees would be utilized to hire a hunt program coordinator and maintain parking areas and signs.

One area of the refuge would be designated for certified wheelchair bound big game hunters. Hunt leaflets, regulations, and maps would be prepared and published annually, and distributed to hunters. Refuge specific regulations would be published annually in the Federal Register and codified in Title 50, Part 32. A hunter data base would be maintained to facilitate mailings and distribution of information. Blackwater Refuge would continue the same precautions for threatened and endangered species and migratory waterfowl as in Alternate A. Hunting would be regulated in time and space to eliminate conflicts with endangered species and other public uses and to ensure compatibility with refuge purposes. Annual spotlight surveys, harvest data, herd health conditions, and available habitat would continue to ensure that the deer hunt remained biologically sound.

Deer hunting, while maintaining herd numbers within acceptable levels, would continue to provide opportunities to utilize a renewable resource. Hunting seasons would be adjusted annually to take into consideration changes indicated in herd quality by biological monitoring [APCs (abomasum parasite counts), antler size, reproductive rates, etc.].

(E) Why is the use being proposed?

Deer hunting will be conducted to achieve an integral part of the refuges comprehensive wildlife management program. Specifically, the deer management goals are to: Maintain a healthy deer population at or below habitat carrying capacity; minimize crop depredation to refuge and adjacent private croplands; minimize Delmarva fox squirrel (DFS) habitat degradation and deer competition with the squirrel; keep the exotic sika deer numbers at a level compatible with its habitat to prevent the species from increasing its range inland, thereby intruding into and competing with the native white-tailed deer; and provide quality, compatible, consumptive, wildlife-oriented recreation.

Spring turkey hunting is being proposed to provide quality, compatible, consumptive, wildlife-oriented recreation.

Availability of Resources:

The Comprehensive Conservation Plan for the Chesapeake Marshlands NWR Complex recommends two full-time law enforcement officers (one at Blackwater and one for the Nanticoke Division) to conduct this and other hunt programs. One full-time officer was hired in FY2003. Combined with the existing two collateral duty refuge officers, there will be sufficient personnel to ensure compliance with regulation, protection of the resources, and public safety when all these positions are filled.

All hunting programs and supporting activities would be totally administered and funded by the Friends of Blackwater, who would also hire and pay for a full-time hunt coordinator. The Hunt Coordinator would administer all aspects of these hunting programs; respond to all questions and provide information to the public; process hunt applications and permits; conduct mailings; provide visitor assistance for the hunt programs; improve customer service; make a positive impression to customers and the public; provide maintenance of signs and parking areas; and otherwise assist hunters in following regulations and enjoying a good hunting experience, all at no cost to the government. Friends of Blackwater will continue to fund the annual publication of regulations, permit applications, maps, and leaflets. Any remaining revenue generated

from the administrative process and permit application fees would be used to replace signs, post closed areas, and maintain parking areas and roads.

There should be no significant administration and management costs for the government associated with this specific proposed use.

There would be no special equipment, facilities or improvements necessary to support the amount of big game hunting anticipated.

Since we would not be putting in any facilities or improvements on refuge property for this specific use, there would be no significant maintenance costs associated with this use.

Monitoring costs associated with maintaining statistical information on hunting activities, kill, age/sex ratios, etc. will be assumed by Friends of Blackwater who will staff the check stations.

Cost Breakdown:

The following is the list of costs to the Refuge required to administer and manage the hunting programs.

Refuge Personnel Costs	
Archery (45 days @ 3 hrs/day@\$24/hr.).....	\$3,240
Muzzleloading (2 days @ 9hrs/day@\$24/hr.).....	\$ 432
Shotgun (4 days @ 9hrs/day@\$24/hr.).....	\$ 864
Turkey hunts (10 days @ 4 hrs/day@24/hr.).....	\$ 960
<hr/>	
Total.....	
\$5,496	

All other costs will be paid for by the Friends of Blackwater.

Anticipated Impacts on Refuge Purpose(s):

The following is a summary of the environmental, socioeconomic, and cultural/historical impacts of these programs as more thoroughly described in the Environmental Assessment prepared for the Chesapeake Marshlands NWR Complex's Comprehensive Conservation Plan of which this document is an attachment. Impacts from the deer hunts are anticipated to be minimized as demonstrated by closely monitoring impacts of annual hunts during 1972 and from 1985 to present.

Impacts on endangered species and their habitats would be minimized by taking several precautions. In accordance with the "Management Guidelines for Bald Eagles in the Chesapeake," hunting near eagle nests would be restricted to a minimum radius of 250 yards. Open marsh areas, where eagles typically feed, would be entirely closed to hunting, and eagle roost sites would be protected by a ¼-mile minimum buffer zone where no entry is permitted. Eagle activity usually increases in late December and nesting begins in early January, well after deer hunting seasons end. All young eagles would be fledged prior to spring turkey season.

Delmarva fox squirrels are found in the upland hunting areas, but hunter/squirrel encounters are expected to be brief and generally non-disturbing. Almost 100% of white-tailed deer hunters use deer stands, when questioned during hunter check-in. Consequently, most hunter movement only would involve going to and coming from their stand. This is especially true during the archery hunt. Law enforcement patrols during past hunts observed very little movement from deer hunters. Furthermore, sika deer are hunted primarily in wet forest, where DFS are less frequently observed.

Impacts on habitat are expected to be minimal and then only temporary, as trampled ground vegetation will recover. During the archery and spring turkey seasons, hunters must "walk in" from designated, existing parking areas, and all vehicle access will be prohibited. During the deer firearms season, vehicles will be

Appendix E. Compatibility Determinations

restricted to designated roadways. There will be no off-road vehicles or ATV uses allowed during any hunting season. Personal observation of the habitat during hunting season would lead a biologist to suspect the deer population, especially bucks, does more damage to the vegetation with numerous scrapes, antler polishing on saplings, and browsing woody vegetation, than the hunters damage.

Impacts on public use are especially minimal. Public use facilities are totally unaffected by the archery hunt. The only time the self-guided trails and the wildlife drive is closed during the first day of the four-day firearms season (0.25% of the year). Even then, a portion of the wildlife drive remains open for visitor use. The visitor center remains open and is unaffected by the deer hunt. The remainder of the refuge hunt areas is closed to public entry throughout the year.

Waterfowl use areas such as the moist soil impoundment system, adjacent cropland, and marsh are closed to hunting, and are not impacted.

Public Review and Comment:

This compatibility determination will be submitted for public review and comment as an appendices to the Environmental Assessment for the Draft Comprehensive Conservation Plan for the Chesapeake Marshlands NWR Complex in full compliance with NEPA.

Determination: (Check One)

This use is compatible X

This use is not compatible _____

Stipulations Necessary to Ensure Compatibility:

These hunting programs have been conducted for many years and the special regulations, restrictions, and general operations have been structured to ensure compatibility. If the monitoring described under Availability of Resources indicates that this use materially interferes with or detracts from fulfillment of the National Wildlife Refuge System mission or the purposes of the refuge, we would curtail or eliminate the use.

Special Regulations governing our hunting programs will be codified in the Code of Federal Regulations, Title 50 and will be subject to Maryland State regulations and the following special refuge conditions:

1. We require refuge permits for all hunters regardless of age. We require that permits must be in the hunter's possession along with a valid Maryland State hunting license, any required stamps, and a photo identification. Permits are non-transferable.
2. We require that hunt permits be obtained only through the mail by mailing an application and administration fee to the refuge after applications are made available in July. To obtain an application and regulations leaflet (including designated areas and map, dates of hunts, bag limits, and permit fees) for archery, youth, muzzleloader, and shotgun deer hunts and turkey hunts, we require hunters to contact the refuge hunt coordinator or refuge Visitor Center between the hours of 9:00 am and 4:00 pm daily.
3. We allow archery hunters to obtain a permit at the Visitor Center after the first week of September until the end of the archery season.
4. We allow walk-in youth deer hunters to obtain a permit at the check station on the day of the hunt.

5. We require youth hunters to be at least 12 years old but less than 16 years old, and require that they be accompanied by a licensed or exempt from licensed, unarmed adult, 21 or older. We require the accompanying adult to remain with the youth at all times in the field.
6. We require a permanently disabled hunter to be certified “wheelchair-bound” by a physician, and to be accompanied by an assistant who is not permitted to use a firearm. We require the permanently disabled certification to accompany the hunters permit application.
7. We allow only participants possessing authorized permits to enter the hunt areas.
8. We require check-in for all hunts, except archery and turkey hunts, beginning at 5:00 am.
9. We require all deer killed during all hunts except archery hunts to be properly tagged and presented for examination at the refuge check station on the day of the kill.
10. We require hunters to seek refuge employee assistance to retrieve deer or turkeys from closed areas.
11. We do not require check-in or check out at the refuge for the archery hunt and turkey hunts, but we require harvested deer and turkey to be registered at one of the Maryland check stations designated by the refuge.
12. We require only weapons that meet Maryland State regulations. We do not allow handguns and breech-loading rifles.
13. We allow access to hunt areas only on designated roads and parking areas indicated on hunt maps in the regulations leaflet (obtained with application by mail or at the Visitor Center). All other access is limited to walk-in or bicycles. We do not allow access by boats or ATV's.
14. We allow scouting only on designated days listed in the regulations for permitted hunters.
15. We do not require check-in or check-out for scouting.
16. We do not allow firearms or other weapons on the refuge when scouting.
17. We require permitted youth hunters to be accompanied by permitted adult age 21 or older while scouting.
18. We require a minimum of 400 square inches of solid-colored daylight fluorescent orange clothing to be worn on the head, chest, and back of all deer hunters during the youth, muzzleloader, and shotgun hunts.
19. We require the use of a tree stand that elevates the hunter a minimum of 8 feet above the ground for deer hunting in Area B2 (except disabled hunters). Temporary, removable, ladder, fixed, and climbing-type tree stands that do not damage trees are permitted in all other areas.
20. We do not allow screw-in steps, spikes, or other objects that may damage trees.
21. We do not allow hunting from a permanently constructed tree stand.
22. We allow tree stands to be pre-installed during the scouting days for use during the selected hunts, and to be left in the hunting area at the hunter's discretion. We require all stands to be

Appendix E. Compatibility Determinations

removed the last day of the refuge hunting season (we will not be held responsible for damage, theft or other hunter occupancy).

23. We do not allow pets in hunt areas.

24. We do not allow hunting from or shooting across a roadway where vehicle traffic is allowed.

25. We do not allow driving deer during youth hunts.

26. We do not allow commercialized guiding.

Justification:

As a federally mandated steward of the Nations wildlife and other natural resources, the U.S. Fish and Wildlife Service and Blackwater National Wildlife Refuge have an obligation to the State of Maryland, the Eastern Shore, and Dorchester and Wicomico Counties to manage a deer population equally shared by the Refuge and private lands adjacent to the refuge in such a manner as to not violate the purposes for which the refuge was established. At the same time, the refuge must honor the commitments related to refuge acquisitions where the Service assured the public that the historical tradition of hunting deer and other wildlife would be permitted if compatible with the objectives of the refuge.

It has been determined in the preceding sections that deer and spring turkey hunting programs are compatible. Palmer et al. (1980) and Cypher (1988) state that the only biologically sound and cost effective method to keep a deer population in balance with its environment is through regulated hunting. Over-browsing by an unmanaged deer population has a detrimental effect on understory vegetation and on regeneration of hardwoods (Butt 1984). Likewise, an unmanaged deer population causes severe crop depredation on refuge property and on the property of adjacent land owners. This crop depredation results in negative socioeconomic impact on the private landowners as well as competition with migratory waterfowl and the endangered Delmarva fox squirrel. Croplands can account for 41% of the annual diet in deer even though other prime food sources are available (Dusek et al. 1989).

A regulated deer hunt is essential to accomplish the goal of managing a healthy deer population, resulting in high reproductivity and recruitment for both consumptive and non-consumptive wildlife-orientated recreation. Dickerson (1983) noted the drastic effect of the "no hunting" approach to deer management. He examined harvested deer from a state park in New York where hunting had been prohibited for 71 years. Through these observations, he concluded that due to the lack of hunting, the deer herd was in the worst physical condition of any he had observed in New York and possibly the northeast.

Limited spring turkey hunting in accordance with the restrictions and numbers of hunters proposed would have insignificant impacts on biological resources, with the exception that obviously a few gobblers would be killed. However, their removal from the population would not have significant impacts on the species or its abundance.

Big Game Hunting for white-tailed deer, sika deer, and Eastern wild turkey will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the Refuge was established.

Signature - Refuge Manager: /s/ Glenn A. Carowan 1/30/2006
(Signature and Date)

Concurrence - Regional Chief: /s/ Anthony D. Legér 6/26/2016
(Signature and Date)

Mandatory 15 year Reevaluation Date: June 26, 2021

Attachments:

Tract descriptions (table E.2) and Hunting Maps (Figure E.22 and E.23)

References:

Butt, J.P. 1984. Deer and trees on the Allegheny: how could hunters keep the deer and the forest service keep regeneration when the deer were eating the regeneration? *Journal of Forestry* 82(1984):468-471.

Cline, K. 1985. Bald Eagles in the Chesapeake: A Management Guide For Landowners. National Wildlife Federation. 16 pp.

Cypher, B.L., E.A. Cypher. 1988. Ecology and management of white-tailed deer in northeastern coastal habitats: a synthesis of the literature pertinent to the National Wildlife Refuges from Maine to Virginia. U.S. Fish and Wildlife Service, Biological Report 88(15). 52 pp.

Dickinson, N.R. 1983. An example of the effect of underharvesting on a deer population. *N.Y. Fish and Game Journal* 30(1983):231-232.

Dusek, G.L., R.J. Mackie, J.D. Herriges, Jr., B.B. Compton. 1989. Population ecology of white-tailed deer along the lower Yellowstone River. *Wildlife Monographs* 104:1-68.

Larson, T.J., O.J. Rongstad, F.W. Terbilcox. 1978. Movement and habitat use of white-tailed deer in southcentral Wisconsin. *Journal of Wildlife Management* 42(1):13-117.

Palmer, D.T., D.A. Andrews, R.O. Winters, and J.W. Francis. 1980. Removal techniques to control an enclosed deer herd. *Wildlife Society Bulletin* 8(1):29-33.

Table E.2. Land acquisition history (Blackwater NWR)

<i>Date</i>	<i>Tract No.</i>	<i>Acres</i>	<i>Tract Name</i>	<i>Authority¹</i>
1/13/33	18	1.00	Graveyard Tract	MBCA
1/13/33	19	72.00	Blackwater R.	MBCA
1/23/33	14,a,-I,-II,-III,b-g,i	8,167.99	Delmarvia Fur Farms	MBCA
12/01/42	16,a	355.18	Kuehnle	MBCA
8/02/45	24,a-c	2,203.21	Seward	MBCA
4/21/51	29	416.94	Smith	MBCA
6/22/72	37	408.40	Luthy	MBCA
6/23/72	38	1.15	Brooks	MBCA
6/29/72	31	1.28	Turner	MBCA
6/27/75	45,R	175.10	Spicer	ESA
5/15/78	45b-d	1,610.47	Jarrett	ESA
9/28/78	45a-e	852.84	Jarrett	ESA

Appendix E. Compatibility Determinations

<i>Date</i>	<i>Tract No.</i>	<i>Acres</i>	<i>Tract Name</i>	<i>Authority¹</i>
10/09/84	58,-I	489.50	Handley	ESA
4/19/85	53,-I	863.00	Herman Robbins Est.	MBCA
4/20/64	41,R	0.00	State of MD Easement	MBCA
11/05/76	2	7.14	State of MD Exchange2	80 STAT. 926
3/02/77	14d	(9.89)	State of MD Exchange3	16 U.S.C. 668dd
8/11/87	54	71.40	Schmidt	RRA
10/21/87	55,-I	237.20	Wm. Robbins	RRA
11/02/88	99,R	445.00	Paul Handley Est.	MBCA
11/09/88	52	297.20	Rufus Robbins	MBCA
4/09/91	100	454.20	Pascal	MBCA
10/21/91	51,-I	562.70	Gregg	MBCA
12/24/91	100a-i	176.75	Barren Island	MBCA
12/30/92	101	797.78	Williams	MBCA
12/28/92	100m	459.47	Howard	RAA
12/30/92	100j	380.00	Bishops Head	RAA
12/30/92	100k	52.00	Spring Island	RAA
2/28/94	100n	856.00	Madison (Ewing)	NAWCA
8/10/94	59	201.00	Mills	MBCA
11/2/94	103	299.95	Burton	MBCA
2/7/96	100t	173.85	Elliott	MBCA
12/28/95	104a	324.34	Valiant	MBCA
5/23/96	100r	55.23	Rasche	MBCA
8/6/96	100u	1,163.06	Linthicum	MBCA
7/29/96	100p,q	431.26	Lakes	MBCA
12/16/97	100Ae	149.73	Williamson	MBCA
9/24/99	108	74.88	Spicer	MBCA
9/24/99	107r	748.26	Spicer	MBCA
7/26/99	100Af	26.50	Long	MBCA
3/29/99	105,a	174.48	LeCompte	MBCA
3/28/00	100Ag	64.73	Riggins	MBCA
6/29/72	31	1.28	Turner	MBCA

<i>Date</i>	<i>Tract No.</i>	<i>Acres</i>	<i>Tract Name</i>	<i>Authority¹</i>
3/15/00	54a	141.60	Schmidt	MBCA
2/6/02	100Ah	109.81	Newcomb	MBCA
2/20/02	100Ai	89.25	Newcomb	MBCA
6/26/93	102	0.11	Wooten	MBCA
7/8/00	106	149.06	Stanley	MBCA
6/28/00	111	139.10	Elliott	MBCA
1/4/00	113	215.80	Lewis	MBCA

¹MBCA: Migratory Bird Conservation Act; ESA: Endangered Species Act; RRA: Refuge Recreation Act; NAWCA: North American Wetlands Conservation Act; RAA: Refuge Administration Act

²Received in an exchange with the State of Maryland for land of equal value

³Given in an exchange with the State of Maryland for land of equal value

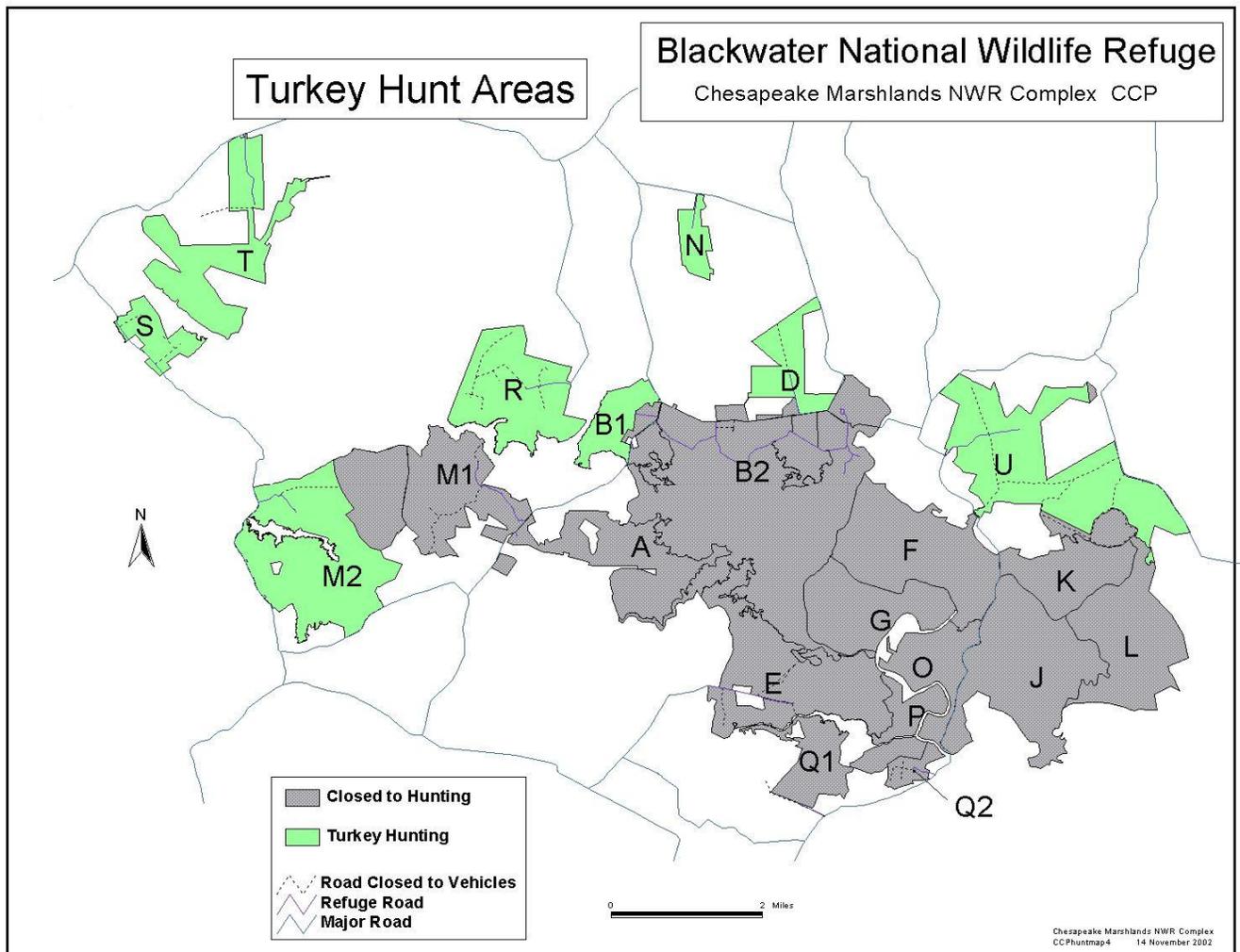
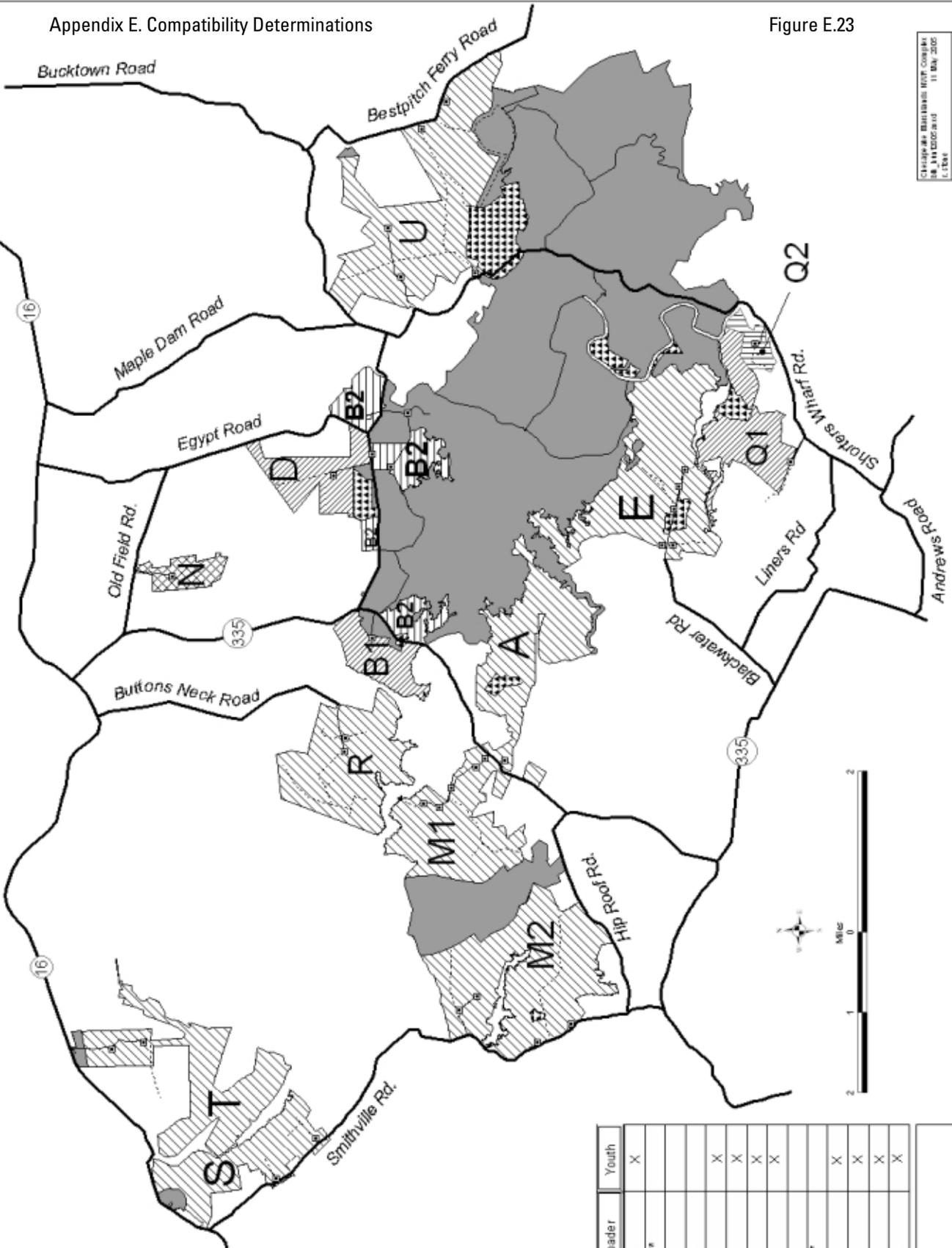


Figure E.22. Turkey Hunting Areas

CHESAPEAKE MARSHLANDS NWR COMPLEX
 M. 1/11/2006 and
 L. 1/2006

BLACKWATER NATIONAL WILDLIFE REFUGE



Deer Hunt Units
 2005-06 Season

- Shotgun
- Shotgun, Muzzleloader
- Shotgun, Muzzleloader, Youth
- Archery, Shotgun, Muzzleloader
- Archery, Shotgun, Muzzleloader, Youth
- Closed to Hunting
- Private Inholdings
- Check Station
- Hunt Parking
- Major Roads
- Refuge Roads
- Closed to Vehicles

Unit	Ares	Archery	Shotgun	Muzzleloader	Youth
A	495	X	X	X	X
B1*	450	X*	X*	X*	
B2**	726	X**	X**	X	
D	510	X	X	X	
E	815	X	X	X	X
M1	1000	X	X	X	X
M2	1825	X	X	X	X
N	215	X	X	X	X
O1	300	X	X	X	X
O2*	125	X*	X*	X*	X
R	1163	X	X	X	X
S	810	X	X	X	X
T	1100	X	X	X	X
U	1888	X	X	X	X

* B1 & O2 - Wheelchair Accessible Only
 ** B2 - Stationary Assignment

COMPATIBILITY DETERMINATION

Use: Hunting - Waterfowl

Station Name: Blackwater National Wildlife Refuge

Establishing and Acquisition Authorities:

The Chesapeake Marshlands National Wildlife Refuge Complex (CMNWRC) is composed of three nationally significant wildlife areas: Blackwater NWR, Martin NWR, and Susquehanna NWR with several separate divisions. Blackwater NWR includes the Nanticoke Division, and Martin NWR includes the Barren Island, Bishops Head/Spring Island, and Watts Island Divisions. Collectively, Martin NWR, Susquehanna NWR, and the respective associated divisions are referred to as the Chesapeake Island Refuges.

The first and largest of these areas to be established was Blackwater NWR. Originally authorized for establishment by the Migratory Bird Conservation Commission on December 3, 1931, and named "Blackwater Migratory Bird Refuge," the refuge's current 28,000 acres are a showplace for the U.S. Fish and Wildlife Service's Refuge System.

On December 31, 1931, the Migratory Bird Conservation Commission authorized the Secretary of Agriculture to purchase 10,000 acres from the Delmarvia Fur Farms, Inc. of Philadelphia, Pennsylvania. On December 9, 1931, the Secretary entered into an agreement with Delmarvia Fur Farms, Inc., effective January 1, 1932, to lease 8,167.99 acres for the refuge. The Secretary subsequently determined that it was in the best interest of the Government to acquire 8,240.99 acres for the refuge from the Delmarvia Fur Farms and two other properties by condemnation. A notice of condemnation was filed August 26, 1932, and these tracts were conveyed to the Government in January 1933.

Blackwater NWR was therefore officially established under the authority of the Migratory Bird Conservation Act on January 23, 1933. Since that time, additional lands have been added to the refuge under the authorities of the Endangered Species Act, Refuge Recreation Act, North American Wetlands Conservation Act, and the Refuge Administration Act.

Table E.3 summarizes Blackwater National Wildlife Refuge's acquisition history and the tracts that are currently being affected by the proposed uses. Unless otherwise noted, all acquisitions are fee title. This compatibility determination will also apply to additional tracts, particularly those in Blackwater's Nanticoke Division, as they are acquired.

Refuge Purpose(s):

For lands acquired under the Migratory Bird Conservation Act (16 U.S.C. § 715 d), the purpose of the acquisition is "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds."

For lands acquired under the Endangered Species Act of 1973 (16 U.S.C. § 1534), the purpose of the acquisition is "...to conserve (A) fish or wildlife which are listed as endangered or threatened species...or (B) plants."

For lands acquired under the Refuge Recreation Act (16 U.S.C. § 460K-1), the purpose of the acquisition is for "...(1) incidental fish and wildlife-oriented recreation; (2) the protection of natural resources; (3) the conservation of endangered species or threatened species..."

For lands acquired under the North American Wetlands Conservation Act (16 U.S.C. § 4401-413), the purpose of the acquisition is "(1) to protect, enhance, restore, and manage an appropriate distribution and diversity of wetland ecosystems and other habitats for migratory birds and other fish and wildlife in

Appendix E. Compatibility Determinations

North America; (2) to maintain current or improved distribution of migratory bird populations; and (3) to sustain an abundance of waterfowl and other migratory birds consistent with the goals of the North American Waterfowl Management Plan and the international obligations contained in the migratory bird treaties and conventions and other agreements with Canada, Mexico, and other countries."

For lands acquired under the Refuge Administration Act (16 U.S.C. § 668ddb), the purpose of the donation is "to protect, enhance, restore, and manage wetland ecosystems and other habitats for migratory birds, endangered and threatened species, and other wildlife."

National Wildlife Refuge System Mission:

"To administer a national network of land and waters for the conservation, management, and where appropriate, the 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 (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57)."

Description of Use:

This evaluation is to determine the compatibility of migratory waterfowl hunting programs with the purposes for which the affected tracts were acquired.

(A) What is the Use? Is the use a priority use?

The use is waterfowl hunting. The National Wildlife Refuge System Improvement Act of 1997 identified hunting as one of the six, priority, wildlife-dependent recreational uses to be facilitated in the Refuge System, and the Act encouraged the Service to provide opportunities for these uses.

Background and Rationale for the Management Activity

In the 1930's, when Blackwater Refuge was first established as a refuge for migratory birds, waterfowl hunting in Dorchester County was a means of providing food for the table as well as an accepted popular form of recreation. Most of the area was rural and the local population hunted on their own land and also allowed others to hunt their property. The Blackwater Refuge was considered a sanctuary for wildlife and protected from poachers. Few visitors came to Blackwater Refuge.

A 1949 amendment to the Duck Stamp Act permitted hunting on 25 percent of the lands purchased for the National Wildlife Refuge System with Duck Stamp funds, but Blackwater Refuge remained closed to hunting (Note: Later amendments authorized up to 40%). After World War II, Americans traveled the nation's back roads and discovered their National Wildlife Refuges. Interest developed in using refuges for recreation other than hunting. Although most wanted to share with their families the sights and sounds of wildlife and the wonders of the living world, many citizens wanted to use their refuges to sail, swim, camp, water ski, ride horses, sun bathe, and rock climb. Guidance in the first Refuge Manual (1943) left the door open to uses for the cause of building public support, but conflicts between wildlife and public uses could be forecast. In the 1957 Refuge Manual, guidance on how to decide which public uses to allow hinted towards a wildlife first priority, but sent mixed signals. However, the Refuge Recreation Act of 1962 and the Refuge Administration Act of 1966 placed into law the concept that refuges would be closed to all recreation uses until a manager could determine that a proposed use was compatible with the refuge's establishing purposes and that sufficient funds were available to administer those uses. Refuge managers were responsible for making these compatibility determinations. Decisions were usually made locally, and in many cases, were based on local pressures and interests.

During the CCP scoping meetings, respondents indicated a desire for increased hunting opportunities, including deer, turkey, resident Canada geese, and migratory waterfowl. Resident Canada geese have become a major problem on and off the Refuge.

The Refuge System Administration Act identified hunting as one of the six wildlife-dependent recreational uses to be facilitated in the Refuge System, and the Act encouraged the Service to provide opportunities for these uses.

(B) Where would the use be conducted?

Resident Canada goose hunting blind sites would be located in areas B1, B2, G, F, J, K, L, and O on 3,731 acres of marsh, 70 acres of fields, and 4,500 acres of open water for a total of approximately 8,300 acres. New areas would be evaluated and considered as they are acquired that would not conflict with public use areas; would not adversely affect endangered and threatened species (bald eagle); would not have a negative impact on other wildlife or habitat resources; or adversely affect public safety.

Migratory waterfowl hunting would be conducted along both sides of the upper portion of the Blackwater River from the White Marsh area to Route 16. On the Nanticoke River, migratory waterfowl hunting would be conducted in the area along the east side of the river from Route 50 south to Rewastico Creek.

(C) When would the use be conducted?

Blackwater Refuge would be open to spring hunting (March 15 - April 15) for resident Canada geese according to an Annual Hunt Plan based on the *Integrated Wildlife Damage Management Plan for Control of Resident Canada Geese*, if consistent with the Service Environmental Impact Statement (EIS) on managing these injurious resident waterfowl. The Migratory Bird Treaty Act prohibits hunting of migratory waterfowl after March 15 of each year. Therefore, the Service must prepare an EIS in order to authorize certain conservation measures, including spring hunting of resident Canada geese. Scout days would be authorized the day before each hunt day.

Migratory waterfowl hunting, in accordance with state seasons, species, bag limits, and hunting methods, would be permitted on 40% of all new acquisitions. This proposed hunting opportunity would continue to maintain approximately 23,000 acres as an inviolate sanctuary for wintering and migrating waterfowl.

(D) How would the use be conducted?

Resident Canada goose hunting would require a permit determined by a lottery system issued for 30 blind sites (two people per blind site) constructed by the hunter within 100 yards of a numbered post. Fifteen blinds would be hunted daily. Thirty permits per day (27 days) would be issued providing 810 recreational resident goose hunting opportunities.

Other migratory waterfowl hunting, in accordance with state seasons, species, bag limits, and hunting methods, would be permitted for up to 60 days on up to 40% of all new acquisitions. In addition to all required state and federal permits, all refuge hunters would be required to obtain a non-quota refuge permit.

Migratory waterfowl hunting areas on the upper Blackwater River would be accessible only by boats launched from the Rt.335 launching area. Only canoes, kayaks, and small john boats without trailers are suitable for launching at that facility.

Access to the Nanticoke River waterfowl hunting areas would be by boats launched from the public boat ramp at Vienna.

(E) Why is the use being proposed?

Resident Canada goose hunting is being proposed in order to help reverse the adverse effects this population is having on the primary purpose for which the refuge was established. Complete and detailed analysis of the impacts of resident Canada geese can be found in the *Environmental Assessment for the Management of Conflicts Associated with Non-migratory (resident) Canada Geese* (2000).

Appendix E. Compatibility Determinations

The National Wildlife Refuge System Improvement Act of 1997 identified hunting as one of the six, priority, wildlife-dependent recreational uses to be facilitated in the Refuge System, and the act encouraged the Service to provide opportunities for these uses.

Opening additional areas as they are acquired would increase public hunting opportunities at Blackwater Refuge, and eventually the Nanticoke Division. These activities and programs would produce a positive impact on refuge management, visitor attitudes, and local economy. The increase in hunters, especially from other areas like Pennsylvania and Western Maryland would contribute substantially to the economy of the area with their local purchases of gas, food, lodging, hunting licenses, equipment, and supplies. They would spread the word to their friends, encouraging them to come to the area to take advantage of the high quality recreation and thus positively affect the economy of the area.

These proposed hunting opportunities would continue to maintain approximately 23,000 acres as an inviolate sanctuary for wintering and migrating waterfowl while providing quality, compatible, consumptive, wildlife-oriented recreation.

Availability of Resources:

The Comprehensive Conservation Plan for the Chesapeake Marshlands NWR Complex recommends two full-time law enforcement officers (one at Blackwater and one for the Nanticoke Division) to conduct this and other hunt programs. One full-time officer was hired in FY2003. Combined with the existing two collateral duty refuge officers, there will be sufficient personnel to ensure compliance with regulation, protection of the resources, and public safety when all these positions are filled.

All hunting programs and supporting activities would be totally administered and funded by the Friends of Blackwater, who would also hire and pay for a full-time hunt coordinator. The Hunt Coordinator would administer all aspects of these hunting programs; respond to all questions and provide information to the public; process hunt applications and permits; conduct mailings; provide visitor assistance for the hunt programs; improve customer service; make a positive impression to customers and the public; provide maintenance of signs and parking areas; and otherwise assist hunters in following regulations and enjoying a good hunting experience, all at no cost to the government. Friends of Blackwater will continue to fund the annual publication of regulations, permit applications, maps, and leaflets. Any remaining revenue generated from the administrative process and permit application fees would be used to replace signs, post closed areas, and maintain parking areas and roads.

There should be no significant administration and management costs for the government associated with this specific proposed use.

There would be no special equipment, facilities or improvements necessary to support the amount of hunting anticipated.

Since we would not be putting in any facilities or improvements on refuge property for this specific use, there would be no significant maintenance costs associated with this use.

Monitoring costs associated with maintaining statistical information on hunting activities, kill, age/sex ratios, etc. will be assumed by Friends of Blackwater who will staff the check stations.

Cost Breakdown:

The following is the list of costs to the Refuge required to administer and manage the hunting programs.

Refuge Personnel Costs	
Res. Canada goose (27 days@3 hrs/day@\$24/hr.)...	\$1,944
Mig. Waterfowl (60 days@3 hrs/day@\$24/hr.).....	\$4,320
	Total.....\$ 6,264

All other costs will be paid for by the Friends of Blackwater.

Anticipated Impacts on Refuge Purpose(s):

The environmental, socioeconomic, and cultural/historical impacts of these programs are thoroughly described in the Environmental Assessment prepared for the Chesapeake Marshlands NWR Complex’s Comprehensive Conservation Plan, of which this document is an attachment.

Public Review and Comment:

This compatibility determination will be submitted for public review and comment as an appendix to the Environmental Assessment for the Draft Comprehensive Conservation Plan for the Chesapeake Marshlands NWR Complex in full compliance with NEPA.

Determination: (Check One)

This use is compatible X

This use is not compatible ____

Stipulations Necessary to Ensure Compatibility:

Hunting programs have been conducted for many years and the special regulations, restrictions, and general operations have been structured to ensure compatibility. If the monitoring described under Availability of Resources indicates that this use materially interferes with or detracts from fulfillment of the National Wildlife Refuge System mission or the purposes of the refuge, we would curtail or eliminate the use.

Special Regulations governing our hunting programs will be codified in the Code of Federal Regulations, Title 50 and will be subject to Maryland State regulations and the following special refuge conditions:

1. We require refuge permits for all hunters regardless of age. We require that permits must be in the hunter’s possession along with a valid Maryland State hunting license, any required stamps, and a photo identification. Permits are non-transferable.
2. We require that hunt permits be obtained only through the mail by mailing an application and administration fee to the refuge after applications are made available. To obtain an application and regulations leaflet, including designated areas and map, dates of hunts, bag limits, and permit fees, we require hunters to contact the refuge hunt coordinator or refuge Visitor Center between the hours of 9:00 am and 4:00 pm daily.
3. We allow only participants possessing authorized permits to enter the hunt areas.
4. We require check-in for all hunts beginning at 5:00 am.
5. We do not require check-in or check out at the refuge for the hunts.

Appendix E. Compatibility Determinations

6. We require only weapons that meet Maryland State regulations.
7. We allow access to hunt areas only on designated roads and parking areas indicated on hunt maps in the regulations leaflet (obtained with application by mail or at the Visitor Center). All other access is limited to walk-in or bicycles.
8. We allow scouting only on designated days listed in the regulations for permitted hunters.
9. We do not require check-in or check-out for scouting.
10. We do not allow firearms or other weapons on the refuge when scouting.
11. We require permitted youth hunters to be accompanied by permitted adult age 21 or older while scouting.
12. We do not allow pets in hunt areas.
13. We do not allow hunting from or shooting across a roadway where vehicle traffic is allowed.
14. We do not allow commercialized guiding.

Justification:

Migratory waterfowl hunting will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established.

The Migratory Bird Conservation Act of 1929, which established inviolate sanctuaries, was amended by the National Wildlife Refuge System Administration Act of 1966. This amendment authorized up to 40 percent of an area acquired for a migratory bird sanctuary to be opened to migratory bird hunting. Migratory waterfowl hunting, in accordance with state seasons, species, bag limits, and hunting methods, would be permitted on 40% of all new acquisitions. This proposed hunting opportunity would continue to maintain approximately 23,000 acres as an inviolate sanctuary for wintering and migrating waterfowl.

The National Wildlife Refuge System Improvement Act of 1997 identified hunting as one of the six, priority, wildlife-dependent recreational uses to be facilitated in the Refuge System, and the act encourages the Service to provide opportunities for these uses.

Signature - Refuge Manager: /s/ Glenn A. Carowan 1/30/2006
(Signature and Date)

Concurrence - Regional Chief: /s/ Anthony D. Legér 6/26/2016
(Signature and Date)

Mandatory 15 year Reevaluation Date: June 26, 2021

Attachment

Table E.3. Land Acquisition History

References:

- Belanger, L. and J. Bedard. 1989. Responses of staging greater snow geese to human disturbance. *J. Wildl. Manage.* 53(3):713-719.
- Cullen, R. 1985. Rationing recreational Use of public land. *J. Environ. Manage.* 21: 213 - 224.
- Keller, V. E. 1991. The effects of disturbance from roads on the distribution of feeding sites of geese (*Anser brachyrhynchus*, *A. anser*), wintering in north-east Scotland. *Ardea* 79:229-232.
- Klein, M. L. 1989. Effects of high levels of human visitation on foraging waterbirds at J. N. "Ding" Darling NWR, Sanibel, FL. Final report to USFWS. 103 pp.
- Laskowski, H., T. Leger, J. Gallegos, and J. James. 1993. Behavior response of greater yellowlegs, snowy egrets, and mallards to human disturbance at Back Bay National Wildlife Refuge, Virginia. USFWS, Final report RMS 51510-01-92. Cambridge, MD. 31 pp.
- McNeil, R., P. Drapeau, and J. D. Goss-Custard. 1992. The occurrence and adaptive significance of nocturnal habits in waterfowl. *Biol. Rev.* 67:381-419.
- Morton, J. M. 1987. Habitat use and energetics of American black ducks wintering atChincoteague, Virginia. M.S. Thesis. VPI&SU, Blacksburg, VA. 147 pp.
- Paulus, S. L. 1984. Activity budgets of nonbreeding gadwalls in Louisiana. *J. Wildl.Manage.* 48(2):371-380.
- Purdy, K. G., G. R. Goff, D. J. Decker, G. A. Pomerantz, and N. A. Connelly. 1987. A guide to managing human activity on National Wildlife Refuges. Human Dimensions Research Unit, Cornell Univ., Ithaca, NY. 34 pp.
- U.S. Department of the Interior, Fish and Wildlife Service. 2000. Hunt Management Plan. Blackwater National Wildlife Refuge, Cambridge, MD. 8 pp.

Table E.3. Land acquisition history (Blackwater NWR)

<i>Date</i>	<i>Tract No.</i>	<i>Acres</i>	<i>Tract Name</i>	<i>Authority¹</i>
1/13/33	18	1.00	Graveyard Tract	MBCA
1/13/33	19	72.00	Blackwater R.	MBCA
1/23/33	14,a,-I,-II,-III,b-g,i	8,167.99	Delmarvia Fur Farms	MBCA
12/01/42	16,a	355.18	Kuehnle	MBCA
8/02/45	24,a-c	2,203.21	Seward	MBCA
4/21/51	29	416.94	Smith	MBCA
6/22/72	37	408.40	Luthy	MBCA
6/23/72	38	1.15	Brooks	MBCA
6/29/72	31	1.28	Turner	MBCA
6/27/75	45,R	175.10	Spicer	ESA
5/15/78	45b-d	1,610.47	Jarrett	ESA
9/28/78	45a-e	852.84	Jarrett	ESA
10/09/84	58,-I	489.50	Handley	ESA
4/19/85	53,-I	863.00	Herman Robbins Est.	MBCA
4/20/64	41,R	0.00	State of MD Easement	MBCA
11/05/76	2	7.14	State of MD Exchange ²	80 STAT. 926
3/02/77	14d	(9.89)	State of MD Exchange ³	16 U.S.C. 668dd
8/11/87	54	71.40	Schmidt	RRA
10/21/87	55,-I	237.20	Wm. Robbins	RRA
11/02/88	99,R	445.00	Paul Handley Est.	MBCA
11/09/88	52	297.20	Rufus Robbins	MBCA
4/09/91	100	454.20	Pascal	MBCA
10/21/91	51,-I	562.70	Gregg	MBCA
12/24/91	100a-i	176.75	Barren Island	MBCA
12/30/92	101	797.78	Williams	MBCA
12/28/92	100m	459.47	Howard	RAA
12/30/92	100j	380.00	Bishops Head	RAA
12/30/92	100k	52.00	Spring Island	RAA
2/28/94	100n	856.00	Madison (Ewing)	NAWCA

<i>Date</i>	<i>Tract No.</i>	<i>Acres</i>	<i>Tract Name</i>	<i>Authority¹</i>
8/10/94	59	201.00	Mills	MBCA
11/2/94	103	299.95	Burton	MBCA
2/7/96	100t	173.85	Elliott	MBCA
12/28/95	104a	324.34	Valiant	MBCA
5/23/96	100r	55.23	Rasche	MBCA
8/6/96	100u	1,163.06	Linthicum	MBCA
7/29/96	100p,q	431.26	Lakes	MBCA
12/16/97	100Ae	149.73	Williamson	MBCA
9/24/99	108	74.88	Spicer	MBCA
9/24/99	107r	748.26	Spicer	MBCA
7/26/99	100Af	26.50	Long	MBCA
3/29/99	105,a	174.48	LeCompte	MBCA
3/28/00	100Ag	64.73	Riggins	MBCA
6/29/72	31	1.28	Turner	MBCA
3/15/00	54a	141.60	Schmidt	MBCA
2/6/02	100Ah	109.81	Newcomb	MBCA
2/20/02	100Ai	89.25	Newcomb	MBCA
6/26/93	102	0.11	Wooten	MBCA
7/8/00	106	149.06	Stanley	MBCA
6/28/00	111	139.10	Elliott	MBCA
1/4/00	113	215.80	Lewis	MBCA

¹MBCA: Migratory Bird Conservation Act; ESA: Endangered Species Act; RRA: Refuge Recreation Act; NAWCA: North American Wetlands Conservation Act; RAA: Refuge Administration Act

²Received in an exchange with the State of Maryland for land of equal value

³Given in an exchange with the State of Maryland for land of equal value

COMPATIBILITY DETERMINATION

Use: Wildlife Observation, Photography, Interpretation, and Environmental Education

Station Name: Blackwater National Wildlife Refuge

Establishing and Acquisition Authorities:

The Chesapeake Marshlands National Wildlife Refuge Complex (CMNWRC) is composed of three nationally significant wildlife areas: Blackwater NWR, Martin NWR, and Susquehanna NWR with several separate divisions. Blackwater NWR includes the Nanticoke Division, and Martin NWR includes the Barren Island, Bishops Head/Spring Island, and Watts Island Divisions. Collectively, Martin NWR, Susquehanna NWR, and the respective associated divisions are referred to as the Chesapeake Island Refuges.

The first and largest of these areas to be established was Blackwater NWR. Originally authorized for establishment by the Migratory Bird Conservation Commission on December 3, 1931, and named "Blackwater Migratory Bird Refuge," the refuge's current 28,000 acres are a showplace for the U.S. Fish and Wildlife Service's Refuge System.

On December 31, 1931, the Migratory Bird Conservation Commission authorized the Secretary of Agriculture to purchase 10,000 acres from the Delmarvia Fur Farms, Inc. of Philadelphia, Pennsylvania. On December 9, 1931, the Secretary entered into an agreement with Delmarvia Fur Farms, Inc., effective January 1, 1932, to lease 8,167.99 acres for the refuge. The Secretary subsequently determined that it was in the best interest of the Government to acquire 8,240.99 acres for the refuge from the Delmarvia Fur Farms and two other properties by condemnation. A notice of condemnation was filed August 26, 1932, and these tracts were conveyed to the Government in January 1933.

Blackwater NWR was therefore officially established under the authority of the Migratory Bird Conservation Act on January 23, 1933. Since that time, additional lands have been added to the refuge under the authorities of the Endangered Species Act, Refuge Recreation Act, North American Wetlands Conservation Act, and the Refuge Administration Act.

Table I summarizes Blackwater National Wildlife Refuge's acquisition history and the tracts that are currently being affected by the proposed uses. Unless otherwise noted, all acquisitions are fee title. This compatibility determination will also apply to additional tracts, particularly those in Blackwater's Nanticoke Division, as they are acquired.

Refuge Purpose(s):

For lands acquired under the Migratory Bird Conservation Act (16 U.S.C. § 715 d), the purpose of the acquisition is "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds."

For lands acquired under the Endangered Species Act of 1973 (16 U.S.C. § 1534), the purpose of the acquisition is "...to conserve (A) fish or wildlife which are listed as endangered or threatened species...or (B) plants."

For lands acquired under the Refuge Recreation Act (16 U.S.C. § 460K-1), the purpose of the acquisition is for "...(1) incidental fish and wildlife-oriented recreation; (2) the protection of natural resources; (3) the conservation of endangered species or threatened species..."

For lands acquired under the North American Wetlands Conservation Act (16 U.S.C. § 4401-413), the purpose of the acquisition is "(1) to protect, enhance, restore, and manage an appropriate

Appendix E. Compatibility Determinations

distribution and diversity of wetland ecosystems and other habitats for migratory birds and other fish and wildlife in North America; (2) to maintain current or improved distribution of migratory bird populations; and (3) to sustain an abundance of waterfowl and other migratory birds consistent with the goals of the North American Waterfowl Management Plan and the international obligations contained in the migratory bird treaties and conventions and other agreements with Canada, Mexico, and other countries."

For lands acquired under the Refuge Administration Act (16 U.S.C. § 668ddb), the purpose of the donation is "to protect, enhance, restore, and manage wetland ecosystems and other habitats for migratory birds, endangered and threatened species, and other wildlife."

National Wildlife Refuge System Mission:

"To administer a national network of land and waters for the conservation, management, and where appropriate, the 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 (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57)."

Description of Use:

This evaluation is to determine the compatibility of wildlife observation, photography, interpretation, and environmental education with the purposes for which the affected tracts were acquired.

(A) What is the Use? Is the use a priority use?

The use is wildlife observation (biking, walking, hiking), photography, interpretation, and environmental education. The National Wildlife Refuge System Improvement Act of 1997 identified wildlife observation, photography, interpretation, and environmental education as four of the six, priority, wildlife-dependent recreational uses to be facilitated in the Refuge System, and the Act encouraged the Service to provide opportunities for these uses.

Background and Rationale for the Management Activity

In the 1930's when Blackwater NWR was first established as a refuge for migratory birds, the refuge was considered a sanctuary for wildlife. Few visitors came to the refuge. By the 1960's, people began to take an interest in Blackwater for recreation. Schools began to bring students to see wildlife, visitors interrupted working employees to ask questions, and people wanted a place to picnic in a natural setting. A recreational area (consisting of a shelter, rest room, picnic area with tables, charcoal cookers, walkways, and parking area) was constructed in 1963. The area was highly sought after and appreciated by local residents as it was the only facility maintained in the entire county. It is still only one of the few, if any, public use areas available in Dorchester County. Photographers and bird watchers continued to increase with the pressure of their use being felt by the refuge staff. A Visitor Center was constructed in 1996. Locally, the new Center was called the Community Center where people of the surrounding area could go to ask questions and learn about their renewable resource - wildlife. With the continued demand for wildlife oriented recreation along with the increase in visitation, additional facilities were constructed: an observation tower in 1968, a 2 ½ mile Wildlife Drive in 1969, and 2 walking trails in 1971. A self service entrance Fee Program, begun in 1987, caused an initial drop in visitation, but was gradually accepted by the local population continuing the increase in visitation. Four kiosks with interpretive panels were completed in 1999. Public demand for information prompted the refuge to produce a general leaflet; bird, mammal, reptile and amphibians check list; Canada goose leaflet, and Wildlife Drive and Marsh Edge Trail guides. Blackwater became a showcase for wildlife. It was a place for adults and children to learn first hand nature's lessons of adaptation and diversity to see birds and wildlife in their natural environment, and to pass on to a new generation a love for America's wildlife. Visitation peaked in 1999 at approximately 500,000, with 100,000 using refuge facilities and programs.

In the 1960's, the entire staff participated in the overall refuge interpretive program. Although well-trained and equipped to manage habitat and wildlife, the staff faced new challenges with the task of managing an

eager and active public. The idea took hold that a better informed public could be a positive force in shaping conservation awareness, and thus policy and practice. A Public Use Specialist was hired in 1968 increasing the number of environmental and interpretive programs. Visitation continued to increase and required a permanent full time Outdoor Recreation Planner (ORP), a permanent full time Recreation Assistant, and as many as 2 temporary and 2 seasonal Recreation Assistants. Since 1990, when both the ORP and Recreation Assistant took other positions, Blackwater has had only one ORP and numerous temporary Recreation Assistants, volunteer interns, or Student Conservation Association Volunteers (usually only one at a time for 3 month periods requiring a great deal of time for recruiting and training). There were also periods as long as 6 months when the ORP tried to cope with the increasing demand of a Public Use Program with only the assistance of volunteers. It is no longer possible to keep up with the expectations and requests of the public without additional staff.

Although there were a few citizens starting to volunteer in 1981, volunteer workshops weren't started until 1985. The program reached 104 volunteers in 1994 and has remained consistent with approximately 100 volunteers providing over 11,500 hours/year of their time. The Visitor Center is staffed mainly by volunteers and sometimes are the only ones on the refuge because of the staff shortage. The Friends of Blackwater (FOB), a cooperative association that established a book store in the Visitor Center in 1988, has grown to an organization of over 700 members, grossed over \$61,000 in their bookstore in 1999, procured several grants to assist in refuge projects, and has become nationally known for their mentoring and assistance in developing other "friends" groups. FOB has supported the Public Use Program by helping to offset the shortage in staffing and government funding, and has assisted the refuge in trying to meet the public demand for environmental and interpretive programs.

During the scoping meetings, the public expressed their desire for more facilities and public use of the refuge. In particular, they want increased opportunity for wildlife-oriented educational and interpretive programs, more opportunities for local school use and education, better auto tour routes, more hiking trails, canoe trails and maps, boat ramps, bike trails, observation tower, and a remodeled/new Visitor Center. Although the Visitor Center exhibits were upgraded in 1982, they are in need of new, updated, and innovative displays to better inform the public of Service and Blackwater Refuge policies, wildlife needs, and awareness of wildlife conservation.

Proposed strategies include increasing environmental education programs (including the publication of an environmental education manual); increasing the number and types of interpretive and outreach programs, photographing facilities, and wildlife observation facilities; constructing an environmental education facility; updating exhibits and remodeling and enlarging the existing Visitor Center; and hiring more staff to plan, manage, conduct, and operate the public use program.

(B) Where would the use be conducted?

Wildlife observation, photography, interpretation, and environmental education will all occur on the five-mile Wildlife Drive, the .3 mile Marsh Edge Trail and the .5 mile Woods Trail on Tract 14a; other forested and wetland areas of Tract 14, Tract 52, Tract 37, Tract 45e, Tract 45c, Tract 100ai, Tract 100ah; upland areas of Tracts 100 and 101 as designated by the refuge on request; and proposed acquisition of the Robbins property (approximately 19 acres) located adjacent to Tract 14.

The Wildlife Drive begins at the old refuge office (across the road from the fire building) on Key Wallace Drive and extends south across the Pool 1 dike to the Marsh Edge Trail and the observation site, and/or turns west after crossing the Pool 1 dike, and continues along the southernmost dikes of Pools 1, 3, and 5 until it exits onto State Route 335, an area of approximately 10.08 acres. The area was first established as the Wildlife Drive over 45 years ago because the dike system that created the freshwater impoundments represented a "ready-made" infrastructure, the only real interior infrastructure that could be considered for such use. Even today, there is no other location more suited for a wildlife drive in terms of infrastructure, and certainly there is no other location that gives the visitor a representation of all refuge habitats within such a short distance, yet restricts use to only 10.08 acres of the refuge's 23,444 acres.

Appendix E. Compatibility Determinations

The Marsh Edge Trail begins at the environmental education pavilion parking area, and extends through approximately 10 acres of loblolly pine woods to the marsh where it connects to a 40 foot observation deck that is constructed along the edge of the Little Blackwater River. The Marsh Edge Trail is paved to accommodate handicapped access. Uses will be restricted to the 6' wide paved area and to the boardwalk, a total area of approximately .2 acres.

The Woods Trail begins at a parking lot along the Wildlife Drive, and extends in a .5 mile loop through the center of 50 acres of loblolly pine woods. Uses will be restricted to the chipped trail, an area of approximately .3 acres.

The trails were first established as the Marsh Edge Trail and Woods Trail over 25 years ago. They were originally constructed with minimal disturbance of the habitats within the already existing Wildlife Drive area. With the exception of improvements made for wheelchair access (paving) and interpretation/education (signing and numbered stops), the trails have not changed. The trails provide a sample of the refuge's diverse habitats for interpretation and education, yet directly impact only .5 acres of the refuge's 23,444 acres.

The proposed new Key Wallace Trail, habitat demonstration area, and environmental education facility will be located on Tract 37 across from the headquarters building. The 2.7 mile trail will begin at the intersection of Key Wallace Drive and Egypt Road, cross through a previously harvested immature forest area, follow an existing road that goes by two ponds, and continue through a mature forest area. Boardwalks, photo blind, observation platform, outdoor classroom pavilion, and a 20' x 20' storage facility will be located in open fields near the ponds. The outdoor classroom facility will consist of a covered 25' x 40' pole pavilion with cement floor and six weatherproof tables and benches to seat thirty-six students comfortably. The trail and associated facilities will provide various stages of a forest for wildlife observation, photography, interpretation, and education yet directly impact only 5 acres.

The proposed new 1.7 mile White Marsh Trail will be located on Tracts 100ai and 100ah. The trail will be accessed from Hip Roof Road and will follow existing roads. The trail will circle through a wetland forest area impacting 2 acres. Some of the area will be reforested to restore tornado damage, while a small area will be left for visitors to see the results of a tornado and natural regeneration following the disaster.

The two new proposed trails take advantage of cleared firebreaks and roadways for part of the trail experience. The portions of the trails that pass through undisturbed forest and field will be "blazed" trails. That is, there will be no parts of the trails that are not on the old firebreaks that will be man made. There will be no "bush hogging" or "cutting in" the trails. A visitor will experience the forests and fields as they are in nature, without man made interference. Each trail head will begin at an existing parking area of crushed stone and will include an information kiosk, numbered trail signs, and map/brochure guide. A third new proposed Gum Swamp Trail, kiosk, observation/photo blind, and parking area will take advantage of existing roads and parking area with minor physical impact on the surrounding forested habitat. This trail will extend from Route 335 to Smithfield Road through Tracts 45e, 45c, and 100ah. The trail would be approximately 5 miles long and connect with the proposed White Marsh Trail.

A new 200' x 8' accessible boardwalk and 20' x 20' elevated observation platform will be constructed at the old observation tower site along the Wildlife Drive at the junction of the Little Blackwater River and Blackwater River. The structure would replace the observation tower removed in 1990.

Two new wheel chair accessible photo blinds will be constructed along the Wildlife Drive on Tract 14a. The first 10' x 16' blind with an 80' x 6' boardwalk will overlook a small pond adjacent to a wooded area. The second blind will be constructed at the beginning of the pool 5 section of the Wildlife Drive which will eventually be converted to non-motorized use. The entrance to the Wildlife Drive will be redesigned to allow visitors to enter the Wildlife Drive from the Visitor Center. The original first section of the drive (pool 1 and pool 3) will be for motorized vehicles exiting at the original entrance, and the second section (pool 5)

will be a safe observation area for non-motorized use. The second loop will connect with a bike trail to be constructed by the Maryland Highway Department and Dorchester County along Route 335 to Hip Roof Road, providing a four to five mile bike trail.

An environmental education outdoor classroom and parking area will be constructed in the site of a previous residence which burned to the ground and would minimize physical and biological impacts to the environment. The Service will purchase the Robbins property located east of Key Wallace Drive near the Visitor Center. The site will utilities available from the previous burned residence requiring no additional excavation or disturbance reducing the cost of construction. The outdoor classroom will provide storage, wet laboratory, and working tables and chairs for up to 75 students.

The new proposed administrative facility/visitor center/environmental education site at the Nanticoke Division will be located in prior disturbed habitat. There are several opportunities for siting the facility on properties that have been cleared and previously disturbed by construction. The proposed trail and observation tower for the Nanticoke Division will be located in an area that will least disturb the wildlife and habitat by taking advantage of existing roads if possible.

(C) When would the use be conducted?

Wildlife observation and photography will be conducted on the Wildlife Drive and trails daily, year-round, from dawn to dusk (i.e., daylight hours only), unless there is a conflict with a management activity or extenuating circumstance that would necessitate deviations from these procedures. Closures for ice storms or other events affecting human safety or activities needed to protect a newly constructed eagle nest are examples that would require these uses to be temporarily suspended. Use will be further restricted by weather and summer insect infestations, self limiting factors that virtually eliminate all uses during June through August in some areas.

(D) How would the use be conducted?

Utilization of the Wildlife Drive will be authorized for automobiles and other motorized vehicles, bicycles, and pedestrians who simply want to walk/hike. All uses will be expressly restricted to the paved roadway, boardwalks, observation/photo blinds, and paved or chipped trails. Admission to the Wildlife Drive, Marsh Edge Trail, Woods Trail, and photo blinds will be regulated by an electric gate at a "self-serve" entrance fee station that will be administered according to provisions in 50 CFR, Subchapter C, Part 25. Educational groups may request a fee waiver for utilization of the Wildlife Drive and associated hiking trails and facilities.

The uses described above will be regulated by signing and distribution of publications and regulations at the entrance station (posting Prohibited/Permitted signing, posting time of day use is authorized, 15 m.p.h. maximum speed limit signing, caution signs for recognition of endangered species and waterfowl which may cross the roadway, maps and interpreted information, teacher workshops, and distribution of refuge leaflets and Wildlife Drive and Marsh Edge Trail Guides with numbered, interpreted stops corresponding to signing). A guide/map with numbered, interpreted stops corresponding to signing is planned for other trails. Law enforcement patrols and compliance checks by refuge officers will be used to enforce the provisions of 50 CFR, Subchapter C, Parts 25, 26, and 27, as applicable. As previously mentioned, Staff and volunteers at the Visitor Center and the refuge office will also give instructions to visitors on how these uses are to be conducted.

Utilization of outdoor classrooms, forested and wetland areas on the trails, observation site, and limited specific wetland, wet forest, upland forest and grassland sites in other areas of the refuge will be authorized for educational outdoor classroom activities on an individual basis. These uses will be regulated by refuge personnel personally instructing qualified teachers on how and where the activity will be conducted. Approximately 99% of the activities will be conducted in areas where refuge personnel conduct similar educational and interpretive activities designated in the Public Use and Management Plans and are incorporated in teacher workshops.

(E) Why is the use being proposed?

These uses will be conducted to provide compatible educational and recreational opportunities for visitors to enjoy the resource and to gain understanding and appreciation for fish and wildlife, wildlands ecology and the relationships of plant and animal populations within the ecosystem, and wildlife management. They will enhance the public's understanding of natural resource management programs and ecological concepts to enable the public to better understand the problems facing our wildlife/wildlands resources, to realize what effect the public has on wildlife resources, to learn about the Service's role in conservation, to better understand the biological facts upon which Service management programs are based, and to foster an appreciation as to why wildlife and wildlands are important to them. The authorization of these uses will produce a more informed public, and advocates for Service programs. Likewise, these uses will provide opportunities for visitors to observe and learn about wildlife and wildlands at their own pace in an unstructured environment and to observe wildlife habitats firsthand. Professional and amateur photographers will also be provided opportunities to photograph wildlife in their natural habitats. Photographic opportunities obviously will result in increased publicity and advocacy for Service programs. These uses will also provide wholesome, safe, outdoor recreation in a scenic setting, with the realization that those who come strictly for recreational enjoyment will be enticed to participate in the more educational facets of the public use program, and can then become advocates for the refuge and the Service.

Availability of Resources:

Requested additional staff will develop and conduct more environmental education programs for different age groups, types of groups (including scouts, 4-H, college, adults, etc.) and for larger numbers of groups; develop an Envirothon for middle and elementary schools; develop communication workshops and meetings with other environmental education organizations and institutions; hold teacher workshops; recruit and train more volunteers; prepare and present more interpretive programs; develop a new updated video; revise leaflets and develop new ones; update kiosk information; develop needed signs; catalog and store slides, photos, and historical items; develop habitat demonstration areas and trails; plan and conduct photography programs; organize and conduct more events; regularly schedule programs for the public; work with Dorchester County Tourism, Harriet Tubman Organization, National Park Service, Gateways Program and other organizations to plan events and activities; display off-site exhibits at more local events; develop ecotourism with the Hyatt and Dorchester County Tourism; participate in the development of watershed-wide cooperative outreach groups; develop better relationships with media providing monthly reports; and be able to respond immediately to public inquiries.

Staff at the Nanticoke Division will be required to initiate, plan, develop, and conduct an interpretive and environmental education program, staff a visitor center, and to develop visitor center exhibits, leaflets, signs, video, website, and special events. The staff will develop teacher workshops, a volunteer program, off-site exhibits and ecotourism programs. They will introduce the Nanticoke Division to the public, the media, and participate in local events and activities. They will plan and develop trails and other observation facilities.

Cost Breakdown:

The following is the list of costs to the refuge required to administer and manage wildlife observation, photography, interpretation, and environmental education programs.

Yearly Service Staffing Costs - Blackwater NWR

Outdoor Recreation Planner GS-0023-12/13.....	\$	87,285
Outdoor Recreation Planner GS-0023-9/11.....	\$	61,253
Park Ranger GS-0025-5/7.....	\$	41,379
Park Ranger (LE) GS-0025-5/7.....	\$	41,379
Total.....	\$	231,296

Compatibility Determination – Wildlife Observation, Photography, Interpretation, and Environmental Education

Facility and Equipment Costs - Blackwater NWR

Redesign Wildlife Drive, Signs & Kiosks.....	\$ 180,000
3 photo blinds, observation platform & 15 miles hiking trails.....	\$ 106,000
EE Manual.....	\$ 85,000
Exhibits, outreach & materials for folk museum.....	\$ 124,000
Construct observation platform & 150' environmental ed boardwalk.....	\$ 252,000
Remodel Visitor Center.....	\$ 1,000,000
Construct environmental outdoor classroom	\$ 250,000
Install Traveler's Station.....	\$ 38,000
 Total.....	 ... \$ 2,035,000

Non-Service Costs Provided by Partnerships, Grants, and Donations - Blackwater

Traveler's Station - Dorchester County.....	\$ 3,000
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Yearly Service Staffing Costs - Nanticoke Division

Outdoor Recreation Planner GS-0023-9/11.....	\$ 61,253
SCEP GS-0499-5/7	\$ 20,689
Park Ranger (LE) GS-0025-5/7.....	\$ 41,000
Maintenance Worker WG-4749-08.....	\$ 50,000
 Total.....	 \$ 173,942

Facility and Equipment Costs -Nanticoke

Needs and location assessment for building construction, trails, etc.....	\$ 95,000
Construct Visitor Center/Administration/ EE Building.....	\$ 1,000,000
Equipment & materials to implement Environmental Education Program.....	\$ 26,000
Interpretive & educational exhibits, signs, video, leaflets, website & kiosk.....	\$ 430,000
Install traveler's station, off-site exhibits, and 2 public event supplies.....	\$ 35,000
Wildlife observation trail and tower.....	\$ 113,000
 Total.....	 \$1,699,000

Anticipated Impacts on Refuge Purpose(s):

The following is a summary of the environmental, socioeconomic, and cultural/historical impacts of these programs as more thoroughly described in the Environmental Assessment prepared for the Chesapeake Marshlands NWR Complex's Comprehensive Conservation Plan of which this document is an attachment.

Physical Impacts: Uses of the Wildlife Drive will directly impact approximately 10.08 acres of refuge habitat, i.e. the tops of dikes and/or access roadways to these dike systems that were constructed primarily for migratory bird management purposes and administration (creation and management of freshwater impoundments and croplands, and access to the residences and maintenance area). These uses therefore directly impact less than .05% of the total refuge acreage that supports this particular purpose. It should be noted that even if the subject uses were eliminated, refuge management and administrative uses of these acres would not change, i.e., the roadway would remain paved and the dikes would continue to be maintained just as they currently are to support migratory bird management purposes. There is no other direct impact to habitats since visitors are restricted to the pavement.

Uses of the existing trails will directly impact approximately .5 acre of refuge habitat that is used primarily by migratory songbirds, and to a lesser degree, a few shorebirds and marsh and water birds near the boardwalk at the Marsh Edge Trail. Being primarily forested areas, trail habitats do not support large numbers of other migratory birds such as waterfowl. These uses therefore directly impact less than .003%

of the total refuge acreage that supports this particular purpose. There is no other direct impact to habitats since visitors are restricted to the paved or chipped areas.

A maximum of 550 students (usually in small groups of 20 a program) a year participate in environmental education workshops in areas other than on the paved drive and Marsh Edge Trail or the Chipped Woods Trail. Approximately 90% of these have been refuge interpreted programs that are part of the Public Use and Management Plan. The remaining 55 students use the refuge different times of the year, in 5 different areas, and in such small groups as to not have an impact on the habitat.

Construction of visitor centers and environmental education outdoor classrooms will occur in prior disturbed habitats. There are several opportunities for siting the administrative facility and visitor center at Nanticoke Division on properties that have been cleared and previously disturbed by construction. At Blackwater Refuge, the Visitor Center expansion and remodeling would occur within close proximity to the existing footprint, in open agricultural fields requiring no clearing of trees or vegetation, and in areas previously disturbed by a historical CCC camp. Blackwater Refuge's environmental education outdoor classroom, proposed for siting on the Robbins Property, would be constructed within the footprint of a private residence that recently burned. The site has already been disturbed, and utilities exist, thus requiring no additional excavation or disturbance.

During construction activities, best maintenance practices and storm water runoff/sedimentation plans would be implemented to minimize erosion or degradation to water quality. The additional observation trails at Blackwater Refuge that would extend through a habitat demonstration area off Key Wallace Drive, through a tornado damaged area off Hip Roof Road, and from Route 335 to Smithville Road, would simply utilize existing roadways and dikes constructed in the 1970's. The proposed trail and observation tower at the Nanticoke Division would also utilize existing roadways when possible. Overall, physical impacts should be very minimal.

Biological Impacts: At Blackwater Refuge, public use can potentially interfere with normal migratory bird and other wildlife habits in several ways. One is the disruption of normal foraging and social behavior of wildlife by feeding (Edington and Edington, 1986). Van der Zande (1980) defined such disturbance as "emission of stimuli to which animals may respond by avoiding the vicinity...". Several studies have also found correlations between human-use levels and bird densities (Erwin, 1980; Madsen, 1985; Werschkul et al, 1976.) High levels of disturbance may keep ducks from building up enough energy reserves over the winter to meet subsequent reproductive requirements (Hohman et al, 1988). Pair-bonding may likewise be adversely affected when disturbance is high (Anderson et al, 1988). In addition, the effects of common human actions, including specific recreational activities, have been examined by Burger (1981, 1986) and Vos et al (1985), and these actions can, at certain levels, influence a wide diversity of migratory waterbirds (Klein, 1989).

The concern, therefore, is whether or not these disturbances are sufficient to adversely affect the subject purpose(s) for which the refuge was established. Several major evaluation criteria will be used to make this determination: percentage of the refuge's habitats affected; the number of visitors; location of the wildlife drive and associated trails and their juxtaposition to important habitats; types of human behavior (treatments) and the types of activities visitors participate in; timing of visitation; importance of visitation area to migratory birds; species composition; enforcement and education; presence of "escape cover;" and location of high-quality foraging areas in relationship to line of sight from the wildlife drive and trails.

Even on the best days, only 25% of the Wildlife Drive visitors use the Marsh Edge Trail, and only 17% use the Woods Trail (information obtained from visitor surveys). This equates to peak visitation of approximately 100 and 72 people for daily weekend use, respectively. Peak weekday use is 22 and 15 visits, respectively. However, peak visitation occurs only four months a year (April, May, October, and November) when weather conditions are the best and the insect populations are still bearable. Visitation in other months is considerably less or almost nonexistent as in June, July, and August. The maximum number of

student/teacher workshops is only 130 with a maximum of 4200 students. There are approximately 60 non-staff conducted programs with approximately 1400 students held each year.

Assuming a zone of visitors influence of 50 feet on either side of the trails in these forested areas, the maximum area of human disturbance along the two hiking trails that could be expected from these uses would be approximately 9.6 acres or less than .05% of the total refuge acreage managed for the purposes of migratory birds.

Given the critical distance of 80 meters (the greatest distance that similar migratory bird species were not as likely to be disturbed by the same types of uses being proposed) described for J.N. "Ding" Darling NWR's 8 km wildlife drive (Klein, 1989), the maximum area of human disturbance along the 5-mile Wildlife Drive that could be expected from these uses would be approximately 300 acres or only less than 1.5 percent of the total refuge acreage managed for the purposes of migratory birds.

The potential for disturbance at Blackwater, however, is significantly less than at "Ding" Darling Refuge, for several very important reasons: 1) Overall annual visitation at Blackwater Refuge is almost five times less (approx. 120,000 at Blackwater Refuge vs. 538,000 at "Ding" Darling Refuge) and, equally important, the average daily use is considerably less (35 vehicles per week day at Blackwater Refuge vs. 350 vehicles per week day at "Ding" Darling Refuge). Peak use is also considerably different (170 vehicles per weekend day during peak season, 50 during summer at Blackwater Refuge vs. 600 vehicles per weekend day during peak season, 425 during non-peak season) at "Ding" Darling Refuge); 2) Blackwater Refuge is four times larger than "Ding" Darling Refuge (8500 ha vs. 2030 ha), with significantly more migratory bird habitats (Carowan, 1994); 3) The impoundment system at Blackwater Refuge has a new series of contour, subimpoundment dikes that parallel the Wildlife Drive that screen foraging/resting migratory water birds from visitors, thereby decreasing disturbance; 4) Alternative, closely adjoining, extremely high quality, migratory bird feeding/resting habitats have been acquired and developed at Blackwater Refuge in areas where no public use is authorized; 5) At Blackwater Refuge, 75% of the visitors are contacted at the Visitor Center where visitors receive much more individual attention than at "Ding" Darling Refuge where visitation exceeds the ability of staff and volunteers to successfully interact with visitors (Klein, 1989). Approximately 99.9% of the teachers giving workshops at Blackwater Refuge have received training and/or individual instruction from refuge staff; 6) The majority of feeding and foraging habitats at "Ding" Darling Refuge are within sight of the Wildlife Drive, and the majority of the waterbirds are required to feed at relatively narrow time windows (Klein, 1989) dictated by tidal cycles, situations that do not exist at Blackwater Refuge; 7) Most public use occurs from 9:00 a.m. to 5:00 p.m. at Blackwater Refuge, periods when most migratory birds are less active, although time of day and weather conditions are less important in determining harmful disturbances than conditions mentioned in #6 (Chapman, 1984); and 8) The majority (80%) of student/teacher environmental education programs and all other visitors at Blackwater Refuge are restricted to the roadway, and therefore the major form of disturbances determined by Klein (1989) (i.e., approaching wildlife on foot and exploring off the roadway) are not as likely to affect migratory birds at Blackwater Refuge. In addition, extensive, alternative (if so desired), extremely high quality, migratory bird feeding/resting/nesting habitats have been acquired and developed at Blackwater Refuge in areas where no public use is authorized, and the locations of the trails are not in habitats of major importance to migratory birds.

Additional facilities would result in moderate disturbance to wildlife while under construction. These impacts would be short lived and should not significantly affect Federal trust resource species in the long-term. The photo blinds may negatively impact a few wildlife while being constructed, but should have little or no impact on wildlife and their habitats after construction. These facilities would be sited to avoid endangered species habitats and sensitive areas. After construction, the photo blinds would actually help to minimize disturbance by focusing photographic opportunities on specific areas where photographers are out of view of wildlife and where they are not as likely to wander into sensitive areas. Impacts attributable to environmental education and interpretation would be mitigated by the benefits of educating the public about refuge resources and the environment.

Appendix E. Compatibility Determinations

Obviously, with improved facilities, there would be increased visitation. Disturbance, however, would remain minimal overall since most of these public use facilities already exist, and they would, for the most part, continue to be located on a very small portion (less than 4%) of the total refuge's acreage. Also, the expanded activities would occur in areas where wildlife have habituated to human activities over the course of over a half century. On Blackwater Refuge, for example, excluding the new observation trails on Key Wallace Drive and Hip Roof Road, all the public use would occur on about 1,000 acres of the refuge's more than 23,444 acres. The same overall effects would be predicted for the Nanticoke Division.

Socioeconomic Impacts: A remodeled Visitor Center at Blackwater Refuge with new exhibits, Environmental Education Outdoor Classroom, and increased number of activities, materials, and facilities would reach a much greater segment of the public with up-to-date information that promotes Blackwater Refuge and Service mission and goals and can create support for wildlife both on and off Blackwater Refuge. As facilities are enhanced, the possibilities for a quality experience are enhanced. As more people enjoy quality experiences, visitation would increase. Thus, the communities surrounding Blackwater Refuge would benefit through increased use of their facilities, service stations, lodging, and restaurants.

Providing a well staffed Visitor Center on the Nanticoke Division that has the potential to reach over 6 million visitors a year; publishing a Nanticoke Division film, interpretive tour guides and informative leaflets; providing proper signing; printing maps and brochures that convey the mission and goals of the Nanticoke Division and provide understanding of the Nanticoke Division and Nanticoke Division management, would reduce potential conflicts while educating a more knowledgeable public. Working with the community, community organizations, tourism, schools, local businesses, news media, congressional entities, constituent groups, and state and local government agencies to develop programs, events, and activities, would only increase the good association with the community and help establish a better understanding of the Nanticoke Division, its mission and goals, wildlife, and wildlife habitats. Interest in wildlife observation by walking, biking, canoeing, and automobile, and photographing wildlife, has been steadily increasing. With increased opportunities for wildlife observation at Nanticoke Division, more facilities are provided, and better relationships with the community are developed, more visitors would come to the Nanticoke Division. The communities surrounding the Nanticoke Division would benefit from increased use of their service stations, facilities, lodging, and restaurants. If the current \$15 million a year in benefits to the local economy are any indication of what can be expected at the Nanticoke Division, these activities would significantly increase the potential for ecotourism related businesses.

Dorchester, Wicomico, and Somerset Counties are developing Tourism Management Plans that will increase and facilitate ecotourism. Developing environmental education programs with other educational institutions and groups in the community would create a good working relationship with the community and public, increasing their interest in working with Blackwater Refuge to help develop ecotourism. Working with the respective County Tourism Offices and the community to increase ecotourism would help increase the economy of the local area even more.

Hiring a Volunteer Coordinator would enable these refuges to make better use of volunteer talents and interests, make the best use of volunteers to meet refuge needs, and recruit additional volunteers from the local community, developing more support for the community.

Working with the community, community organizations, tourism, schools, local businesses, news media, congressional entities, constituent groups, and state and local government agencies to develop programs, events, and activities can only increase the good association with the community and help establish a better understanding of these refuges, their missions and goals, wildlife, and wildlife habitats.

Interest in wildlife observation by walking, biking, canoeing, and riding in an automobile has been steadily increasing throughout the area. Refuge programs would add some structure and regulation to these activities that would be more compatible with wildlife and sensitive habitats. For example, after Blackwater Refuge was listed in the Maryland biking travel guides, the number of cyclists to Blackwater

Refuge increased from 842 in 1992 to 3,275 in 1995. Publications by Dorchester County, advertising Blackwater's trails, Wildlife Drive, and Visitor Center, have also attracted more visitors to Blackwater Refuge seeking opportunities for wildlife observation. According to the Dorchester County Department of Tourism, Blackwater Refuge visitors spend an estimated \$15 million annually. Blackwater Refuge is the most utilized tourist attraction to Dorchester County. With the new Dorchester County Tourism Plan and the nearly completed construction of a new Hyatt Regency Conference Center in Cambridge, MD, the County anticipates attracting many more visitors to the area. Their encouragement of bus tours to Dorchester County has already increased the number of bus tours to Blackwater Refuge. Increased visitation to these refuges would have a positive impact on the local economy and would not adversely impact wildlife if properly planned.

Public Review and Comment:

This compatibility determination will be submitted for public review and comment as an appendices to the Environmental Assessment for the Draft Comprehensive Conservation Plan for the Chesapeake Marshlands NWR Complex in full compliance with NEPA.

Determination: (Check One)

This use is compatible X

This use is not compatible _____

Stipulations Necessary to Ensure Compatibility:

These wildlife observation, photography, interpretive and environmental education uses have been conducted for many years and the special regulations, restrictions, and general operations have been structured to ensure compatibility. If the monitoring described under Availability of Resources indicates that this use materially interferes with or detracts from fulfillment of the National Wildlife Refuge System mission or the purposes of the refuge, we would curtail or eliminate the use.

Special Regulations governing our programs will are listed in the Code of Federal Regulations, Title 50, Parts 26 and 27, and will be subject to Maryland State regulations.

Justification:

Klein (1989) concluded in her study at "Ding" Darling Refuge that visitors were displacing 19 of the 40 species of waterbirds observed from foraging habitats "at least some of the time." She furthermore stated that "if the management of the refuge is to allow waterbirds to use the habitats available to their fullest extent, it will eventually be necessary to control visitor use." Klein, however, did not address the significance of these recreational uses at "Ding" Darling Refuge in reference to their effect on the purpose(s) for which the refuge was established, but one can interpret these summary recommendations as meaning that visitor disturbances at "Ding" Darling Refuge are certainly approaching the level that refuge purposes could be negatively affected. Conversely, given the comparisons discussed in the previous sections and the fact that Klein did not quantify what she termed as "critical levels" of disturbance until the number of vehicles exceeded 150 cars per day (most often between 150 and 300 cars per day), it is more obvious that the outdoor recreational uses of wildlife/wildlands observation (walking, hiking, and bicycling), photography, teacher/student environmental education workshops, and interpretation associated with the Wildlife Drive at Blackwater Refuge (for educational and recreation uses, cumulatively) are compatible because of the limited visitation and the very limited direct and indirect effects on the refuge's migratory birds and their habitats. The restrictions that Blackwater Refuge places on these activities; the ready availability of alternative, high quality habitats for waterfowl (400 acres of adjacent impoundments and croplands where no public use is allowed); the public outreach, enforcement and educational efforts that minimize wildlife disturbances; and the limited opportunities for disturbance resulting from the Wildlife Drive's spacial and temporal restrictions, all validate these uses as compatible.

Appendix E. Compatibility Determinations

Wildlife Observation, Photography, Interpretation, and Environmental Education will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which Blackwater Refuge was established.

Signature - Refuge Manager: /s/ Glenn A. Carowan 1/30/2006
(Signature and Date)

Concurrence - Regional Chief: /s/ Anthony D. Legér 6/26/2016
(Signature and Date)

Mandatory 15 year Reevaluation Date: June 26, 2021

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COMPATIBILITY DETERMINATION

Use: Wildlife Observation, Photography, Interpretation, and Environmental Education

Station Name: Chesapeake Island Refuges

Establishing and Acquisition Authorities:

The Chesapeake Marshlands National Wildlife Refuge Complex (CMNWRC) is composed of three nationally significant wildlife areas: Blackwater NWR, Martin NWR, and Susquehanna NWR with several separate divisions. Blackwater NWR includes the Nanticoke Division, and Martin NWR includes the Barren Island, Bishops Head/Spring Island, and Watts Island Divisions. Collectively, Martin NWR, Susquehanna NWR, and the respective associated divisions are referred to as the Chesapeake Island Refuges.

The unconditional donation of 2,569.86 acres of land by the late Glenn L. Martin was the means whereby Martin NWR was established. In addition to the donations included in the December 1954 and January 1955 deeds, approval by the Migratory Bird Conservation Commission to purchase additional lands with Duck Stamp Funds resulted in increasing the refuge to its current size of 4,423 acres. The legal boundary of the refuge extends to the mean high water mark. A 1960 Secretarial Closing Order provided the refuge with a 300-yard wide proclamation boundary channelward of the mean high water mark which prohibits waterfowl hunting. Located in the middle, eastern portion of Chesapeake Bay, on Smith Island, the refuge lies in the heart of one of the largest waterfowl feeding grounds on the Bay. Martin is also home to the largest and most diverse colonial wading bird rookeries in the watershed.

This evaluation is to determine the compatibility of wildlife observation, photography, interpretation, and environmental education with the purpose for which Martin NWR was established. Such uses are not being considered for the before mentioned associated divisions to Martin.

Refuge Purpose(s):

For lands acquired under the Migratory Bird Conservation Act (16 U.S.C. § 715 d), the purpose of the acquisition is "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds."

National Wildlife Refuge System Mission:

"To administer a national network of land and waters for the conservation, management, and where appropriate, the 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 (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57)."

Description of Use:

This evaluation is to determine the compatibility of wildlife observation, photography, interpretation, and environmental education with the purposes for which the affected tracts were acquired.

(A) What is the Use? Is the use a priority use?

The use is wildlife observation, photography, interpretation, and environmental education. The National Wildlife Refuge System Improvement Act of 1997 identified wildlife observation, photography, interpretation, and environmental education as four of the six, priority, wildlife-dependent recreational uses to be facilitated in the Refuge System, and the Act encouraged the Service to provide opportunities for these uses.

Background and Rationale for the Management Activity

When Martin NWR was first established as a refuge for migratory birds, the refuge was considered a sanctuary for wildlife. Few visitors came to the refuge. In recent years, people have begun to take an interest in Martin as a destination for ecotourism. A small visitor center with refuge information and exhibits is located in the Middleton House in the town of Ewell on Smith Island. Martin Refuge is closed to the general public to protect nesting and wintering waterbirds. Administrative support of Martin NWR is conducted from the Chesapeake Marshlands NWR Complex office in Cambridge, Maryland.

During CCP scoping meetings, the public expressed their desire for more facilities and public use of the refuge. In particular, they wanted increased opportunity for wildlife-oriented educational and interpretive programs, more opportunities for local school use and education, and a remodeled/new Visitor Center. Existing visitor center exhibits are in need of new, updated, and innovative displays to better inform the public of Service and refuge policies, wildlife needs, and awareness of wildlife conservation.

Proposed strategies include increasing environmental education programs (including the publication of an environmental education manual); increasing the number and types of interpretive and outreach programs, photography opportunities, and wildlife observation facilities; constructing an environmental education facility; updating exhibits, building a new visitor center; and hiring more staff to plan, manage, conduct, and operate the public use program. These strategies assume new lands be purchased in the town of Ewell for an environmental/education/research facility, outside of the sensitive nesting and wintering areas within the existing refuge boundary.

(B) Where would the use be conducted?

A new visitor center would be constructed on vacant land not far from the Middleton House, in the town of Ewell. The Middleton House would be converted to office space and residence for refuge staff, visiting interns, volunteers, and researchers. At the new visitor center an observation tower would be constructed, along with facilities which highlight Chesapeake Bay ecology, and the waterman culture of Smith Island. Facilities would include displays and hand-on exhibits such as crab shedding tanks, fishing gear demonstrations, fish and oyster rearing tanks, duck traps, and wetland and submerged aquatic vegetation nurseries. Tours to the refuge proper would be conducted by refuge staff during times of the year when disturbance to trust resources (e.g. nesting colonial waterbirds) can be minimized. Although the refuge can prohibit migratory bird hunting within the Proclamation Boundary, waters surrounding and interior to the refuge are outside the jurisdiction of the Service. Scheduled refuge tours should help minimize boating disturbance on State of Maryland waters. Environmental education, in particular with school groups, will be done jointly with the Chesapeake Bay Foundation's environmental education program

(C) When would the use be conducted?

Wildlife observation and photography will be at the new visitor center daily, year-round, from dawn to dusk (i.e., daylight hours only), unless there is a conflict with a management activity or extenuating circumstance that would necessitate deviations from these procedures. Boat tours of the refuge would be conducted by refuge staff and the Chesapeake Bay Foundation during Spring, Summer, and Fall. No tours would be conducted during the winter waterfowl period. No entrance buffer zones will be established around critical colonial waterbird nesting rookeries to avoid disturbance. Non-tour boating access throughout Maryland State waters will not change.

(D) How would the use be conducted?

Because Smith Island is only accessible by boat, public visitation to the visitor center will be restricted to foot traffic. The new visitor center will be within an easy walking distance from the boat ferry which runs between Smith Island and Crisfield, Maryland. The observation tower, examples of habitat restoration, and fishing and crabbing operations will be on the visitor center property. Tours of the refuge property will be conducted by boats operated by refuge staff and the Chesapeake Bay Foundation, and landing areas will be

designated and restricted. Opportunities will be provided for refuge visitors to leave the boats in order to experience the wetland and beach habitats on foot.

(E) Why is the use being proposed?

These uses will be conducted to provide compatible educational and recreational opportunities for visitors to enjoy the resource and to gain understanding and appreciation for fish and wildlife, wildlands ecology and the relationships of plant and animal populations within the ecosystem, and wildlife management. They will enhance the public's understanding of natural resource management programs and ecological concepts to enable the public to better understand the problems facing our wildlife/wildlands resources, to realize what effect the public has on wildlife resources, to learn about the Service's role in conservation, to better understand the biological facts upon which Service management programs are based, and to foster an appreciation as to why wildlife and wildlands are important to them. The authorization of these uses will produce a more informed public, and advocates for Service programs. Likewise, these uses will provide opportunities for visitors to observe and learn about wildlife and wildlands at their own pace in an unstructured environment and to observe wildlife habitats firsthand. Professional and amateur photographers will also be provided opportunities to photograph wildlife in their natural habitats. Photographic opportunities obviously will result in increased publicity and advocacy for Service programs. These uses will also provide wholesome, safe, outdoor recreation in a scenic setting, with the realization that those who come strictly for recreational enjoyment will be enticed to participate in the more educational facets of the public use program, and can then become advocates for the refuge and the Service.

Availability of Resources:

Requested additional staff will develop and conduct more environmental education programs for different age groups, types of groups (including scouts, 4-H, college, adults, etc.) and for larger numbers of groups; develop an Envirothon for middle and elementary schools; develop communication workshops and meetings with other environmental education organizations and institutions; hold teacher workshops; recruit and train more volunteers; prepare and present more interpretive programs; develop a video; revise leaflets and develop new ones; update kiosk information; develop needed signs; catalog and store slide, photos, and historical items; develop habitat demonstration areas; plan and conduct photography programs; organize and conduct more events; regularly schedule programs for the public; work with Somerset County Tourism, National Park Service, Gateways Program and other organizations to plan events and activities; display off-site exhibits at more local events; develop ecotourism with Somerset County Tourism; participate in the development of watershed-wide cooperative outreach groups; develop better relationships with media providing monthly reports; and be able to respond immediately to public inquiries.

Cost Breakdown:

The following is the list of costs to the refuge required to administer and manage wildlife observation, photography, interpretation, and environmental education programs.

Yearly Service Staffing Costs

Refuge Operations Specialist GS-0485-12 (20%).....\$	17,616
Outdoor Recreation Planner GS-0023-5/7 (75%).....\$	31,034
Biologist GS-0486-5/7 (10%).....\$	4,138
Small Craft Operations WG-5786-9 (20%).....\$	11,930
Maintenance Worker WG-4749-4 (20%).....\$	7,392
SCEP (Refuge Manager, 0.5 FTE) GS-0499-5/7 (20%).....\$	4,138
Law Enforcement Officer GS-0025-5/7 (20%).....\$	8,276
Total.....\$	84,524

Appendix E. Compatibility Determinations

Facility and Equipment Costs

Construct observation platform.....\$	38,000
Construct new visitor center.....\$	1,500,000
Land acquisition.....\$	500,000
Construct aquaculture and nursery facilities.....\$	100,000
Construct demonstration wetland habitat restoration.....\$	500,000
Exhibits, outreach & materials for waterman culture interpretation.....\$	124,000
Install traveler’s station.....\$	38,000
Construct photo blind.....\$	15,000
2 tour boats.....\$	30,000
Total.....\$	2,845,000

Anticipated Impacts on Refuge Purpose(s):

The following is a summary of the environmental, socioeconomic, and cultural/historical impacts of these programs as more thoroughly described in the Environmental Assessment prepared for the Chesapeake Marshlands NWR Complex’s Comprehensive Conservation Plan of which this document is an attachment.

Physical Impacts: Construction of the visitor center, observation tower, traveler’s station, aquaculture and nursery facilities, photo blind, and habitat restoration projects will occur in prior disturbed habitats. The property includes an old house site, former dredged material disposal area, and bare soil areas used by local youth for bicycling and dirt bike riding. Fallow areas associated with the house site consists of early successional weeds, shrubs, and young trees. Construction of the visitor center will include habitat landscaping with native plant species, which will improve the locations habitat value to passerine bird species and butterflies. Wetland habitat restoration will improve habitat for waterfowl, wading birds, and estuarine aquatic resources. No expanded footprint of existing roadways will be required with the exception of a new driveway for refuge staff access to the visitor center. Because the site will be accessed by the public by walking from the ferry landing to the visitor center, parking will not be required. During construction activities, best management practices and storm water runoff/sedimentation plans would be implemented to minimize erosion or degradation to water quality. Overall, physical impacts should be very minimal, with an end result in improvement to the acreage and quality of habitat over existing conditions.

Biological Impacts: At Martin NWR, public use can potentially interfere with normal migratory bird and other wildlife habits in several ways. One is the disruption of normal foraging and social behavior of wildlife by feeding (Edington and Edington, 1986). Van der Zande (1980) defined such disturbance as "emission of stimuli to which animals may respond by avoiding the vicinity...". Several studies have also found correlations between human-use levels and bird densities (Erwin, 1980; Madsen, 1985; Werschkul et al, 1976.) High levels of disturbance may keep ducks from building up enough energy reserves over the winter to meet subsequent reproductive requirements (Hohman et al, 1988). Pair-bonding may likewise be adversely affected when disturbance is high (Anderson et al, 1988). In addition, the effects of common human actions, including specific recreational activities, have been examined by Burger (1981, 1986) and Vos et al (1985), and these actions can, at certain levels, influence a wide diversity of migratory waterbirds (Klein, 1989).

The concern, therefore, is whether or not these disturbances are sufficient to adversely affect the subject purpose(s) for which the refuge was established. Several major evaluation criteria will be used to make this determination: percentage of the refuge's habitats affected; the number of visitors; location of boating/landing destinations and their juxtaposition to important habitats; types of human behavior (treatments) and the types of activities visitors participate in; timing of visitation; importance of visitation area to migratory birds; species composition; enforcement and education; presence of "escape cover;" and location of high-quality foraging areas in relationship to line of sight from human intrusion.

All of the new proposed facilities will be sited in existing low value habitat, therefore no increased disturbance to wildlife is anticipated. Conversely, habitat improvements will attract new species and greater numbers of these species to the visitor center and observation tower area. Boat tours and public landings on Martin NWR will be scheduled and managed to minimize disturbance to Service trust resources. Time of year restrictions on boat tours during the winter waterfowl season will minimize disturbance to migratory ducks and geese. The availability of the tours should help decrease unmanaged access throughout the waterways surrounding and interior to Martin NWR, which are outside the regulatory authority of the Service. Critical waterbird rookeries will be posted, and an adequate no access buffer zone will be established for the boat tours. Public landing areas associated with the boat tours will be sited outside of critical habitats. No public landings will be allowed on Martin NWR outside of the Service and Chesapeake Bay Foundation boat tours.

Additional facilities would result in moderate disturbance to wildlife while under construction. These impacts would be short lived and should not significantly affect Federal trust resource species in the long-term. The photo blind may negatively impact a few wildlife while being constructed, but should have little or no impact on wildlife and their habitats after construction. These facilities would be sited to avoid endangered species habitats and sensitive areas. After construction, the photo blinds would actually help to minimize disturbance by focusing photographic opportunities on specific areas where photographers are out of view of wildlife and where they are not as likely to wander into sensitive areas. Impacts attributable to environmental education and interpretation would be mitigated by the benefits of educating the public about refuge resources and the environment.

Obviously, with improved facilities, there would be increased visitation. Disturbance, however, would remain minimal overall since most of these public use facilities will be sited in an area of low habitat value. Increased boating by Service staff will be managed as previously stated. Also, the expanded facilities would occur in areas where wildlife have habituated to human activities over the course of over 400 years (when the Town of Ewell was established).

Socioeconomic Impacts: A new Visitor Center at Martin Refuge with new exhibits, environmental education materials, and increased number of activities and facilities would reach a much greater segment of the public. Up-to-date information that promotes Martin Refuge and the Service mission and goals will create support for wildlife both on and off the Refuge. As facilities are enhanced, the possibilities for a quality experience are enhanced. As more people enjoy quality experiences, visitation would increase. Thus, the communities surrounding Martin Refuge would benefit through increased use of their facilities, service stations, lodging, and restaurants.

Somerset County is developing a Tourism Management Plan that will increase and facilitate ecotourism. Developing environmental education programs with other educational institutions and groups in the community would create a good working relationship with the community and public, increasing their interest in working with Martin Refuge to help develop ecotourism. Working with the County Tourism Office and the community to increase ecotourism would help increase the economy of the local area even more. Working with the community, community organizations, tourism, schools, local businesses, news media, congressional entities, constituent groups, and state and local government agencies to develop programs, events, and activities can only increase the good association with the community and help establish a better understanding of these refuges, their missions and goals, wildlife, and wildlife habitats.

Interest in wildlife observation has been steadily increasing throughout the area. Refuge programs would add some structure and regulation to these activities that would be more compatible with wildlife and sensitive habitats. Increased visitation to this refuge would have a positive impact on the local economy and would not adversely impact wildlife if properly planned.

Appendix E. Compatibility Determinations

Public Review and Comment:

This compatibility determination will be submitted for public review and comment as an appendices to the Environmental Assessment for the Draft Comprehensive Conservation Plan for the Chesapeake Marshlands NWR Complex in full compliance with NEPA.

Determination: (Check One)

This use is compatible X

This use is not compatible ____

Stipulations Necessary to Ensure Compatibility:

These wildlife observation, photography, interpretive and environmental education uses have been conducted for many years and the special regulations, restrictions, and general operations have been structured to ensure compatibility. If future monitoring indicates that this use materially interferes with or detracts from fulfillment of the National Wildlife Refuge System mission or the purposes of the refuge, we would curtail or eliminate the use.

Special Regulations governing our programs will are listed in the Code of Federal Regulations, Title 50, Parts 26 and 27, and will be subject to Maryland State regulations.

Justification:

The justification for allowing the subject uses is described in detail throughout both the Alternatives section and Consequences section of the Environmental Assessment prepared for the Chesapeake Marshlands NWR Complex's Comprehensive Conservation Plan of which this document is an attachment. Wildlife Observation, Photography, Interpretation, and Environmental Education will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the Refuge was established.

Signature - Refuge Manager: /s/ Glenn A. Carowan 1/30/2006
(Signature and Date)

Concurrence - Regional Chief: /s/ Anthony D. Legér 6/26/2016
(Signature and Date)

Mandatory 15 year Reevaluation Date: June 26, 2021

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