

March 13, 1992

Colonel Richard C. Johns
District Engineer
Norfolk District, Corps of Engineers
803 Front Street
Norfolk, VA 23510-1096

ATTN: Mr. Steve Martin
Regulatory Branch

Re: CENAO-CO-R 91-1283-18, Charles City
County, Virginia

Dear Colonel Johns:

This responds to your January 14, 1992 request for formal consultation under Section 7(a)(2) of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), regarding impacts of the Department of the Army (DOA) permit application CENAO-CO-R 91-1283-18 by Charles City County on the bald eagle (Haliaeetus leucocephalus), a Federally listed endangered species. The project is located on the James River in Charles City County, Virginia. This letter constitutes the U.S. Fish and Wildlife Service's (Service) Biological Opinion on this permit application, as required by Section 7(b) of the Endangered Species Act. This letter also provides the comments of the Service and the Department of the Interior pursuant to the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), which are included following the Biological Opinion.

SCOPE OF THE BIOLOGICAL OPINION

This Biological Opinion covers the DOA permit application CENAO-CO-R 91-1283-18 by Charles City County (the County). The County has applied for a Federal permit to construct a public fishing pier, riprap, and fish attracting structures in the James River at the end of State Route 618, south of Route 5, historically known as Willcox Wharf (Figures 1 and 2). The fishing pier is part of the development of a county park. Originally, the proposed pier was to be 285 feet (87 meters [m]) long by 10 feet (3 m) wide with a 50-foot (15 m) by 10-foot (3 m) T-head. The T-head has been revised to include an octagon, 10 feet (3 m) on each side, in its center. The octagon will extend 7 feet (2 m) out from the edge of the T-head and will be used to improve wheelchair access. The riprap will be placed beneath and adjacent to the pier to prevent shoreline erosion. Forty feet (12 m) of Class I riprap will be placed from two feet (0.6 m) below the mean low water line to above the mean high water line. Originally, each of the six fish attractants was to consist of six 10-inch (25 centimeters [cm]) diameter piles set

in a 10-foot (3 m) diameter circle on the river bottom with the area between the piles filled with weighted branches, trees, or stumps. A revision to the permit application indicates that the County prefers to construct four different fish attractants to determine which type is most effective. The four types include: (1) concrete tetrahedrons in a 3 by 3 pattern, total structure is 10 feet in length and width; (2) tires in concrete in a 3 by 3 pattern, total structure is 10 feet in length and width; (3) six 10-inch diameter piles set in a 10-foot diameter circle with the area between the piles filled with weighted branches (no stumps); and (4) six 10-inch diameter piles set in a 10-foot diameter circle. In addition, the County requested a revision of the original permit application to include the placement of advisory signs recommending no mooring/no boating around the pier. The signs will be placed in the James River within the County's riparian rights. The Virginia Department of Transportation (VDOT) has applied for a Corps' permit to widen and improve State Route 618 to allow access to the park. Impacts to eagles from road work will be addressed in this Opinion, although this Opinion does not constitute formal consultation on the VDOT application.

In addition, the County proposes to construct two scenic outlooks, nature trails, a boardwalk, picnic facilities, two parking lots, temporary restroom facilities, and permanent restroom facilities with an associated drain field within the 24-acre park site (Figures 1 and 2). The two parking lots are located at the northern and southern portions of the park and consist of 25 and 18 spaces, respectively. Picnic facilities will be located at the northern parking lot area. Immediately south of the northern parking lot will be the permanent restroom facilities and drain field, as well as a short nature trail ending at a scenic overlook. The southern parking lot will provide parking for the fishing pier and temporary restroom facilities. West from this parking lot is another nature trail that includes a boardwalk and leads to another scenic overlook.

Funds for this project are coming from four sources. The Virginia Department of Game and Inland Fisheries is providing money for the pier through fishing license revenues (J. Mark Wood, pers. comm.). The Virginia Council on the Environment and the Division of Parks and Recreation are providing funds for park construction. Part of these funds are coming from the National Oceanic and Atmospheric Administration under the Coastal Zone Management Act. The Virginia Department of Transportation is providing funding for the improvement and widening of State Route 618.

CONSULTATION HISTORY

Consultation history regarding this project is provided in Appendix A.

BIOLOGY AND STATUS OF THE BALD EAGLE

The bald eagle (*Haliaeetus leucocephalus*) is a large raptor (bird of prey) that was chosen as the United States' symbol in the late 1700s due to its size and majesty. With the exception of the California condor (*Gymnogyps californianus*), the bald eagle is the largest raptor in North America, with a wing span of 6.5 feet (2 m). The bald eagle is found primarily near seacoasts, rivers, and lakes of North America; thus its colloquial name, the "sea eagle." A scavenger,

the bald eagle feeds primarily on fish and carrion. Bald eagles tend to be a social species. Non-nesting birds are often found in large numbers in areas where feeding opportunities are good and in communal night roosts.

Although adult bald eagles are known for their white heads and tails, immature and juvenile birds are mainly brown. Adult plumage develops slowly, with full plumage not in place until the birds reach four to five years of age. Adult birds mate for life, establishing nesting territories that they return to each year. Nesting pairs may remain near their territory year round, particularly towards the southern range of the species. Immature and non-mated eagles range widely, migrating north and south from their nest sites. Northern pairs also migrate south during the winter when rivers and lakes freeze. These birds tend to congregate in both summer and winter concentration areas, locations where feeding opportunities are good and human disturbance is low.

The widespread use of DDT was primarily responsible for the precipitous decline of the bald eagle in North America in the 1960s and the listing of the Southern bald eagle as a Federally endangered species in 1967. (The remaining bald eagle populations in the coterminous United States were listed as endangered or threatened in 1978 and the "Southern" designation was dropped.) This pesticide entered the food chain and built up to toxic levels in eagles, resulting in reproductive failure. With the cancellation of the pesticide registration for DDT by the U.S. Environmental Protection Agency, eagle populations have started to recover. Habitat loss now poses a greater threat to the bald eagle since its preferred habitat, coasts and shorelines, is also where most of the human population growth is occurring in the United States.

The bald eagle populations of the United States have been divided by the Service into five recovery groups: Pacific, Southwest, Northern, Southeast, and Chesapeake. Birds from the Northern, Southeast, and Chesapeake populations use the James River area. The Southeast bald eagle population includes birds from Florida, Georgia, South Carolina, North Carolina, Kentucky, Tennessee, West Virginia west of the 80th meridian, Alabama, Mississippi, Arkansas, Louisiana, and Texas west to the 100th meridian (U.S. Fish and Wildlife Service 1984). To reclassify this population as threatened, the recovery plan calls for documentation of 600 occupied breeding areas (i.e., the presence of a pair of eagles during the breeding season in an area which contains a nest) distributed in at least 9 of the 12 southeastern states. The recovery plan further states that reproductive success must be greater than 0.9 young per occupied nest, 1.5 young per successful nest, and at least 50% of the nests successful in raising at least one young, based on a three-year average. Currently, the recovery goal of 600 breeding areas has not been reached, nor has the distribution goal (David Fleming, pers. comm.).

Twenty-four states are included in the Northern bald eagle population. According to the Northern States Bald Eagle Recovery Plan (U.S. Fish and Wildlife Service 1983), 96% of the 568 known occupied breeding areas and 90% of all young produced occurred in Minnesota, Maine, Michigan, and Wisconsin in 1981. To reclassify the population as threatened, the recovery plan indicates that 1,200 occupied breeding areas must be distributed over at least 16 states,

with an average annual productivity of at least one young per occupied nest. Currently, the goal of 1,200 occupied breeding areas has been reached, but nesting is not distributed over a multi-state area as required to meet recovery goals (Paul Nickerson, pers. comm.).

The recovery and reclassification to threatened status of the Chesapeake Bay Region bald eagle population depends on the availability of enough undisturbed roosting and nesting habitat to accommodate 175-250 nesting pairs with a success rate of 1.1 young per active nest, concurrent with showing sustained progress in habitat protection measures (U.S. Fish and Wildlife Service 1990). A goal of management and recovery is to ensure preservation of selected, well-distributed habitats (U.S. Fish and Wildlife Service 1989). The recovery plan indicates the need to "Minimize disturbance and loss of bald eagles. Activities of man, either directly against the birds themselves, or indirectly through disturbance of areas frequented by bald eagles, continues to be a serious limiting factor to Chesapeake Bay Region eagles" (U.S. Fish and Wildlife Service 1982). The Chesapeake region currently supports 230 breeding pairs with a productivity level of 1.43, which meets the recovery plan's criteria for reclassification to threatened (U.S. Fish and Wildlife Service 1990). However, available habitat is continuing to decline, affecting the ultimate carrying capacity of the Chesapeake Bay Region (U.S. Fish and Wildlife Service 1990).

Advanced notice of a forthcoming proposal to reclassify the bald eagle from endangered to threatened in certain portions of its range was published in the Federal Register on February 7, 1990 (50 CFR Part 17). The advanced notice includes two of the three populations that use the James River area - the Northern and Chesapeake Bay recovery populations. The Southeastern recovery population was not included in the advanced notice on reclassification. The official proposal itself has not been published. It must be recognized however, that if the bald eagle's status is reclassified to threatened in parts of its range, the species will still be protected under the Endangered Species Act. The term "threatened" indicates there is still a possibility that the species could face extinction if further protective measures are not undertaken. The protection of roosting and foraging habitat is critical to the maintenance and recovery of this species.

The summer bald eagle concentration located on the seven-mile stretch of the James River between Powell and Wards Creeks (Figure 3) was discovered in 1978 and is the largest known summer concentration site on the East Coast (Mitchell Byrd, pers. comm. 1991). It has come to be identified as the James River or Powell Creek eagle concentration area. As stated above, the concentration area is used by eagles from the Northern, Southeast, Chesapeake recovery populations. Eagles using this area feed and perch along the James River during the day and roost in adjacent tracts of large, wooded areas at night, but the majority do not nest in the vicinity. There are two or three large communal night roosts along this river stretch, one of which is the James River National Wildlife Refuge (3,537 acres) purchased by the Service in March, 1991. In January, 1992 an additional 613 acres were added to the refuge. Presently, this refuge contains the most significant night roost site (Dana Bradshaw, pers. comm.). It is thought that eagles use this concentration area because of a dependable food source and relatively undisturbed shoreline, but further studies are needed to determine exactly what attracts birds to this particular location (Dana Bradshaw, pers.

comm.).

The majority (60%) of bald eagles using this section of the James River are immature birds (Dana Bradshaw, pers. comm.). Gerrard et al. (1980) found that immature birds typically do not remain in any one place for more than one or two days during their first three years of life. Marked birds from Florida, South Carolina, Tennessee, and New Jersey have been identified (Dana Bradshaw, pers. comm.). Most adults using the area are thought to be post-breeding birds from the southeast United States (U.S. Fish and Wildlife Service 1989). However, local breeding pairs stay in the area year-round. Transient eagles begin to arrive in early April (U.S. Fish and Wildlife Service 1989). Birds seen during July and August are a mix of Chesapeake Bay birds, summering southern eagles, and northern eagles which are beginning to migrate south for the winter (Wallin and Byrd 1984). It has been estimated that up to 1,000 eagles may use the Powell Creek area over the course of a summer (Mitchell Byrd, pers. comm. 1989). By October or November, it is thought that the majority of the birds have left the area, but because winter birds are arriving simultaneously it is difficult to pinpoint an exact date (Dana Bradshaw, pers. comm.). There are also seven bald eagle nests within the Powell Creek concentration area, all of which were productive at least once between 1989 and 1991. Four of the nests were productive during 1991. The nests are located adjacent to Powell, Queens, Wards, and Buckland Creeks and a tributary of Flowerdew Hundred Creek.

During the day, eagles spend approximately 94% of their time perching (Gerrard et al. 1980, Watson et al. 1991). Of that time, 54% is spent loafing, 23% foraging, and 16% nesting (Watson et al. 1991). Eagles prefer high perches in trees that rise above the surrounding vegetation to provide a wide view that faces into the wind (Gerrard et al. 1980). Birds often locate prey from a shoreline perch and hunting forays from perches appear to be more successful than those initiated from flight (Jaffee 1980). Gerrard et al. (1980) found that after a successful fishing trip, eagles flew to a low perch to feed; these perches were less than 10 m (33 feet) above the water and were well below the level of neighboring tree tops.

The main diet of bald eagles on the Chesapeake Bay during the summer is fish (U.S. Fish and Wildlife Service 1982). Therefore, the majority of birds are likely to be present along shorelines at any given time (Wallin and Byrd 1984). Foraging is a key behavior that influences daily and seasonal activity budgets (Watson et al. 1991). Foraging patterns may be strongly influenced by tidal fluctuations. Several studies have found that birds foraged much more than expected during low tides and less than expected at high tides (McGarigal et al. 1991, Watson et al. 1991).

In King George County, Virginia overall bald eagle foraging frequency was highest from 4:35 to 6:00 a.m., with a small decline from 6:00 to 10:00 a.m. At 10:00 a.m. foraging decreased further, then remained the same until 6:00 p.m. when it decreased rapidly (Jaffee 1980). Feeding behavior can be disrupted by the mere presence of humans (Stalmaster and Newman 1978). McGarigal et al. (1991) found that because eagles had to spend more time scanning for intruders as human activity in an area increased, feeding efficiency declined.

Most summer eagle roosts in the Chesapeake Bay region were found in greater than 100-acre forest blocks and were further from human development than random sites (Buehler et al. 1991b). Ninety-five percent of the roosts were within 720 m (2,362 feet) of water and 50% were at least 680 m (2,231 feet) from the

nearest building (Buehler et al. 1991b). Trees used for roosting were larger in diameter, taller, and more accessible than other available trees (Keister and Anthony 1983, Buehler et al. 1991b). Another important attribute of communal roosts is their proximity to food sources (Keister and Anthony 1983). Because food for eagles occurs in the river, suitable habitat along the river is important. Buehler et al. (1991b) determined that on the Northern Chesapeake Bay "...fewer than 2% of the random trees met the minimum habitat values of roost trees, indicating that suitable roost trees are scarce relative to other trees. This relative scarcity suggests that if shoreline forest is removed indiscriminantly, roost habitat could become limiting to the bald eagle population in the future."

EFFECTS OF THE FEDERAL ACTION ON THE BALD EAGLE AND ITS HABITAT

As defined in 50 CFR 402.02 "action" means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. The "action area" is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. The direct and indirect effects of the actions and activities resulting from the Federal actions must be considered in conjunction with the effects of other past and present Federal, State, or private activities, as well as the cumulative effects of reasonably certain future State or private activities within the action area.

The action area for this Biological Opinion has been determined by the Service and the Corps of Engineers (Corps) to be the 24-acre park site owned by Charles City County and the adjacent upland and the section of the James River that fronts the County property. The action area for this consultation is limited to these areas because individuals using the park will not be venturing into other areas of the James River and its associated shoreline. Other pending Corps' permit applications for this section of the James River (between Powell and Wards Creeks) will be subject to separate consultation. The action area for those projects is likely to include a much larger area than the immediate project site because these applicants will likely be using areas of the river up- and downstream by means of recreational vehicles (e.g., boats, jet skis).

Environmental Baseline

The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early Section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process.

This site was originally developed as a boat wharf and river crossing, known as Willcox Wharf. Later it was used as a postal drop and was then developed as an oil depot, but never used. Previously, this site had an open pile pier, mooring dolphins, steel bulkhead, masonry building, and an oil tower. However, these structures have been removed and only a few dolphins and pilings, indicating the wharf location, remain at this site. A dirt and gravel road extends

through the site from the end of State Route 618 to the river.

The site contains an emergent and forested wetland that is attached to the river by a small stream, a portion of which is tidal. The remaining floodplain near the historic wharf site is vegetated primarily with grasses and forbs and a few scattered pine trees. A narrow band of trees occurs along the river shoreline. Riverward of the trees is a sandy intertidal zone with sparse patches of herbaceous wetland species such as pickerel weed (*Pontederia cordata*). The upland areas rise steeply from the floodplain and are forested with a mix of pines and hardwoods that are approximately 30 to 45 years old with some individual trees being older than 80 years. Because of the relatively undisturbed habitat, the park site is a high use area for bald eagles, as shown in Figure 3. Eagles perch and forage from the park property during the day (Dana Bradshaw, pers. comm.). Currently, the area is relatively undisturbed by humans. Some activity occurs at the site through use by local residents as evidenced by beer cans and other trash found on the property.

Effects of the Federal Action

In evaluating the effects of the Federal action under consideration in this consultation, 50 CFR 402.2 and 402.14(g)(3) require the Service to evaluate both the direct and indirect effect of the action on the species, together with the effects of other activities that are interrelated or interdependent with the action that will be added to the environmental baseline.

Direct impacts to bald eagles resulting from construction of the riprap, fishing pier, and associated parking lot will occur during construction through human activity, loud noises, and movement of heavy equipment. Indirect impacts to eagles will occur through: (1) permanent habitat loss from clearing of upland and shoreline vegetation; (2) disturbance through human activity and vehicles during normal use of the pier and parking lot and any boat activity near the pier; and (3) possible entanglement with fish hooks and lines that are picked up with fish or broken off after snaring on the fish attractants.

The direct effects of the action on bald eagles will be the disturbance created during construction of the pier, riprap, fish attractants, and the parking lot for the pier. Construction of these will necessitate human activity in the area, a considerable amount of noise, use of heavy equipment, and some shoreline clearing for placement of riprap and construction of the parking lot. These activities will disturb the birds during early morning foraging attempts and throughout the day at perch sites. It is likely that during these construction activities, birds will vacate the area, thereby reducing the amount of available foraging and perching habitat along the James River. Human activity resulting in even temporary disruption of the bird's environment represents a major source of potential disturbance in many eagle populations (McGarigal et al. 1991). Human disturbance in perching areas can interrupt feeding and cause birds to relocate (Fraser 1988). Buehler et al. (1991a) seldom observed eagles on the northern Chesapeake Bay within 500 m (1,640 feet) of human activity and found that the birds rarely used developed areas or areas frequented by people on foot. During the summer, birds on the northern Chesapeake Bay flush, on average, when humans get within 176 m (577 feet) of a bird (Buehler et al. 1991a). Once birds are disturbed (i.e., flushed), they do not return to the area until several hours after the disturbance has occurred and only when

the disturbance no longer persists (Stalmaster and Newman 1978; Mitchell Byrd, pers. comm. 1989). Disturbance may result in increased energy expenditures due to avoidance flights and decreased energy intake due to interference with feeding activity (Knight and Knight 1984).

Indirect effects are defined as those that are caused by the proposed action and are later in time, but still are reasonably certain to occur (50 CFR 402.02). Indirect effects on eagles will occur through human use of and activity around the permitted structures. Human disturbance to birds will occur from use of the pier.

Recreation in the Chesapeake Bay Region has increased dramatically since the 1970s, resulting in disturbance to eagles in breeding and feeding areas. These activities have caused birds to be displaced from prime habitat and have resulted in reductions in reproductive activity and success (U.S. Fish and Wildlife Service 1982). Early morning human activities are potentially the most disruptive to eagle foraging activity (McGarigal et al. 1991) and this is the time during which the most angler activity will occur at the pier. The Virginia Department of Game and Inland Fisheries (1991) has estimated that no more than 50 anglers will use the pier at any one time. This number is based on the number of parking spaces in the southern lot and the amount of deep water fishing (at least 6 feet at mean low water) available from the pier. They also expect constant use of the pier between April and November, coinciding with summer eagle use of the area. Chronic human disturbance may result in disuse of areas of human activity (U.S. Fish and Wildlife Service 1989). Based upon the timing and amount of human use of the pier, it is likely that up to 500 m (1,640 feet) riverward of the shoreline and around the fishing pier will be rendered functionally unsuitable as foraging and perching habitat for bald eagles.

The proposed pier is likely to attract commercial and recreational boaters for use as a fishing site, mooring structure, unloading their harvest, and visiting the park. Boating activity can adversely impact eagles because it disrupts feeding activity and affects large areas in short periods of time (Knight and Knight 1984). McGarigal et al. (1991) found that eagles usually avoided an area within 200 to 900 m (656 - 2,952 feet) of a single stationary experimental boat, with an average avoidance distance of 400 m (1,300 feet). In effect, a single stationary boat displaced eagles from 69 to 124 acres of available foraging habitat. Activities of recreational boaters are not predictable and thus are especially disruptive to birds (Wallin and Byrd 1984). Buehler et al. (1991a) found that on the northern Chesapeake Bay, eagles were flushed by an approaching boat at an average distance of 175.5 m (575 feet). Byrd (pers. comm. 1989) has observed that when eagles are flushed by boat from perch sites along the James River, they usually fly inland and cease foraging for at least several hours. Therefore, if boats are attracted to and use the fishing pier, an area of the James River up to 900 m (3,000 feet) upstream of the pier could become functionally unsuitable as foraging and perching habitat. The area immediately downstream of the pier has already been disrupted due to the presence of several houses and waterfront construction along the shoreline and a private pier.

Another concern with fishing in this area is possible line or hook entanglement in eagles. The pilings of the pier are likely to catch hooks and lines. However, the chance of entanglement is magnified by use of fish attractants that will likely increase the amount of line and hooks that are broken off, float in the river, and may be picked up by eagles to use as nesting material. In addition, fish that are cut or break loose from a line eventually die and can float to the surface. These fish can be picked up by eagles, which may then get caught in a hook or line. Nestling and adult ospreys (Pandion haliaetus) have been found entangled in monofilament fishing line and entangled in the hooks of a fishing lure (U.S. Fish

and Wildlife Service 1982). Byrd (pers. comm. 1992) has found numerous young ospreys entangled in monofilament line. In Arizona, 40% of bald eagle nests examined from 1986-1990 contained fishing line, hooks, weights, etc. (BioSystems Analysis, Inc. 1991). In the same nesting areas, one adult eagle and two eaglets were observed to have problems with entanglement in monofilament lines or hooks in 1986 (BioSystems Analysis, Inc. 1991). In 1988, one nestling and one juvenile were freed from hooks and line by biologists and one nestling was found dead, entangled in monofilament line (BioSystems Analysis, Inc. 1991).

As defined in 50 CFR 402.02, interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Activities interrelated to and interdependent with the action are the southern parking lot (near the pier) and portable restroom facility. Construction of this parking lot will result in disturbance of eagles through human activity, noise, and use of heavy equipment. Clearing will be minimal and will only require removal of several pine trees. Post-construction, disturbance will continue from human and vehicle activity in the parking lot and surrounding area.

Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities on endangered or threatened species or critical habitat that are reasonably certain to occur during the course of the Federal activity subject to consultation. Future Federal actions are subject to the consultation requirements established in Section 7 and, therefore, are not considered cumulative with the proposed action.

In addition to the park facilities already discussed, the County plans to construct a northern parking lot, picnic facilities, nature trails, a boardwalk, scenic overlooks, permanent restroom facilities, and a drain field, as shown in Figure 2. The County has also agreed to place a structure restricting vehicle access on the road between the two parking lots. This structure will be closed after dark to prevent vehicle use of the southern parking lot. The northern parking lot and adjacent picnic tables will require a substantial amount of clearing in a wooded upland site. The restroom facilities and associated septic drain field will also require clearing of forest vegetation.

The boardwalk and two nature trails will require little to no vegetation clearing. The nature trail that leads to the boardwalk and then to a scenic overlook along the river will be paved with 2-inch (5 cm) pea stone, except where it crosses wetlands. A boardwalk will be constructed on pilings to cross the wetlands. The boardwalk decking was to be placed with 1-inch (2.5 cm) spacing to minimize potential shading effects on wetland vegetation. However, when a representative of the Endependence Center, Inc. visited the site, it was determined that half-inch (1.3 cm) spacing is necessary for wheelchair access and is required by the Uniform Federal Accessibility Standards (Endependence Center, Inc. 1992). The other nature trail near the northern parking lot will be paved with asphalt to allow wheelchair access. The two scenic overlooks will require a small amount of vegetation clearing, but no ground-level

structures will be placed. However, vegetation will be cleared to provide of view of the river from both sites. The vegetation proposed to be removed is to be less than 12 inches (30 cm) in diameter.

Removal of canopy vegetation and land clearing at the park will lead to increased disturbance to eagles because they will be able to more easily view humans and vehicles on the ground. Removal of tall, large diameter trees will also decrease the amount of perching and roosting habitat available. Forest management of eagle roosts should protect existing tall, large diameter trees and promote their growth in stands where they are lacking (Buehler et al. 1991b). It has been documented that eagles are more tolerant of sounds when the sources were partially or totally concealed from their view (e.g., Stalmaster and Newman 1978, Wallin and Byrd 1984). Strips of vegetation that reduce line-of-site will allow closer presence of humans and provide perching and roosting trees (Stalmaster and Newman 1978). Stalmaster and Newman (1978) found that flush distance was highest for simulated disturbance in water and on gravel bars, intermediate on land, and shortest under vegetation canopy.

Clark (in prep.) found that eagle abundance on this stretch of the James River decreased with increased numbers of buildings, boat landings, and medium duty roads. Buehler et al. (1991b) found that bald eagle use of shoreline was inversely related to building density (magnitude of effect was greatest in summer and least in fall) and directly related the development set-back distance. When shoreline is developed, it is irretrievably lost as eagle habitat (Buehler et al. 1991b). Buehler et al. state, "We assume there is an upper limit to the number of eagles that can be supported by any stretch of undeveloped shoreline. Thus, as shoreline continues to be modified, we believe that the length of remaining undeveloped shoreline may become the limiting factor for some eagle populations, including the Chesapeake population." Optimum eagle management should include maintenance of substantial areas of undeveloped shoreline (Fraser et al. 1985).

Construction of these park facilities and land clearing will result in disturbance of eagles through human activity in the area, loud noise, and use of heavy equipment. Post-construction, disturbance will continue throughout the park from human activity in the form of noise, general movement, walking, use of the picnic tables, and vehicle traffic.

Human use of the fishing pier and other park facilities is expected to primarily coincide with the period of the year when eagles are found in highest numbers in the concentration area, which is April through October. However, human use of the pier and park is expected to be greatest during weekends. If human use is low during the week, eagles may continue to make some use of the park and surrounding river for perching and foraging. It is not known whether the periodic increase in human disturbance during weekends will eventually cause the eagles to totally abandon the park area and this segment of the James River as a perching area and food source.

Widening and improving State Route 618 will require a small amount of vegetation clearing and filling of wetlands. As discussed previously, noise and human activity will likely cause the birds to vacate the area. Long-term, clearing of wooded vegetation decreases the total amount of perching and roosting habitat for eagles and disturbance from vehicles using the road will continue to prevent use of this area by eagles.

OPINION OF THE SERVICE

The proposed fishing pier, taken together with the indirect and interrelated effects associated with the human use of the pier and parking lot facilities, and the cumulative effects associated with the development and human use of the county park and State Route 618, will result in the significant degradation of at least 119 acres (24-acre park and 95 acres within a 500 m disturbance zone north and west of park boundary) of bald eagle perching and loafing habitat along the shoreline and 73 acres (500 m disturbance zone channelward and 500 m upstream of pier) of eagle foraging habitat within the James River. As the largest summer eagle concentration area in the eastern United States, the Powell Creek area provides essential feeding and migratory habitat for the three bald eagle recovery populations of the eastern United States. Although this seven-mile segment of river shoreline has been relatively undisturbed until recently, development pressures are increasing. If significant shoreline development and land clearing occurs in this area of the James River, this essential eagle habitat will be lost.

It is the opinion of the Service that this project is not likely to jeopardize the continued existence of the three bald eagle recovery populations that use the Powell Creek concentration area. This opinion is based upon two premises. First, Charles City County has incorporated measures to minimize the amount of shoreline clearing and forest canopy clearing and has structured the park to be a relatively low human-use facility. Therefore, the impacts to eagles and their habitat should be limited to the area immediately surrounding the park. Second, the fishing pier and County park will provide public access to and recreational use of the James River for the residents of Charles City County and others, and should reduce the need to develop private waterfront recreational facilities elsewhere on the river. This public facility should thus contribute to the protection of eagle habitat along the remaining portion of the north side of the Powell Creek concentration area.

INCIDENTAL TAKE

Section 9 of the Endangered Species Act prohibits the taking of listed species within the United States by any person subject to the jurisdiction of the Federal government without a special exemption. Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Harass has been defined as an intentional or negligent act or omission which creates the likelihood of injury by annoying individuals to such an extent as to significantly disrupt normal behavior patterns. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of an agency action subject to the provisions of Section 7 is not considered a prohibited taking within the bounds of the Act, provided that such taking is in compliance with an incidental take statement.

Pursuant to 50 CFR 402.14(g)(7), the Service is to formulate a statement concerning the incidental take of a listed species. This statement must include the level of take that is

anticipated to occur due to the Federal action. The Service is to develop, and the Federal agency and/or applicant is to implement, reasonable and prudent measures that will minimize the impacts of the action on the species. In addition, the Service must set the terms and conditions that must be complied with. If the level of incidental take is exceeded, formal consultation under Section 7 must be reinitiated.

The measures described below are nondiscretionary, and must be made a binding condition of any DOA permit issued to Charles City County.

Amount and Extent of Take

The Service anticipates that incidental take of bald eagles will occur in the form of harassment and harm. Bald eagles perch, forage, and roost within the park boundaries and adjacent areas of the James River. Harassment of eagles is likely to occur in the form of disturbance of foraging and perching during the day and roosting at night as park visitors drive/park their vehicles; walk on the nature trails, boardwalk, scenic overlooks, and roads; and fish from the pier. Harassment is also likely to occur through disturbance from boats that may be attracted to the fishing pier. Distances at which humans disturb eagles during the summer were previously cited under "Effects of the Federal Action." Based upon those distances, up to 500 m (1,640 feet) of eagle habitat used for foraging, perching, and roosting within and around the park and pier could be affected by human activities. If boats approach the pier, up to 900 m (2,952 feet) of habitat around the pier may become unavailable for use by eagles. It is anticipated that this harassment will be periodic, with most human disturbance occurring during weekends between April and October.

Harm to eagles is expected to occur through permanent degradation of their perching and foraging habitat by means of vegetation clearing and park development. Approximately 1.2 acres of wooded habitat will be cleared or thinned. Parking lots, roads, restroom facilities, and picnic facilities will be constructed, resulting in 2.3 acres of habitat loss. The effects of clearing and development were discussed under "Effects of the Federal Action." Based upon that literature review, it is not likely that eagles will use the park area after it is developed, thereby decreasing the total amount of habitat available within the concentration area. However, if use of the park during week days is minimal, eagles may continue to use the area during that time, although total abandonment is considered equally likely. Besides development, clearing and thinning of vegetation allows eagles to more easily view humans, increasing the distance at which they will be disturbed by human activity within the park. Up to 119 acres of habitat within and around the park may be rendered functionally unusable by eagles.

Harm to eagles is also expected to occur through use of fish attractants. Fish that swallow hooks and are cut loose may be picked up by eagles which may become ensnared in the hook and any attached line. The result of this is death or injury. Fish attractants entangle monofilament line and fish hooks and the pilings of the pier itself will likely ensnare lines and hooks. These lines and hooks can be washed from the attractants and pilings and may be picked up by eagles. Birds that pick up these hooks or lines may themselves become entangled or bring the hooks or lines back to their nests resulting in entanglement of

nestlings. Entanglement in fish hooks or monofilament line can result in injury or death because the entangled bird can no longer carry out its daily activities. Based upon observations elsewhere (Mitchell Byrd pers. comm. 1992; BioSystems Analysis, Inc. 1991), the Service expects that one bald eagle may be injured or killed as a result of line or hook entanglement every year.

Reasonable and Prudent Measures

The incidental take statement provides measures that are necessary or appropriate to minimize take of the listed species. Such measures should decrease the level of take to the maximum extent possible or describe methods by which to replace the capability of the population or habitat to support preactivity levels. These measures are to be reasonable and prudent, meaning that the nature of the corrective action required is commensurate with the impact on the species/habitat (e.g., a minor effect on the species/habitat resulting from the action requires minor effort to minimize, while an anticipated significant, but not jeopardy, level of take may require substantially greater effort to minimize). Such measures are to be within the authority or capability of the agency or applicant to perform, and should not alter the basic purpose, location, scope or duration of the Federally permitted action. The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take.

Construction Impacts

Time-of-year restrictions are necessary on all construction and vegetation clearing within the park and activities relating to State Route 618. By conducting construction activities between October 1 and April 30, eagles utilizing the concentration area will not be disturbed and forced to abandon foraging and perching sites. As the amount of development increases, eagle use decreases, this is especially true during the summer.

Habitat Degradation

Clearing of vegetation should be kept to a minimum. Clearing of vegetation allows eagles a better view of human activities occurring below the forest canopy, thereby increasing their flush and avoidance distance. The loss of vegetation, especially large trees, decreases the amount of available perching and foraging habitat in the area.

Human Use and Disturbance

The pier will likely attract boats which, as discussed under "Effects of the Federal Action," are disturbing to eagles. As boats approach the pier and associated shoreline, eagles using adjacent areas are likely to flush and not return for several hours. To ensure that boats do not approach the pier and its associated shoreline, signs must be placed in the river within 10 feet of the edge of the riparian zone of the County's property. These signs will let boaters know that mooring/boat traffic is not recommended between these signs and the pier. In addition, signs must be placed on the pier indicating that mooring or docking at the pier is prohibited.

A structure restricting vehicle traffic must be placed on the road between the two parking lots. This structure will prevent traffic from dusk to dawn between May 1 and September 30. The structure will prevent vehicle access to the parking lot by the pier, thereby decreasing the amount of human activity on the shoreline after dusk. If human activity along the shoreline and associated woodlands decreases after dusk, the chances of disturbing and flushing roosting birds decreases.

Hook and Line Entanglement

Fish that are cut from lines and returned to the water and use of fish attractants around the pier would greatly increase the amount of fishing line and hooks that may be picked up by eagles. As discussed under "Effects of the Federal Action," eagles of any age may become entangled in hooks and lines, which may result in death. The pilings from the pier itself will attract fish and could ensnare lines and hooks. The benefits accrued by use of additional fish attracting structures is outweighed by the possible harm to eagles. To further address this problem, a sign must be placed near the pier in a setting which will attract the attention of anglers about to walk onto the pier. The sign's main purpose will be to describe possible problems for eagles associated with fishing line and hooks and ways to avoid and minimize these problems. The sign should also have some general background information about bald eagles.

Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the Act, Charles City County is responsible for compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions must be incorporated as binding conditions of any DOA permit issued by the Corps.

1. There will be no construction of fish attractants in the James River.
2. A sign must be placed next to pier providing the public with information on bald eagles and potential problems from monofilament fishing line and hooks. The language for this sign must be drafted in cooperation with the Service and must be in place prior to public use of the pier.
3. Signs must be placed on the pier indicating that boat mooring/docking is not permitted. The wording of these signs, their size, number, and placement must be developed by the County in cooperation with the Service, the Corps, and any other required regulatory agencies prior to the construction of the pier. These signs must be in place within one week of the completion of the pier. In addition, advisory signs must be placed in the James River around the perimeter of the pier, within 10 feet of the edge of the riparian zone of the County's property, indicating that this is a no wake zone and that mooring/boating within this zone is discouraged because of possible adverse impacts to bald eagles. The wording of these signs, their size, number, and placement must be developed by the County in cooperation with the Service, the Corps, and any other required regulatory agencies prior to the construction

of the pier. These signs must be in place upon completion of the pier.

4. Construction of the pier and riprap and clearing of vegetation for placement of riprap and the southern parking lot will not occur between June 1 and September 30, 1992. However, after calendar year 1992, construction or maintenance of these facilities will not occur between May 1 and September 30. The County must notify the Service and the Corps upon initiation and completion of the pier, riprap, and southern parking lot.

5. Some type of structure (e.g., a gate) precluding vehicle access must be placed across the road between the upper and lower parking lots of the park. The structure must be approved by the Service. To one side of this structure, access for wheelchairs may be provided. A sign (approved by the Service) must be placed on or adjacent to the restrictive structure indicating that no vehicular traffic, including motorcycles, is allowed beyond this point. This structure must restrict traffic from dusk to dawn during the period of May 1 through September 30 of each year.

6. Clearing of vegetation within the park must be minimized. During the initial construction of the park, the Service must review and approve of all land clearing and vegetation removal activities. After initial construction, maintenance of the park may include the removal of understory vegetation. Trees greater than 12 inches in diameter may not be removed without the approval of the Service.

7. Construction activities and clearing of vegetation, other than those discussed under Condition 4 above, will not occur between May 1 and September 30 of each year.

The incidental take statement provided in this Opinion satisfies the requirements of the Endangered Species Act, as amended. This statement does not constitute an authorization for take of listed migratory birds under the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act or any other Federal statute.

Reporting and Monitoring Requirements

The terms and conditions of the incidental take statement require Charles City County to notify the Service upon the initiation and completion of the construction of the pier, riprap, and southern parking lot. The County must also notify the Service upon the initiation and completion of construction of the remainder of the park facilities. The contact for these reporting requirements is as follows:

Virginia Field Office
U.S. Fish and Wildlife Service
Mid-County Center, U.S. Route 17
P.O. Box 480
White Marsh, VA 23183

(804) 693-6694

In order to ensure that the level of incidental take associated with habitat loss and disturbance is not exceeded, the County must provide the Service (at the above address) with aerial photographs of the park taken before construction activities begin and after completion of all park facilities. These photographs should be at a scale not to exceed 1:12,000 and must be submitted to the Service within two months of the completion of the entire park.

In order to monitor the level of incidental take associated with human disturbance, the County must conduct a two-year study on the effects of human activity on bald eagles. The study will run from June 1 through August 30, 1993 and from June 1 through August 30, 1994. If the construction schedule changes, the dates of the study may likewise change. The study must be conducted by an investigator chosen in cooperation with the Service. During each summer, the investigator will visit Willcox Wharf and one other site within the concentration area containing similar numbers of birds, as documented from previous eagle surveys (as shown in Figure 3). Each site will be visited 2 times per week for 2 hours beginning at sunrise. During each visit the investigator will observe foraging attempts and their distance from the pier or shoreline, perching birds and distance from the pier or shoreline, avoidance/flushing caused by boats and/or humans and distance of each. The details of this study and its funding mechanism must be in place by March 1, 1993.

Upon locating a dead, injured, or sick endangered or threatened species specimen, initial notification must be made to the nearest Service Law Enforcement Office. Contact either of the following Law Enforcement offices:

Division of Law Enforcement
U.S. Fish and Wildlife Service
8301 Willis Church Road
Richmond, VA 23231
(804) 771-2481

Division of Law Enforcement
U.S. Fish and Wildlife Service
P.O. Box 187
Yorktown, VA 23690
(804) 890-0003

Care should be taken in handling sick or injured specimens to ensure effective treatment and care in handling dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered species or preservation of biological materials from a dead animal, the finder has the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

REINITIATION OF FORMAL CONSULTATION

Issuance of this Biological Opinion concludes formal consultation on this Federal action. As required by 50 CFR 402.16, reinitiation of formal consultation by the Corps is required if: (1)

the amount or extent of incidental take is reached; (2) new information reveals effects of the action that may impact listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

If, during the course of the action, the amount or extent of the incidental take limit is reached, the Corps must reinitiate consultation with the Service immediately to avoid violation of Section 9. Operations must be stopped in the interim period between the initiation and completion of the new consultation if it is determined that the impact of the additional taking will cause an irreversible and adverse impact on the species, as required by 50 CFR 402.14(i). The Corps should provide an explanation of the causes of any such taking.

FISH AND WILDLIFE COORDINATION ACT REPORT

The description of the resources of the project site and the impacts associated with the construction and use of the proposed facilities included under the Service's Biological Opinion are pertinent to our comments under the Fish and Wildlife Coordination Act. Besides bald eagles, other migratory birds such as woodland warblers (Dendroica species), vireos (Vireo species), and flycatchers (Empidonax species), which are experiencing population declines, utilize large tracts of forest. Many of these birds require large (85 acres or greater), undisturbed, and generally mature forested areas to reproduce and sustain viable populations. Clearing can subdivide forests, creating "islands" of habitat which are of unsuitable size for many of these species. Human activities in the park will also disturb these birds. Likewise, line entanglement associated with the fish attractants could result in death or injury to other water birds such as ospreys, egrets (Family Ardeidae), and herons (Family Ardeidae).

The Service's recommendation to the Corps under the Fish and Wildlife Coordination Act are the same as our recommendations given under the Endangered Species Act. We recommend that the conditions provided on pages 15 and 16 of the Biological Opinion be included as conditions of any DOA permit issued to Charles city County. We also recommend that the DOA permit include a condition to require the use of silt fencing and straw bales landward of the fringing riparian vegetation along the James River in any areas that land clearing and grading will occur.

The Service appreciates the opportunity to work with the Corps in fulfilling our mutual responsibilities under the Endangered Species Act. Please contact Cindy Schulz of our Virginia Field Office at (804) 693-6694 if you require additional information or wish to discuss our comments further.

Sincerely,

John P. Wolflin
Supervisor
Annapolis Field Office

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Appendix A - Consultation History

04-30-91 The Service met with the Corps of Engineers, Charles City County, Virginia Department of Game and Inland Fisheries (VDGIF), Shoreline Erosion Advisory Service (SEAS), Rickmond Engineering, Virginia Institute of Marine Science, Virginia Marine Resources Commission (VMRC), State Water Control Board, Department of Conservation and Recreation, and Dr. Mitchell Byrd, a state eagle expert, from the College of William and Mary, on site for a pre-application meeting.

09-19-91 The County's application was discussed at the interagency joint permit processing meeting at the Corps' office in Norfolk. The Service received the County's initial permit application at this time.

10-03-91 The Service participated in a meeting to discuss what additional information was needed to complete the Section 7 consultation. Also in attendance at this meeting were the Corps, VDGIF, Virginia Division of Natural Heritage, and Dr. Mitchell Byrd.

11-01-91 The Service and the Corps met to discuss the need for further information from the applicant and possible mitigation strategies. The Service received the County's revised application at that meeting.

11-12-91 Karen Mayne, Service, called William Britton, Charles City County, to discuss possible mitigation measures.

12-03-91 The Service and Corps met at Willcox Wharf to determine exact locations of the proposed park facilities.

12-19-91 The Service met with the Corps, VDGIF, and representatives of the County to discuss mitigation strategies. Additional information was requested from the County by both the Corps and the Service. VDGIF gave the Service a copy of their December 19, 1991 letter to the Corps addressing anticipated use of the fishing pier.

01-09-92 The Service received the Corps' Public Notice on the County's permit application.

01-10-92 The Service participated in an on-site meeting with the Corps, Charles City County, SEAS, Rickmond Engineering, and Virginia Department of Forestry to discuss the

location of head-of-tide, placement of riprap, and amount of clearing anticipated.

01-14-92 The Service received the Corps' request for initiation of formal consultation.

01-23-92 The Corps officially requested a copy of the draft biological opinion be sent to them.

01-23-92 The Service spoke with William Britton to discuss clearing around the area of the pier. Mr. Britton stated that the County wants the site to remain as natural as possible, but will need to thin some trees and remove brush and vines in the understory.

01-30-92 The Service received a permit application revision to the fish attractor design.

02-02-92 The Service received a copy of a letter from the Endependence Center, Inc. to the Corps. The letter indicated changes needed to the boardwalk for wheelchair accessibility.

02-24-92 The Service submitted the draft Biological Opinion the Corps, the County, and VDGIF.

03-05-92 The Service met with the Corps, VDGIF, VMRC, Rickmond Engineering, and representatives of the County to discuss the draft biological opinion.

03-12-92 The Service received a permit application revision for the installation of advisory signs in the James River.

(CSchulz:01/02/92)
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bcc: ARD/FWE, Newton Corner, MA
AFO, Annapolis, MD
(ATTN: John Wolflin)
(ATTN: Jacobs/Moser)
VDGIF, Richmond, VA
(ATTN: Ray Fernald)
(ATTN: Dana Bradshaw)
(ATTN: Mark Wood)
Division of Natural Heritage
Virginia Department of Conservation and Recreation
Dr. Mitchell Byrd, College of William and Mary
Manager, James River NWR
County Administrator, Charles City County
Gary Frazer, USFWS

John Rayfield