January 26, 1995

Colonel Andrew M. Perkins, Jr.
District Engineer
Norfolk District, Corps of Engineers
Fort Norfolk, 803 Front Street
Norfolk, Virginia 23510-1096

Attn: Ms. Alice Allen-Grimes
Regulatory Branch

Re: Route 636, Craig County
Project #: 0636-022-6106-S05

Dear Colonel Perkins:

The U.S. Fish and Wildlife Service (Service) has reviewed the Virginia Department of Transportation (VDOT) permit application CENAO-CO-R 94-4066-15. This responds to the September 15, 1994 request from the U.S. Army Corps of Engineers (Corps) 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 effects of the VDOT permit application to repair two, undermined abutments on the existing Route 636 bridge over Dicks Creek in Craig County, Virginia. Your September 15, 1994 request for formal consultation was received on September 21, 1994. This document represents the Service's biological opinion on the effects of the proposed action on the Federally endangered James spinymussel (Pleurobema collina) in accordance with Section 7(b) of the Endangered Species Act of 1973.

This biological opinion is based on information provided in the project package distributed at the interagency coordination meeting of July 21, 1994. It is also based on the results of a mussel survey report of the project area submitted by Catherine Gatenby and Dr. Richard Neves dated May 1994, and numerous telephone conversations with VDOT staff.

SCOPE OF THE BIOLOGICAL OPINION

VDOT has applied for a Department of the Army permit to repair two, undermined abutments on the existing Route 636 bridge over Dicks Creek in Craig County, Virginia. The geographic limits of this project and its potential impacts to the James spinymussel will include the stream reach in Dicks Creek

from 400 meters downstream to about 30 meters upstream of the Route 636 bridge, and the stream reach of Little Oregon Creek from the confluence with Dick's Creek to approximately 100 meters upstream.

During a recent freshwater mussel survey conducted by Dr. Richard Neves of the Virginia Polytechnic Institute and State University, four live specimens and two valves (shells) of James spinymussels were seen, including one in Little Oregon Creek and three in Dicks Creek, 20-35 meters downstream from the bridge. The valves were found in Dicks Creek.

Dicks Creek is approximately 8 feet wide at the Route 636 bridge. The bridge measures 19 feet wide by 16 feet long. Abutments are 25 feet long and have been undermined to a depth of approximately 2 feet.

The project will require 120 square feet of excavation and the placement of 260 square feet of fill below ordinary high water for abutment repairs within cofferdams. Cofferdams will be constructed using sandbags. The area within the cofferdams will be approximately 150 square feet. Water will be pumped from within the cofferdams into settling basins using a portable pump. Following dewatering, a frame will be built at the base of the two abutments and will be filled manually with concrete. VDOT estimates that all instream work will be completed within two weeks. No heavy equipment will be located within Dicks Creek during construction.

CONSULTATION HISTORY

Consultation history regarding this project is provided in Appendix A.

BIOLOGY AND STATUS OF THE JAMES SPINYMUSSEL

The James spinymussel was listed as an endangered species on July 22, 1988 (50 CFR 17.11). Prior to its decline, the species was found throughout the James River above Richmond, in the Rivanna River, and in ecologically suitable areas in all of the major upstream tributaries. Suitable habitat includes free-flowing freshwater streams 3 to 23 meters wide and 15 to 100 cm deep. The James spinymussel is found in sediments of cobble and sand with a slow to medium current (Clarke and Neves 1984). The species has declined rapidly during the past two decades and it is now known to survive in only ten waterways including Craig, Johns, Dicks, Patterson, Potts, and Catawba Creeks, the Pedlar, Mechums, and Moormans Rivers, and Rocky Run. It is found in Alleghany, Amherst, Albemarle, Botetourt, Monroe, and Craig County, Virginia and Monroe County, West Virginia. With the exception of the Craig and Johns Creek populations, all populations are small and very restricted in distribution.

The shell of the James spinymussel is subrhomboid in juveniles with an obliquely subtruncated posterior, widely-spaced concentric striations, a shiny, straw-colored periostracum, and with or without spines on each valve. With growth the shell becomes more ovate or even arcuate, develops a rounded posterior and a brownish-black periostracum, and in most cases loses any spines it may have had. In the adult the posterior ridge is also broad and rounded, hinge teeth are medium-sized but strong and completely developed, and nacre is whitish and with or without pink or bluish suffusions (Clarke and Neves 1984).

The James spinymussel is a filter feeder. It feeds on plankton collected from water passed over its mucous-lined gills, thereby consuming large quantities of micro-organisms and inert organic material from the water column (Fuller 1977).

The James spinymussel is considered to be a short-term brooder. Both spawning and glochidial (larval) release occur between approximately May 15 and July 31. Male mussels release sperm into the water column in the spring; the sperm is then taken in by females during siphoning. Fertilized eggs are retained in the gills, which serve as brood pouches for the developing glochidia. The glochidia drop off the female's gills, enter the water column, and attach to an appropriate host fish. Known fish hosts include the bluehead chub (Nocomis leptocephalus), rosyside dace (Clinostomus funduloides), blacknose dace (Rhinichthys atratulus), mountain redbelly dace (Phoxinus oreas), rosefin shiner (Notropis ardens), satinfin shiner (Notropis analostanus), and stoneroller (Campostoma anomalum).

The main causes of decline for this species are thought to be siltation, invasion of the exotic Asiatic clam (Corbicula fluminea), impoundment of rivers, and water pollution. Siltation generated by road construction, agriculture, and forestry practices have contributed to water quality problems and the decline of the James spinymussel. Suspended sediment can clog the gills of filter feeding mussels and eventually suffocate them. Asiatic clams often reach high population densities in freshwater streams and have been shown to remove between 40 and 60% of the phytoplankton from one stretch of river (Cohen et al. 1984). Impoundment construction changes the habitat from lotic to lentic conditions, which many mussel species cannot survive, and often causes increased downstream siltation and decreasing flow rates. Due to changes in flows below impoundments, water temperatures may be lowered and host fish communities may be eliminated (Bates 1962). Water pollutants that impact mussel populations include such substances as fly ash and sulfuric acid (Cairns et al. 1971, Raleigh et al. 1978), acid mine drainage (Neel and Allen 1964), organic wastes (Schmidt 1982), insecticides (Salanki and Varanka 1978), and chlorinated effluent from sewage treatment plants (Goudreau 1988).

EFFECTS OF THE FEDERAL ACTION ON THE JAMES SPINYMUSSEL AND ITS HABITAT

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 the direct and indirect effects of the action on the species. Direct impacts to the James spinymussel associated with this project include the potential to kill and/or injure mussels during construction between 30 meters upstream and 400 meters downstream in Dicks Creek. Mussels may be killed or stressed due to siltation of the stream from construction-

related activity. Cofferdam construction and abutment repair may kill or injure mussels by crushing or covering them, creating high turbidity in the water column, or by dewatering the streambed within the cofferdam. Mussels may also be removed from the streambed during excavation, resulting in death. As stated above, direct effects will occur downstream and slightly upstream due to siltation. Siltation will result in harm to mussels through impairing their ability to feed as discussed in Biology and Status of the James Spinymussel.

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 to adult and larval mussels will result from siltation during rain events both during and after construction within the geographic limits of this project. Removal and disturbance of streamside vegetation will encourage erosion from the site thereby increasing turbidity in Dicks Creek and Little Oregon Creek.

OPINION OF THE SERVICE

It is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the James spinymussel. No critical habitat has been designated for this species, therefore, none will be affected.

INCIDENTAL TAKE

Sections 4(d) and 9 of the Endangered Species Act, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. 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. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, 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 the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this 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 with which the Federal agency must comply. If the level of incidental take is exceeded, formal consultation under Section 7 must be reinitiated.

The U.S. Army Corps of Engineers (Corps) has a continuing duty to regulate the activity that is covered by this incidental take statement. If the Corps fails to require the applicant to adhere to the terms and

conditions of the incidental take statement through enforceable terms that are added to the permit, the protective coverage of 7(o)(2) may lapse. The measures described below are non-discretionary, and must be implemented by the Corps so that they become binding conditions of any permit issued to the applicant in order for the exemption in 7(o)(2) to apply.

Amount and Extent of Take

The Service anticipates that incidental take of James spinymussels is likely to occur during construction in the form of direct killing of an unknown but small number of individuals and harm of an unknown number of individuals due to physical disturbance, siltation, and other water quality degradation, in that portion of Dicks Creek from 30 meters upstream of the Route 636 bridge to 400 meters downstream of the bridge, and the stream reach of Little Oregon Creek from the confluence with Dick's Creek to approximately 100 meters upstream

REASONABLE AND PRUDENT MEASURES TO MINIMIZE TAKE

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. 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 that the following reasonable and prudent measures are necessary and appropriate to minimize take of the James spinymussel from the proposed project:

o Construction must be conducted during the time of year when impacts to the James spinymussel reproductive cycle is minimized. Construction should be avoided during April 15 through July 31 when James spinymussels are spawning and releasing glochidia, since this is the most sensitive life stage of the species.

o Siltation of the water column of Dicks Creek and Little Oregon Creek must be minimized to the maximum extent possible to avoid stress or death of James spinymussels.

o Activity within Dicks Creek must be minimized to avoid siltation and physical injury to James spinymussels. No machinery will be allowed in the river and human traffic in the river must be minimized and confined to the area of the existing bridge. Cofferdams must be located as close to the existing bridge as possible.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize incidental take that might otherwise result from the proposed action. With implementation of these measures the Service believes that no more than three James spinymussel will be incidentally taken. If, during the course of the action, this minimized level of incidental take is exceeded, such incidental take represents new information requiring review of the reasonable and prudent measure provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the Endangered Species Act, the Corps, and VDOT must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary and must be incorporated as binding conditions of any Corps permit. These measures are mandatory.

1. No instream work during the time period of April 15 through July 31 of any year.

2. No mechanized equipment in Dicks Creek. Any equipment operated from the shoreline will operate from a rock construction pad or be placed on a mat to reduce sedimentation into Dicks Creek or Little Oregon Creek.

3. All floodplain and wetland fill must be removed from the construction area immediately upon the termination of construction and resultant exposed soils will be stabilized and seeded immediately following disturbance.

4. Any vegetation removal adjacent to the streambank will be minimized. Trees will be felled on land rather than into the waters of Dicks Creek.

5. Instream work must be completed in the dry using non-erodible cofferdams made of sandbags. Water within the cofferdams will be pumped into sedimentation control basins constructed on dry land adjacent to Dicks Creek just downstream of the Route 636 bridge.

6. Human traffic within the creeks during construction will be minimized.

7. No excavation of the stream bottom will be allowed outside of cofferdams.

8. Sediment and erosion controls must be strictly adhered to in accordance with the Virginia Erosion and Sediment Control Handbook (Virginia Department of Conservation and Recreation 1992).

9. All debris will be contained and removed from the site.

10. VDOT biologists must visit the project site weekly during construction to assure that all reasonable and prudent measures are adhered to. If violations of these reasonable and prudent measures occur, VDOT must stop work and notify the Corps, the Service, and the VDOT Aquatic Ecology Chief immediately, and remedial measures to correct the violation must be completed within 24 hours of their discovery.

Reporting and Monitoring Requirements

VDOT must contact the Service four weeks before initiation of construction to ensure proper coordination on this project and implementation of the terms and conditions of the incidental take statement.

The contact for this requirement 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

Upon locating a dead mussel specimen, immediate notification must be made to both the Service office listed above and the following Service Law Enforcement office:

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

Care should be taken in handling dead specimens to preserve biological material in the best possible state. In conjunction with the preservation of biological materials for a dead animal, the finder has the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

REINITIATION OF FORMAL CONSULTATION

This concludes formal consultation on this Federal action. As required by 50 CFR 402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a

manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an adverse 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. In instances where the amount or extent of incidental take is exceeded, all activities that are causing such take must cease until such time as any necessary consultation is completed in order to avoid violation of Section 9 of the Endangered Species Act.

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

Sincerely,

Karen L. Mayne
Supervisor
Virginia Field Office

Attachment

cc: Mr. Steve Long
VDOT, Richmond, VA
Mr. Thomas Hamlett
VDOT, Salem District Office, Salem, VA

REFERENCES

Bates, J.M. 1962. The impacts of impoundments on the mussel fauna of Kentucky Reservoir, Tennessee River. In G.A. Moser. 1990. James spinymussel (Pleurobema collina) recovery plan. U.S. Fish and Wildlife Service, Newton Corner, MA. 35 pp.

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Neel, J.K. and W.R. Allen. 1964. The mussel fauna of the upper Cumberland basin before its impoundment. In G.A. Moser. 1990. James spinymussel (Pleurobema collina) recovery plan. U.S. Fish and Wildlife Service, Newton Corner, MA. 35 pp.

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Virginia Department of Conservation and Recreation. 1992. Virginia Erosion and Sediment Control Handbook, 3rd ed. Technical Services Bureau, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, Richmond, VA.

Appendix A

Consultation History

1-24-94 The Virginia Department of Transportation (VDOT) requests a desktop review of the project location by Dr. Richard Neves of Virginia Polytechnic and State University (Virginia Tech).

5-2-94 The U.S. Fish and Wildlife Service (Service) recommends that VDOT survey for the James spinymussel at the project location.

5-94 Final report submitted to VDOT by Catherine Gatenby and Dr. Richard Neves of Virginia Tech, on the survey of the freshwater mussel fauna at the proposed project location in Dicks Creek and Little Oregon Creek.

7-19-94 VDOT presents project at the VDOT interagency coordination meeting.

9-15-94 Norfolk District Corps informs the Service that the proposed construction may affect the James spinymussel and requests initiation of formal Section 7 consultation.

10-12-94 Service informs the Norfolk District Corps that a Biological Opinion will prepared by January 26, 1995.

bcc: DARD-ES(FO) Hadley, MA
Supervisor, CBFO
(ATTN: Andy Moser)
VDGIF, Richmond, VA
(ATTN: Bret Preston)
(ATTN: Mike Pinder)
Division of Natural Heritage
Virginia Department of Conservation and Recreation
USFWS-LE, Richmond, VA
VAFO, White Marsh, VA
(ATTN: Cindy Schulz)
(James spinymussel file)

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