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

Attn: Jennifer McCarthy
Regulatory Branch

Re: Virginia Natural Gas Pipeline, Permit Application 94-1205-13, Chesapeake and Virginia Beach, Virginia

Dear Colonel Perkins:

The U.S. Fish and Wildlife Service (Service) has reviewed the Virginia Natural Gas Department of the Army (DOA) permit application 94-1205-13 to construct a natural gas pipeline in Virginia Beach and Chesapeake, Virginia. Your December 28, 1994 request for formal consultation was received in this office on January 4, 1995. This document represents the Service's biological opinion on the effects of that action on the Dismal Swamp southeastern shrew (Sorex longirostris fisheri) in accordance with Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). It should be noted that the Dismal Swamp southeastern shrew has not been documented within the entire project site, but the applicant has chosen to assume this species is present in areas with appropriate habitat.

## I. CONSULTATION HISTORY

08-23-94 The Service received the Corps' request to initiate formal consultation.

09-01-94 The Service participated in a site visit with the Corps, Virginia Marine Resources Commission, and the project consultant. During the site visit, the Service requested additional information regarding a portion of the pipeline route and the Corps indicated that this information would be provided.

10-27-94 The Service contacted the Corps to state that we had not received the additional information.

11-18-94 The Service contacted the Corps to state that we had not received the additional information.

01-04-95 The Service received the Corps' revised request to initiate formal consultation, which contained complete information regarding the pipeline route.

## II. BIOLOGICAL OPINION

### DESCRIPTION OF PROPOSED ACTION

The permit applicant, Virginia Natural Gas, has applied for a Federal permit to construct an approximately 12-mile long buried pipeline in Virginia Beach and Chesapeake, Virginia (see attached map). The crossing of Gum Swamp and two branches of the North Landing River are within an existing Virginia Power overhead transmission line right-of-way (ROW) that is maintained in cut-over emergent and scrub-shrub vegetative cover. For this portion of the route, the impacts of trenching, installing the pipeline, and backfilling with excavated material should be temporary in nature and should not permanently destroy wetlands. Temporary access bridges constructed of wooden mats, steel treadways, or steel culverts covered with crushed stone will be installed in wetland areas. Vegetation along the permanent 20-foot ROW and an additional 30-foot temporary construction ROW will be removed along the entire length of the pipeline route. Clearing in the temporary ROW will be accomplished using chainsaws to minimize soil disturbance. No wetland areas will be filled and effective erosion and sediment controls will be used. The trench will be 36-inches wide with varying depths. Excavation of the trench will be accomplished using a track-mounted backhoe or trencher. The length of open trench will not exceed 500 feet at any time and will not generally be open for more than 10 days. No stockpiling of material will occur in wetlands. The wetland communities in the construction area consist of the following:

| Wetland Type | Right-of-Way | |
|---|---|---|
| | 20-foot Permanent | 30-foot Temporary |
| Palustrine shrub-scrub | 0.92 acres | 1.38 acres |
| Palustrine emergent | 0.44 acres | 0.65 acres |

From the transmission line ROW, the pipeline route crosses through a wooded area to Elbow Road. The pipeline alignment along Elbow Road has been modified from the original plan and will now follow the Elbow Road ROW. The pipeline will be installed in the existing roadside ditch and grassed shoulder within a 30-foot permanent ROW. The temporary impacts to forested areas will consist of a 20-foot wide construction ROW along 3,400 linear feet that will be allowed to revegetate naturally once construction is complete. This community has been characterized by the applicant as deciduous/evergreen forest vegetated with sweet gum (Liquidambar styriciflua), loblolly pine (Pinus taeda), red maple (Acer rubrum), and giant cane (Arundinaria gigantea). The applicant found hydric-type soils at this site, but hydrologic indicators were not present. The temporary impacts will consist of approximately 1.5 acres, none of which are located in wetlands.

West of the Elbow Road alignment, the remainder of the pipeline route is in non-jurisdictional areas consisting of mowed areas along roadways and railroad easements, forested uplands, and farmed areas.

Once site work is complete, the graded area will be seeded in an annual cover crop to reduce soil erosion during the first year. Other than this cover crop, the restored area will be allowed to revegetate without additional plantings. Because the portions of the project located in wetlands are narrow, surrounded by hydrophytic vegetation, and most of the original soil profile will remain relatively undisturbed, the disturbed area will become colonized quickly by hydrophytic vegetation. Expected species include giant cane, wax myrtle (Myrica cerifera), soft rush (Juncus effusus), bulrush (Scirpus spp.), cattails (Typha angustifolia), and sedges (Carex spp.). Arrow arum (Peltandra virginica), pickerelweed (Pontederia cordata), and wild rice (Zizania aquatica) are also found along the ROW. The disturbed area should develop quickly into herbaceous emergent and scrub-shrub wetland communities.

The action area for this biological opinion has been determined by the Service to be the portion of the pipeline route from slightly east of Gum Swamp, west to the end of the Elbow Road alignment (see attached map). The remaining portions of the pipeline route have been determined not to contain appropriate habitat for the Dismal Swamp southeastern shrew. The action area includes the temporary and permanent ROWs as well as any other areas that are cleared of vegetation to enable the stockpiling of equipment, materials, etc. or pipeline construction.

RANGEWIDE STATUS OF THE DISMAL SWAMP SOUTHEASTERN SHREW

The Dismal Swamp southeastern shrew is a small mammal that weighs less than 0.2 ounces and measures approximately four inches in length. Little is known about the life history of the shrew, except that in 1905, a litter of five young were found in a nest in the Dismal Swamp (U.S. Fish and Wildlife Service 1994). However, it is likely similar to the life history of the southeastern shrew (S. l. longirostris). Based on a few studies, it appears that southeastern shrews average approximately four young per litter (U.S. Fish and Wildlife Service 1994). Pregnant southeastern shrews have been found in Indiana from 8 April to 25 September and in Alabama and Georgia from 31 March to 6 October (U.S. Fish and Wildlife Service 1994). Shrews of the genus Sorex usually have at least two litters per year (Churchfield 1990). It is likely that shrews remain in the nest for their entire period of growth and development and are nearly adult size when they leave the nest (U.S. Fish and Wildlife Service 1994).

Southeastern shrews feed mainly on small-sized invertebrates, but consume some vegetation (U.S. Fish and Wildlife Service 1994). Typically, shrews forage intermittently throughout the day and night in all seasons and seem to have highest levels of activity associated with rainfall and periods of high humidity. Much of their foraging occurs in the leaf litter or in tunnels in the upper layers of the soil (U.S. Fish and Wildlife Service 1994). Predators of southeastern shrews include barred and barn owls, domestic cats, and occasionally snakes, domestic dogs, and opossums (French 1980).

The main reasons for the shrew's decline are habitat loss and modification and possible loss of genetic integrity through interbreeding with the more common upland subspecies (U.S. Fish and Wildlife Service 1994). "It is

presumed that the Dismal Swamp southeastern shrew developed its distinctive size and coloration while geographically or ecologically isolated within the Great Dismal Swamp during the Holocene (Handley 1979). The recent human-induced progression toward homogenous mature hardwood forest, more representative of habitat conditions of the surrounding region, leads to the possibility that the more common and presumably more generally adapted...subspecies could invade the Dismal Swamp and genetically overwhelm the existing populations of S. l. fisheri, which are more specifically adapted to historic swamp conditions" (U.S. Fish and Wildlife Service 1994).

The Dismal Swamp southeastern shrew's distribution is considered to be coincidental with the boundaries of the historic Dismal Swamp, an extensive contiguous wetland complex that once occupied most of the low-lying land between Norfolk, Virginia and the Albemarle Sound in North Carolina. Historically, this wetland complex was maintained in a variety of successional stages (such as marshes, canebrakes, pocosins, and forest) by natural fires. The original Dismal Swamp ecosystem has been greatly reduced in size as a result of urban development and the clearing and draining of land for agriculture. Most of the remaining wetlands are forested. Approximately 197,680 acres of these wetlands still remain, more than half of which are preserved by the Service as the Great Dismal Swamp National Wildlife Refuge, created in 1974, that is located in Virginia and North Carolina. The Service is attempting to restore some of the vegetational and successional diversity to the portion of the Dismal Swamp ecosystem within the National Wildlife Refuge. The Great Dismal Swamp State Park in North Carolina provides an additional 22 square miles of shrew habitat. There are additional areas of protected shrew habitat such as the North Landing River Preserve and the Northwest River Park in Virginia and Elizabeth City State University's Dismal Swamp Wetland in North Carolina.

Outside of the protected areas, remnants of the Dismal Swamp are rapidly disappearing in southeastern Virginia due to development associated with the Hampton Roads metropolitan area (U.S. Fish and Wildlife Service 1994). In North Carolina, agricultural and silvicultural conversion are the main causes of habitat loss. "In the vicinity of Elizabeth City, North Carolina, for example, two tracts totalling some 32,000 acres of swamp have been cleared and drained within the past 20 years. In addition to these contiguous tracts, many smaller areas within the historic Dismal Swamp of North Carolina have been ditched and cleared in a piecemeal fashion. In Virginia, a comparison of U.S.G.S. 7.5-minute topographic maps to recent aerial photography revealed a collective loss of some 2,600 acres of forested land, scattered over four maps portraying the Dismal Swamp (S. Martin, U.S. Army Corps of Engineers, pers. comm. 1993)" (U.S. Fish and Wildlife Service 1994).

Within the historic Dismal Swamp boundaries, the Dismal Swamp southeastern shrew is found in a range of habitats including recent clearcuts, regenerating forests, young pine plantations, grassy and brushy roadsides, young forests with shrubs and saplings, and mature pine and deciduous forests (U.S. Fish and Wildlife Service 1994). The shrew is likely to exist at highest densities in early successional wetland habitats, such as cane stands; shrub-dominated areas; and young, open forests which retain a fairly dense herbaceous understory. The shrew also occurs at high densities within cleared right-of-ways, such as those used for utility lines, as these areas often contain early successional habitats such as scrub-shrub wetlands. Mature wetland forests also provide habitat diversity important to the integrity and dynamic structure of the shrew population as a whole. Rose (1983) found that the shrew was most abundant in mid-successional, 12 to 15 year-old regenerating forests having a dense understory, moist organic soils, and moderate leaf litter.

Recently, new evidence suggests that the Dismal Swamp southeastern shrew may occur throughout the coastal plain of North Carolina, at least as far south as Wilmington (U.S. Fish and Wildlife Service 1994). However, until this can be substantiated through additional distribution and taxonomy studies, the shrew will remain on the Service's list of endangered and threatened wildlife and plants. As such, the shrew, and its habitat, will continue to receive protection pursuant to the Endangered Species Act until it is removed from this list.

ENVIRONMENTAL BASELINE

Status of the Species - The majority of the action area is upland and wetland forests with little to no development. The only known habitat disturbances are the Virginia Power overhead transmission line, Elbow Road, and a few agricultural fields. The entire action area contains habitat appropriate for the Dismal Swamp southeastern shrew. The shrew has been documented in the flood plain of the North Landing River, including Gum Swamp (Virginia Department of Game and Inland Fisheries 1989). Within the portion of the Virginia Power ROW that will be part of the pipeline route, shrew surveys have been conducted. Rose (1989) documented the shrew in the powerline ROW 100-200 meters west of Gum Swamp. Padgett (1991) also documented the shrew in the powerline ROW west of Gum Swamp off Indian River Road.

Effects of the 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 the direct effects of the action on the species. Direct impacts to the shrew associated with this project include the potential to crush shrews with construction vehicles and heavy equipment while clearing vegetation and installing the pipeline resulting in death or injury. Shrews also may be killed or injured during stockpiling of materials and/or equipment.

In addition, during clearing for and construction of the pipeline, cleared areas within the 50-foot ROW along the pipeline route will be unusable to shrews. Therefore, shrews will be directly affected by the temporary loss of at least 12.5 acres of habitat. It is possible that during clearing and/or construction, areas outside of the 50-foot ROW may be cleared of vegetation. Along Elbow Road, 1.56 acres of habitat will be temporarily lost within the 20-foot temporary construction ROW. The Elbow Road alignment will result in early successional vegetation, similar to what presently exists, within the permanent 30-foot ROW and trees will return within the temporary 20-foot ROW, therefore, no permanent loss of habitat is expected to occur. The portion of the route between Elbow Road and the transmission line will result in the temporary loss of 4.24 acres. Within the 20-foot permanent ROW, 1.7 acres of currently forested habitat will be maintained in a shrub-scrub successional stage in the future. However, because shrews utilize recently cleared areas, this will not result in permanent habitat loss. Within the transmission line ROW, 6.66 acres of shrew habitat will be temporarily lost. Because vegetation within the 50-foot ROW within wetlands will be allowed to return to its present state, there will not be a permanent loss of habitat within the transmission line ROW.

While there is likely to be a loss of individual shrews, because there will not be any permanent habitat loss, this loss should not affect the genetic viability or range of the species. Shrews from areas adjacent to the action area should be able to recolonize this site. "Because these shrews have a high reproductive potential and rapid maturation rate, limited collection of individuals is not detrimental to healthy populations, although more widespread mortality associated with loss or permanent alteration of habitat continues to constitute the primary threat to the survival of this subspecies." (U.S. Fish and Wildlife Service 1994).

Cumulative Effects - Cumulative effects include the effects of future State, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consulta-tion pursuant to Section 7 of Endangered Species Act.

One future activity that may affect the shrew is maintenance of the Virginia Power transmission line ROW and maintenance of the proposed pipeline ROW. Maintenance of these ROWs may result in death or injury to shrews from crushing by vehicles. The habitat alteration that occurs as a result of maintenance will likely result in a successional vegetation stage that can be used by the shrew. The majority of future development activities in this area will require a permit from the Corps and will be reviewed when a permit is applied for.

CONCLUSION

After reviewing the current status of Dismal Swamp southeastern shrew throughout its range and in the action area, the environmental baseline for the action area, the effects of the proposed pipeline construction and the cumulative effects, it is the Service's biological opinion that the issuance of a DOA permit for this project , as proposed, is not likely to jeopardize the continued existence of the Dismal Swamp southeastern shrew. No critical habitat has been designated for this species, therefore, none will be affected.

III. INCIDENTAL TAKE STATEMENT

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. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant. 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.

The measures described below are nondiscretionary, 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 Section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) 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, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of Section 7(o)(2) may lapse.

AMOUNT OR EXTENT OF TAKE

The Service anticipates that incidental take of the Dismal Swamp southeastern shrew will be difficult to detect because the population density of the shrew within the project area has not been determined and any shrews that are killed during clearing of vegetation, project construction, and stockpiling of equipment will be difficult to observe or locate due to their coloring, small body size, and tendency to remain beneath the leaf litter or underground. However, the level of take of this species can be anticipated by the areal extent of the potential habitat affected. This incidental take statement anticipates the taking of Dismal Swamp southeastern shrews from at least 12.5 acres along the pipeline route from slightly east of Gum Swamp, west to the end of the Elbow Road alignment (denoted as appropriate habitat for the Dismal Swamp southeastern shrew on the attached map) resulting from vegetation removal and construction activities, stockpiling of materials and equipment, and temporary loss of habitat.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take:

1. Vegetation clearing should be minimized. This will reduce soil and leaf litter disturbance and will enhance tree resprouting.

2. Impacts to wetlands should be minimized. This will lessen the impacts to shrew habitat and enhance revegetation of the site after the pipeline is installed.

3. Avoid use of herbicides and pesticides. This will minimize impacts to the shrew and its habitat.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of Section 9 of Endangered Species Act, the Corps and Virginia Natural Gas must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

1. The following measures will be taken during clearing, construction, and maintenance activities associated with the project:

a. No use of vehicles or heavy equipment will occur outside the 50-foot right-of-way except on existing roadways, active agricultural fields, maintained lawns, or unvegetated areas.

b. No placement or stockpiling of materials will occur outside the 50-foot right-of-way except on existing roadways, active agricultural fields, maintained lawns, or unvegetated areas.

c. No ground disturbance or vegetation clearing will occur outside of the 50-foot right-of-way.

d. Stumps/root wads will not be removed after vegetation clearing, if possible.

e. Initial and maintenance clearing of vegetation will be done by hand where practicable.

f. The top two feet of topsoil will be stockpiled and kept covered, and then replaced immediately after the pipe is laid and restored to original elevations.

g. All work in wetlands will be done on mats where practicable, preferably during the driest period of the year (May-October).

h. No use of broad scale or aerial herbicide or pesticide applications.

2. The applicant is required to notify the Service before initiation of construction and upon completion of the project at the address given below. All additional information to be sent to the Service should be sent to the following address:

Virginia Field Office
U.S. Fish and Wildlife Service
P.O. Box 480
White Marsh, VA 23183
(804) 693-6694

3. Care must be taken in handling any dead specimens of the Dismal Swamp southeastern shrew that are found in the project area to preserve biological material in the best possible state. In conjunction with the preservation of any dead specimens, the finder has the responsibility to ensure that evidence intrinsic to determining the cause of death of the specimen is not unnecessarily disturbed. Upon locating a dead specimen, initial notification must be made to the following Service Law Enforcement office:

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

Please note that the finding of dead specimens does not imply enforcement proceedings pursuant to the Endangered Species Act. The reporting of dead specimens is required to enable the Service to determine if take is reached or exceeded and to ensure that the terms and conditions are appropriate and effective.

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 only shrews located within the 50-foot ROW within the 12.5-acre project area will be incidentally taken. If, during the course of the action, this minimized level of incidental take is exceeded, such

incidental take would represent new information requiring review of the reasonable and prudent measures 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.

IV. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of Endangered Species Act directs Federal agencies to utilize their authorities to further the purposes of Endangered Species Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to further minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans and other recovery activities, or to develop information to benefit the species.

The Service recommends that the Corps conduct before and after surveys for the Dismal Swamp southeastern shrew within the action area. This will allow our agencies to determine the exact effects of clearing and construction from this type of project on the shrew. If one or two surveys were conducted before the clearing and construction are initiated and several annual surveys are conducted after project completion, valuable information could be obtained regarding the rate of recolonization of cleared areas and the extent to which shrews are impacted. This information could be used in future consultations to better determine the extent of project impacts and evaluate the effectiveness of the terms and conditions that are provided in biological opinions. Additionally, the Technical/Agency Draft of the Recovery Plan (U.S. Fish and Wildlife Service 1994) for this species indicates that "more information is needed on the distribution and abundance" of the shrew outside of the Great Dismal Swamp National Wildlife Refuge. Any information on shrew distribution or abundance obtained from the action area would enhance the recovery of this species.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any of these conservation recommendations by the Corps.

V. REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the action outlined in the Corps' request. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect 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 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, any operations causing such take must cease pending reinitiation.

Unless information in this biological opinion is protected by national security or contains confidential business information, the Service recommends that you forward a copy of to the Virginia Department of Game and Inland Fisheries at the following address:

Nongame and Endangered Species
Virginia Department of Game and Inland Fisheries
P.O. Box 11104
Richmond, VA 23230

If this opinion does not contain such information, the Service will provide a copy to this State agency ten business days after the date of this opinion.
The Service appreciates this opportunity to work with the Corps in fulfilling our mutual responsibilities under the Endangered Species Act. Please contact Cindy Schulz of this office at (804) 693-6694 if you require additional information.

Sincerely,

Karen L. Mayne
Supervisor
Virginia Field Office

EnclosureLITERATURE CITED

Churchfield, S. 1990. The natural history of shrews. Ithaca, NY: cornell University Press. 178pp.

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Virginia Department of Game and Inland Fisheries. 1989. Dismal Swamp southeastern shrew investigations, Pages 139-140 in Virginia nongame and endangered wildlife investigation annual report July 1, 1988 - June 30, 1989. Richmond, VA.

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bcc: DARD-ES(FO), Region 5
(Attn: Debbie Mignogno)
Supervisor, CBFO
Andy Moser, CBFO
Service, Law Enforcement, Yorktown, VA
(Attn: Dan Hurt)
Supervisor, Raleigh Field Office

10 days after the date of this letter, mail copies to:
VDGIF, Richmond
(Attn: Karen Terwilliger)
(Attn: Ray Fernald)
DNH, Richmond
(Attn: Tom Smith)