



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE



Virginia Field Office  
6669 Short Lane  
Gloucester, VA 23061

May 21, 2014

Mr. William T. Walker  
Chief, Regulatory Branch  
Norfolk District, Corps of Engineers  
803 Front Street  
Norfolk, VA 23510-1096

Attn: Sayward Meincke, Regulatory Branch

Re: Koppers, Inc. Intake Structure  
Modifications, City of Salem, VA,  
Permit NAO-2002-2580/12-V1874,  
Project # 2013-F-0668

Dear Mr. Walker:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the referenced project and its effects on the federally listed endangered Roanoke logperch (*Percina rex*) [logperch] in accordance with section 7 of the Endangered Species Act (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA). Your January 15, 2014 request for formal consultation was received on January 17, 2014.

This biological opinion is based on information provided in the January 15, 2014 biological assessment, the project proposal, telephone conversations, field investigations, and other sources of information. A complete administrative record of this consultation is on file in this office.

### CONSULTATION HISTORY

- 01-23-13 The Service received an email from the U.S. Army Corps of Engineers (Corps) with the project review package for the proposed project.
- 03-08-13 The Service received the joint permit application and other detailed information and plans from the Corps.
- 03-15-13 The Service requested a survey for the logperch.

- 08-05-13 The Service received the report from the June 6, 2013 logperch survey.
- 01-17-14 The Service received the request to initiate formal consultation from the Corps.
- 02-24-14 The Service sent a letter to the Corps acknowledging initiation of formal consultation.
- 04-11-14 to 04-22-14 The Service requested and received additional project details from the applicant.

## **BIOLOGICAL OPINION**

### DESCRIPTION OF PROPOSED ACTION

The Corps proposes to issue a permit to Koppers, Inc. to modify an existing intake structure at the Koppers' facility in Salem, VA (Figure 1). The modifications include installation of a 20 foot (ft) by 5 ft cage of 1 millimeter mesh screen around the existing intake structure (Figure 2) and construction of a 19 ft by 10.5 ft rock breakwater (Figure 3). Supplemental dredging of a 50 ft by 20 ft area (8-10 cubic yards of material) within an existing manmade basin in the Roanoke River is also proposed annually, if needed. This basin has continuously silted in and routinely requires maintenance dredging to keep the intake free of debris. The purpose of the proposed breakwater is to block the basin from the river and minimize sediment coming into the basin where the intake structure is located.

Koppers' intake is serviced by 2 pumps: a service pump and a fire pump. The standard withdrawal rate for the service pump is 60 gallons per minute or 0.133680 cubic ft/second. At a standard pool depth for the river, the flow rate through the screen is 0.000836 ft/second. The fire pump is required to have a capacity of 2,400 gallons per minute (5.347 cubic ft/second) for a 1-hour period. During use of the fire pump, the draw rate across the screen is 0.0334 ft/second. Koppers' is required to perform an annual test of the system at 150% of this requirement, or 3,600 gallons per minute (8.020 cubic ft/second). The flow rate though the screen under the test procedures is 0.05 ft/second.

The lifespan of this biological opinion will coincide with the Corps' permit (5 years). At the time of any Corps' permit reissuance, the Service will determine if the biological opinion can be reissued or if modification will be necessary.

### Action Area

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 Service has determined that the action area for this project is the reach of the Roanoke River 656 ft upstream and 2,625 ft downstream of the Koppers facility within the wetted perimeter of the river, including the manmade basin located adjacent and connected to the river. The action area also includes the

upland area adjacent to the pump house and inlet structure where the access to the river and equipment staging area will occur (approximately 1,000 ft<sup>2</sup>).

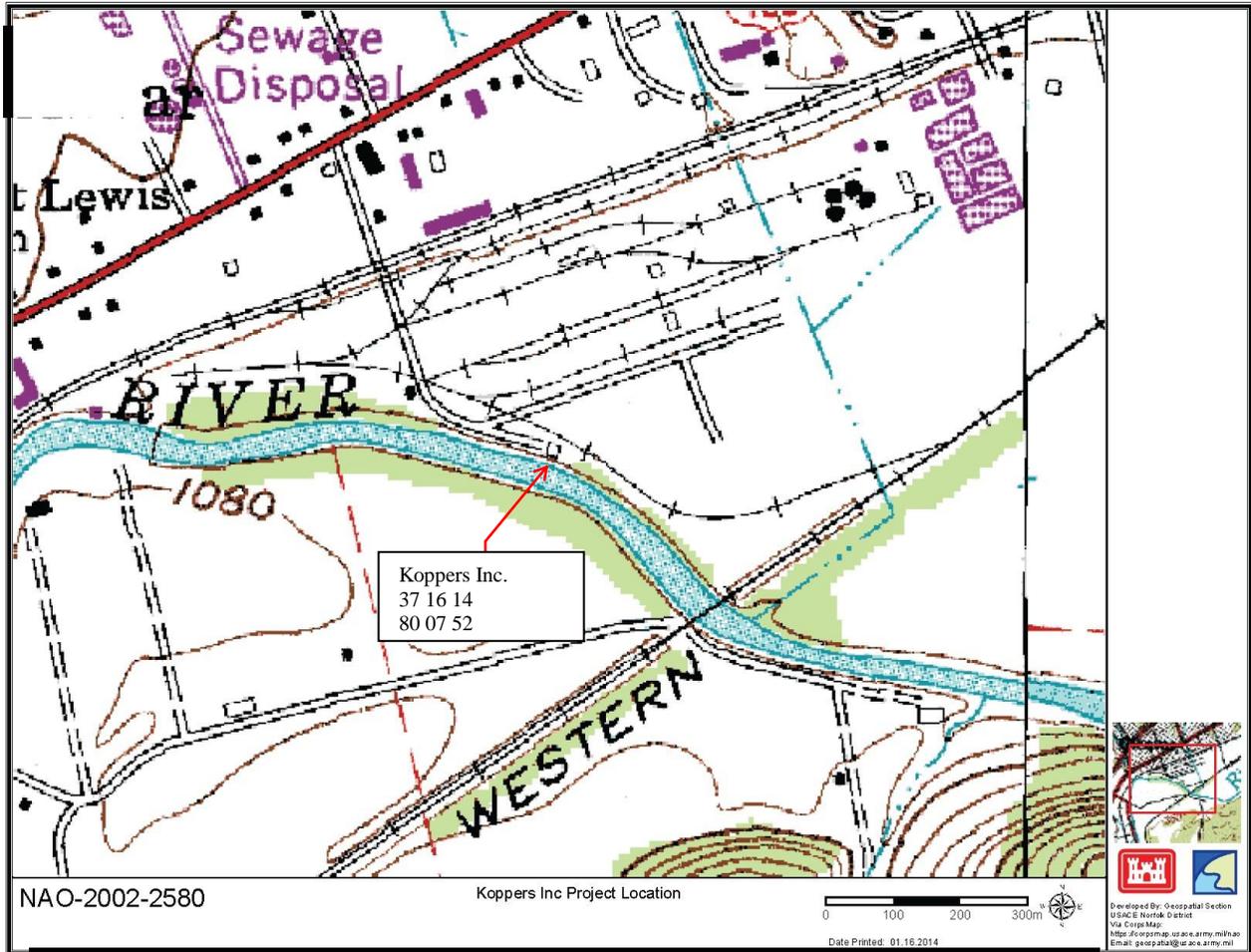


Figure 1. Project location (not to scale).

### STATUS OF THE SPECIES AND CRITICAL HABITAT RANGEWIDE

The species description, life history, population dynamics, status, and distribution and critical habitat description, if applicable, are at: Burkhead 1983; Simonson and Neves 1986; Burkhead and Jenkins 1991; Service 1992; Jenkins and Burkhead 1994; Rosenberger 2002, 2007; Rosenberger and Angermeier 2002, 2003; George and Mayden 2003; Mattingly et al. 2003; Roberts and Angermeier 2003, 2010; Dutton et al. 2008; Roberts et al. 2008, 2009, 2013; Ruble et al. 2009; Bangaru 2010; Neary et al. 2010; and Roberts 2012, 2013.

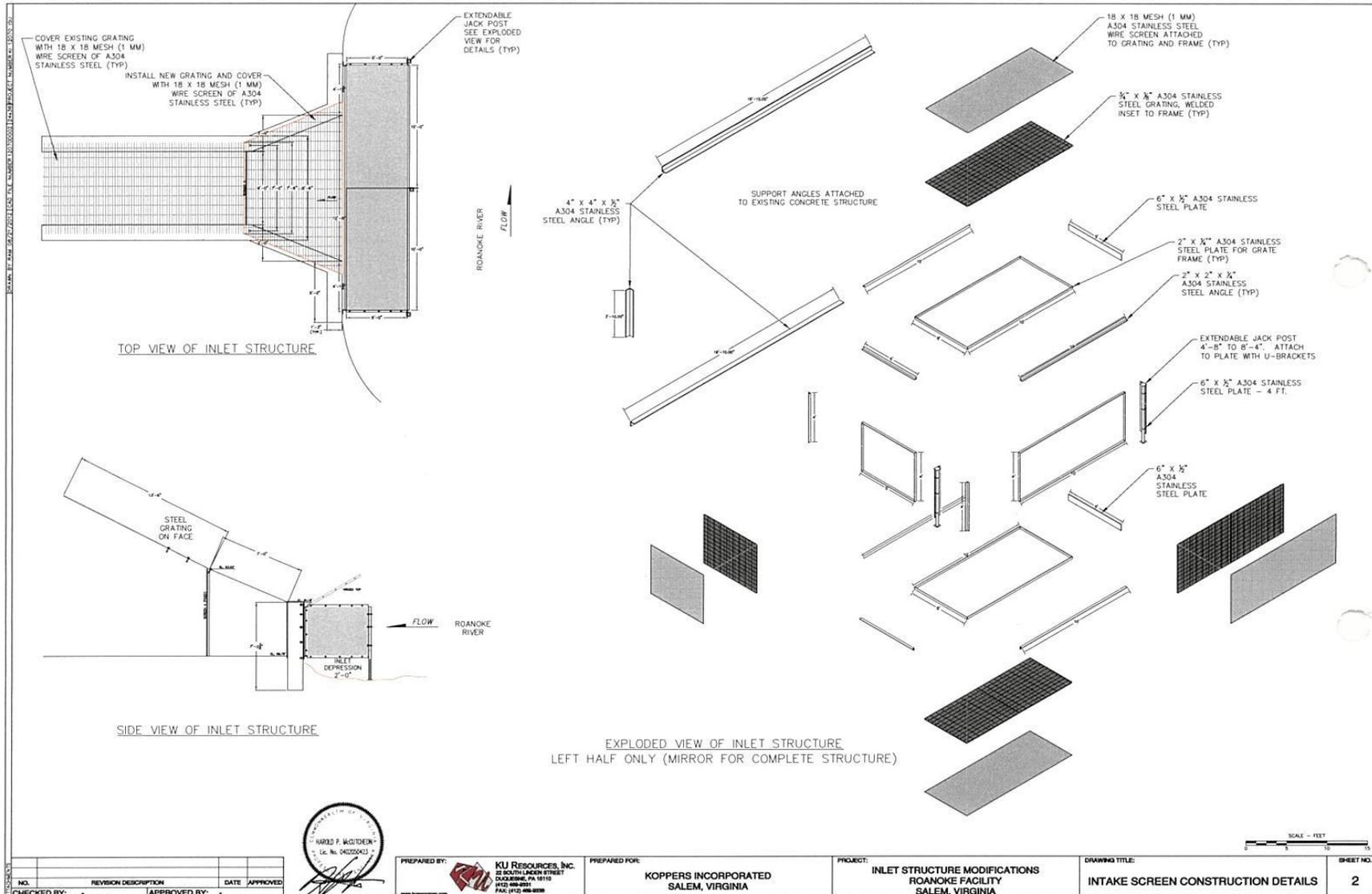


Figure 2. Intake screen construction details.

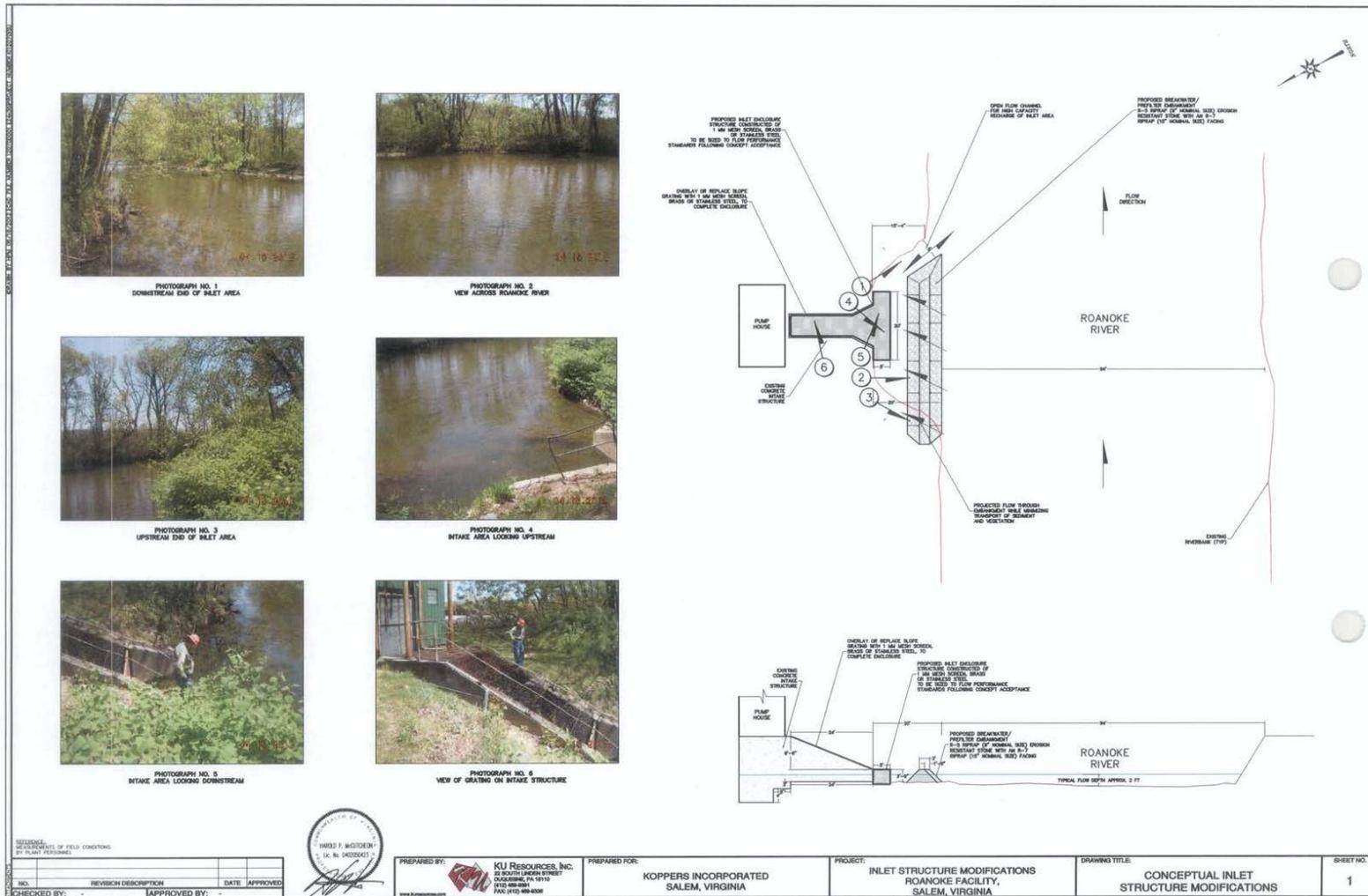


Figure 3. Inlet structure modifications and breakwater.

## ENVIRONMENTAL BASELINE

Status of the Species/Critical Habitat Within the Action Area – The largest population of the logperch is found in the Roanoke River (Rosenberger 1997). Roberts (2013) documented optimal habitat and 5 logperch within the 3,281 ft survey reach adjacent to the Koppers intake structure, which included the manmade basin. The stream widths of the survey reach averaged 100 ft and the habitat contained riffles, runs, and pools with diverse substrate (Roberts 2013). A previous survey, conducted March 8, 2012 within the manmade basin found the substrate to consist primarily of detritus and silt with occasional patches of sand and therefore, the substrate did not appear to be suitable habitat for the species. The surveys indicate that suitable habitat occurs in the river but not in the manmade basin.

We used the results of the Roberts (2013) survey to estimate the number of logperch that may be present in the action area. We added a correction factor to our estimated number since mark-recapture data indicates that only about 10% of the logperch are actually detected during surveys (P. Angermeier, U.S. Geological Survey Virginia Cooperative Fish and Wildlife Research Unit, pers. comm. 2012). To incorporate the detectability correction factor we multiplied the 5 logperch found in the action by 10 and estimate that approximately 50 logperch occur within the river portion of the action area.

Factors Affecting Species Environment Within the Action Area - The land use within the action area includes industry, mowed lawns, fields, small woodlots, and impervious surfaces such as roads and railways/rail yards. Untreated runoff from these areas likely contributes contaminants and sediments into the Roanoke River which degrades habitat quality for the logperch.

## EFFECTS OF THE ACTION

Direct and Indirect Effects – Direct effects are the direct or immediate effects of the project on the species, its habitat, or designated critical habitat. 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).

Modification of the intake structure, construction of the breakwater, and dredging will be accomplished using equipment from the streambank. No excavation will occur in the upland or streambank areas; however, we anticipate that minimal surface disturbance from the use of equipment will occur in these areas and may result in a small amount of sediment reaching the basin/river. Any sedimentation that reaches the river may temporarily impair the ability of logperch to breed, feed, and engage in other routine behaviors in that immediate area.

No equipment will be placed in the water. However, personnel may need to access the intake screen from the basin (not the river) during screen installation and modification. Personnel working in the basin, and dredging and construction of the breakwater will cause resuspension of silt within the basin. The instream construction area will be isolated from the river using a silt curtain. We expect that the curtain will minimize the amount of turbid water that will enter the river. Any sedimentation that reaches the river during breakwater construction or dredging may

temporarily impair the ability of logperch to breed, feed, and engage in other routine behaviors in that immediate area. The placement of the breakwater structure will result in a permanent loss of logperch habitat (199.5 ft<sup>2</sup>).

The modification of the intake structure to incorporate a 1 millimeter screen size and intake approach velocity of less than 0.25 ft/second will comply with our standard recommendations for intake structures and minimize the potential for impingement and entrainment of logperch. Because the intake structure is not located directly in the river, a breakwater will separate the intake structure from the river, and the habitat is not suitable within the manmade basin, we do not anticipate any impingement or entrainment of logperch at the modified intake structure.

Supplemental dredging of a 50 ft by 20 ft area (8-10 cubic yards of material) within the basin will occur annually, if needed. As a result, the basin may be dredged 5 times (initially and every 4 years thereafter) over the life of the permit. Dredging will be accomplished as described above. We anticipate that minimal surface disturbance in uplands/streambanks from use of equipment will occur. This surface disturbance and the dredging itself may result in a small amount of sediment reaching the river. Any sedimentation that reaches the river may temporarily impair the ability of logperch to breed, feed, and engage in other routine behaviors in that immediate area.

Interrelated and Interdependent Actions – An interrelated activity is an activity that is part of the proposed action and depends on the proposed action for its justification. An interdependent activity is an activity that has no independent utility apart from the action under consultation. The Service is not aware of activities interrelated to or interdependent with the proposed action at this time.

Beneficial Actions - Reducing the screen size on the intake structure will minimize the potential for impingement and entrainment of the logperch. The breakwater is intended to prevent silt/sediment from entering the manmade basin which will reduce the amount of future dredging, and thus sedimentation.

### CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, 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 consultation pursuant to section 7 of the ESA.

Urbanization, increased impervious surfaces, untreated runoff, sedimentation, and contaminant spills have been and are continuing threats to the logperch and its habitat in the Roanoke River.

### CONCLUSION

While some permanent habitat loss and a small amount of habitat degradation will occur, the overall magnitude and severity of effects to the logperch from the proposed action are anticipated to be minor since the majority of effects are short-term and temporary and the area affected by

the project represents a small fraction of the logperch's entire range. In addition, the modified intake screen structure will minimize impingement and entrainment of logperch and we anticipate that the breakwater will minimize the need for future dredging of the basin.

After reviewing the current status of the logperch, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the issuance of a Corps' permit to Koppers as proposed, is not likely to jeopardize the continued existence of the logperch. No critical habitat has been designated for this species; therefore, none will be affected.

### **INCIDENTAL TAKE STATEMENT**

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent 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 defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. 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 to be prohibited taking under the ESA 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 undertaken by the Corps so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, 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 assume and implement the terms and conditions or (2) 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 or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Corps or applicant must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR 402.14(i)(3)].

### **AMOUNT OR EXTENT OF TAKE ANTICIPATED**

The Service anticipates incidental take of logperch will be difficult to detect for the following reasons: the logperch is relatively small, finding a dead or impaired specimen during or following project implementation is unlikely, and most incidental take will be non-lethal and undetectable.

The action area below ordinary high water is 328,100 ft<sup>2</sup> (3,281 ft x 100 ft). Permanent impacts from breakwater construction (19 ft x 10.5 ft) comprise approximately 0.06 % [(199.5 ft<sup>2</sup>/328,100 ft<sup>2</sup>)(100)] of the action area below ordinary high water. The Service anticipates incidental take of 1 logperch (0.0006 x 50) in the form of injury and death during breakwater construction due to permanent habitat loss and incidental take of 2 logperch in the form of harm and harassment during breakwater construction and the first dredging event (Year 1). Each subsequent dredging event (Years 2 to 5) will take 1 logperch/year in the form of harm and harassment due to sedimentation.

### 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 measure(s) are necessary and appropriate to minimize take of the logperch:

- Ensure construction is conducted in a manner that minimizes disturbance to logperch.

### TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the ESA, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are nondiscretionary.

1. No instream work from March 15 through June 30 of any year.
2. During initial breakwater construction and all dredging events, isolate the portion of the river/basin being disturbed with a sediment curtain, silt fence, or other soft material (no cofferdams) that will prevent water exchange between the project site and the Roanoke River.
3. During initial construction and all dredging events, contract an approved and permitted logperch surveyor (<http://www.fws.gov/northeast/virginiafield/endspecies/surveyors.html>) to survey the entire isolated area after sediment curtain placement and prior to dredging or rock placement. If any logperch are found, they may be moved into the Roanoke River, ideally with minimal handling. Provide each survey report and a summary of the dredging event to the Service within 30 days at the email address provided below.

4. Fuel, oil, and hydraulic fluids will not be stored within 100 ft of any waterbody or wetland. Refueling of mobile equipment/vehicles will not occur within 100 ft of any waterbody or wetland. Any gasoline powered equipment, such as pumps and generators, and fuel tanks must be entirely enclosed or placed within a secondary containment structure that is large enough to completely contain all materials should a spill, leak, or overflow occur.
5. Retain a Service-approved, spill prevention/response plan on-site at all times. Review the plan with each on-site construction worker prior to their initial entry onto the site. Post the plan in a prominent, on-site location for easy reference. Digitally submit the proposed plan to the Service for approval, at least 90 days prior to initiation of construction, at the email address provided below. Any spills of motor oil, vegetable oil, coolant, or similar fluids, not contained before entry into the action area, must be reported to this office (804 693-6694) and the National Response Center (800 424-8802), immediately.
6. Stabilize any areas of bare soils with vegetation or erosion control matting if weather prevents vegetation establishment.
7. Any increase in intake screen mesh size exceeding 1 millimeter or intake velocity exceeding 0.25 ft/second must be reviewed and approved by the Service prior to implementation.
8. Notify the Service 1 week before initiation of breakwater construction and all dredging events at the email address provided below.
9. Take photos of the intake structure and breakwater within 2 weeks after completion. All photos must be submitted to the Service in digital format at the email address provided below, within 7 calendar days following the site visit.
10. Care must be taken in handling any dead specimens of proposed or listed species 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. The finding of dead specimens does not imply enforcement proceedings pursuant to the ESA. 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. Upon locating a dead specimen, notify the Service's Virginia Law Enforcement Office at 804-771-2883 and the Service's Virginia Field Office at 804-693-6694.

The Service believes that no more than 7 logperch (over the 5-year Corps' permit) will be incidentally taken as a result of the proposed action. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring

reinitiation of consultation and 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.

### **CONSERVATION RECOMMENDATIONS**

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

- We recommend that the Corps assist us with restoring habitat throughout the Roanoke River watershed by planting riparian buffers and working with landowners to provide alternative water sources so livestock can be fenced from streams. Such activities would improve habitat for the logperch and would improve water quality, recreational fisheries, and other river-based recreational opportunities within the area.
- We recommend that the Corps fund research and management contributing to the recovery of logperch.

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 conservation recommendations.

### **REINITIATION NOTICE**

This concludes formal consultation on the action(s) outlined in the 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 (or is authorized by law) and 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 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.

Mr. Walker

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If you have any questions, please contact Kimberly Smith of this office at (804) 824-2410, or via email at [kimberly\\_smith@fws.gov](mailto:kimberly_smith@fws.gov).

Sincerely,

Cindy Schulz  
Field Supervisor  
Virginia Ecological Services

cc: VDCR, DNH, Richmond, VA (Attn: René Hypes)  
VDGIF, Blacksburg, VA (Attn: Mike Pinder)  
VDGIF, Richmond, VA (Attn: Amy Ewing)

Literature Cited

- Bangaru, S. 2010. Swimming performance of Roanoke logperch, *Percina rex*. Master's Thesis. Tennessee Technological University, Cookeville, TN.
- Burkhead, N.M. 1983. Ecological studies of two potentially threatened fishes (the orangefin madtom), *Noturus gilberti* and Roanoke logperch, *Percina rex*) endemic to the Roanoke River drainage. Report to Wilmington District Corps of Engineers, Wilmington, NC.
- Burkhead, N.M., and R.E. Jenkins. 1991. Fishes. Pages 395-397 in Virginia's Endangered Species, proceedings of a symposium. Karen Terwilliger (ed.). McDonald and Woodward Publishing Company, Blacksburg, VA.
- Dutton, D.J., J.H. Roberts, P.L. Angermeier, and E.M. Hallerman. 2008. Microsatellite markers for the endangered Roanoke logperch, *Percina rex* (Percidae) and their potential utility for other darter species. *Molecular Ecology Resources* 8:831-834.
- George, A.L., and R.L. Mayden. 2003. Conservation genetics of four imperiled fishes of the Southeast. Final Report to U.S. Forest Service, Asheville, NC.
- Jenkins, R.E., and N.M. Burkhead. 1994. Freshwater fishes of Virginia. American Fisheries Society, Bethesda, MD.
- Mattingly, H.T., J. Hamilton, and D.L. Galat. 2003. Reproductive ecology and captive breeding of the threatened Niangua darter *Etheostoma nianguae*. *American Midland Naturalist* 149:375-383.
- Neary, V., S. Bangaru, and H. Mattingly. 2010. Best available practice for binary fish passage modeling of Roanoke logperch, *Percina rex*. Report to U.S. Fish and Wildlife Service, Gloucester, VA.
- Roberts, J.H. 2012. Assessment of the distribution and abundance of Roanoke logperch (*Percina rex*) in the Dan River Basin of Virginia. Report to Virginia Department of Game and Inland Fisheries, Richmond, VA..
- Roberts, J.H. 2013. Survey of fishes and habitat in the Roanoke River for Koppers, Inc. of Salem, Virginia. Report to Koppers, Inc., Salem, VA.
- Roberts, J.H., and P.L. Angermeier. 2003. Monitoring effects of the Roanoke River flood reduction project on the endangered Roanoke logperch (*Percina rex*). Report to U.S. Army Corps of Engineers, Wilmington, NC.

- Roberts, J.H., and P.L. Angermeier. 2010. Assessing impacts of the Roanoke River flood reduction project on the endangered Roanoke logperch (*Percina rex*). Report to U.S. Army Corps of Engineers, Wilmington, NC.
- Roberts, J.H., A.E. Rosenberger, B.W. Albanese, P.L. Angermeier. 2008. Movement patterns of endangered Roanoke logperch (*Percina rex*). *Ecology of Freshwater Fish* 17:374-381.
- Roberts, J.H., P.L. Angermeier, and E.M. Hallerman. 2009. Analysis of population genetics of Roanoke logperch (*Percina rex*) based on microsatellite markers. Report to U.S. Fish and Wildlife Service, Virginia Field Office, Gloucester, VA.
- Roberts, J.H., P.L. Angermeier, and E.M. Hallerman. 2013. Distance, Dams and Drift: What structures populations of an endangered, benthic stream fish? *Freshwater Biology* 58 (10):2050–2064.
- Rosenberger, A.E. 2002. Multi-scale patterns of habitat use by Roanoke logperch (*Percina rex*) in Virginia rivers: a comparison among populations and life stages. Doctoral dissertation, Virginia Polytechnic Institute, Blacksburg, VA.
- Rosenberger, A.E. 2007. An update to the Roanoke Logperch Recovery Plan. Report to U.S. Fish and Wildlife Service, Gloucester, VA.
- Rosenberger, A.E., and P.L. Angermeier. 2002. Roanoke logperch (*Percina rex*) population structure and habitat use. Virginia Cooperative Fish and Wildlife Research Unit, Blacksburg, Virginia. Final report to Virginia Department of Game and Inland Fisheries, Richmond, VA.
- Rosenberger, A.E., and P.L. Angermeier. 2003. Ontogenetic shifts in habitat use by the endangered Roanoke logperch (*Percina rex*). *Freshwater Biology* 48:1563-1577.
- Ruble, C.L., P.L. Rakes, and J.R. Shute. 2009. Development of propagation protocols for the Roanoke logperch, *Percina rex*. Report to U.S. Fish and Wildlife Service, Gloucester, VA.
- Simonson, T.D., and R.J. Neves. 1986. A status survey of the orangefin madtom and Roanoke logperch. Report to Virginia Commission of Game and Inland Fisheries, Richmond, VA.
- U.S. Fish and Wildlife Service. 1992. Roanoke logperch (*Percina rex*) recovery plan. Newton Corner, MA.