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50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Diamond Darter (Crystallaria cincotta); Final Rule

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R5–ES–2013–0019; 4500030114]

RIN 1018–AZ40

Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Diamond Darter (*Crystallaria cincotta*)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), designate critical habitat for the diamond darter (*Crystallaria cincotta*), a small fish in West Virginia, under the Endangered Species Act (Act). In total, approximately 197.1 river kilometers (122.5 river miles) in Kanawha and Clay Counties, West Virginia, and Edmonson, Hart, and Green Counties, Kentucky, are being designated as critical habitat. The effect of this regulation is to designate critical habitat for the diamond darter under the Act.

DATES: This rule becomes effective on September 23, 2013.

ADDRESSES: This final rule is available on the Internet at *http://www.regulations.gov* and at the West Virginia Field Office. Comments and materials received, as well as supporting documentation used in the preparation of this rule, are available for public inspection, by appointment, during normal business hours at: U.S. Fish and Wildlife Service, West Virginia Field Office, 694 Beverly Pike, Elkins, West Virginia 26241. The Field Office can be reached by telephone 304–636–6586 or by facsimile 304–636–7824.

The coordinates or plot points or both from which the critical habitat maps are generated are included in the administrative record for this critical habitat designation and are available at *http://www.fws.gov/westvirginiafieldoffice, www.regulations.gov* at Docket No. FWS–R5–ES–2013–0019, and at the West Virginia Field Office (see **FOR FURTHER INFORMATION CONTACT**). Any additional tools or supporting information that we developed for this critical habitat designation are also available at the U.S. Fish and Wildlife Service Web site and Field Office set out above, and may also be included at *www.regulations.gov.*

FOR FURTHER INFORMATION CONTACT: John Schmidt, Acting Field Supervisor, West Virginia Field Office (see **ADDRESSES** section). If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. This is a final rule to designate critical habitat for the diamond darter. Under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), we must designate critical habitat, to the maximum extent prudent and determinable, for any species we determine to be endangered or threatened. Designation of critical habitat can only be completed by issuing a rule.

We listed the diamond darter as an endangered species on July 26, 2013 (78 FR 45074). On July 26, 2012, we published in the **Federal Register** a proposed critical habitat designation for the diamond darter (77 FR 43906).

This rule consists of: A final rule to designate critical habitat for the diamond darter. Section 4(b)(2) of the Act states that the Secretary shall designate critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat.

Here we are designating, in total, approximately 197.1 river kilometers (km) (122.5 river miles (mi)) as critical habitat for the species. The critical habitat is located in Kanawha and Clay Counties, West Virginia, and in Edmonson, Hart, and Green Counties, Kentucky.

We have prepared an economic analysis of the designation of critical habitat. We have prepared an analysis of the economic impacts of the critical habitat designation and related factors. We announced the availability of the draft economic analysis (DEA) in the **Federal Register** on March 29, 2013 (78 FR 19172), allowing the public to provide comments on our analysis. We have incorporated the comments and have completed the final economic analysis (FEA) concurrently with this final determination.

Peer review and public comment. We sought comments from independent specialists to ensure that our designation is based on scientifically sound data and analyses. We asked knowledgeable individuals with the scientific expertise to review our technical assumptions, analysis, and whether we had used the best available data. These peer reviewers generally concurred with our methods and conclusions, and they provided additional information, clarifications, and suggestions to improve this final rule. The information we received from the peer review process is incorporated in this final revised designation. We also considered all comments and information received from the public during the comment periods and incorporated those comments, as appropriate, into this final rule.

Previous Federal Actions

The diamond darter was first identified as a candidate for protection under the Act in the November 9, 2009, **Federal Register** (74 FR 57804). As a candidate, it was assigned a listing priority number (LPN) of 2. Candidate species are assigned LPNs based on the magnitude and immediacy of threats and their taxonomic status. The lower the LPN, the higher the priority is for determining appropriate action for the species using our available resources. An LPN of 2 reflects that the threats to the diamond darter are both imminent and high in magnitude. It also reflects the taxonomic classification of the diamond darter as a full species. We retained the LPN of 2 in our subsequent Notices of Review dated November 10, 2010 (75 FR 69222), and October 26, 2011 (76 FR 66370). On July 26, 2012 (77 FR 43906), we published a proposed rule to list the diamond darter as endangered. On July 26, 2013 (78 FR 45074), we published a final rule to list the diamond darter as endangered.

Background

The diamond darter is a small fish that is a member of the perch family (Percidae). The diamond darter is overall translucent and is a silvery white on the underside of the body and head. It has four wide, olive-brown saddles on the back and upper side (Welsh *et al.* 2008, p. 1). Diamond darters are most active during the night and may stay partially buried in the stream substrates during the day (Welsh 2008, p. 10; Welsh 2009c, p. 1). Adult diamond darters are benthic invertivores, feeding primarily on stream bottom-dwelling invertebrates (NatureServe 2008, p. 8). The diamond darter was historically distributed throughout the Ohio River Basin including the Muskingum River in Ohio; the Ohio River in Ohio, Kentucky, and Indiana; the Green River in Kentucky; and the Cumberland River Drainage in Kentucky and Tennessee. The diamond darter has been extirpated from all these streams and is now known to occur only within the lower Elk River in West Virginia. More detailed information on the diamond

darter, including its taxonomy, species description, and current and historical distribution, and a summary of its life history and habitat can be found in the final listing rule published on July 26, 2013 (78 FR 45074).

Summary of Comments and Recommendations

We requested written comments from the public on the proposed designation of critical habitat for the diamond darter during two comment periods. The first comment period opened with the publication of the proposed rule (77 FR 43906) on July 26, 2012, and closed on September 25, 2012. In a notice published on March 29, 2013 (78 FR 19172), we also requested comments on the proposed critical habitat designation and associated DEA during a comment period that opened March 29, 2013, and closed on April 29, 2013. We did not receive any requests for a public hearing. We also contacted appropriate Federal, State, and local agencies, scientific organizations, and other interested parties, and invited them to comment on the proposed rule and DEA during these comment periods.

During the first comment period, we received 11 letters that provided comments specific to the proposed critical habitat designation. During the second comment period, we received 10 comment letters addressing the proposed critical habitat designation or the DEA. Comments received were grouped into general issues specifically relating to the proposed critical habitat designation for the diamond darter, and are addressed in the following summary and incorporated into the final rule as appropriate. Comments addressing only the proposed listing are addressed separately in the final listing rule (78 FR 45074, July 26, 2013).

Peer Review

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinion from five knowledgeable individuals with scientific expertise on the diamond darter and its habitat, biological needs, and threats. We received individual responses from three of the peer reviewers. The response from one peer reviewer was incorporated into comments submitted by his employer, the West Virginia Division of Natural Resources (WVDNR). Those comments are addressed below under *Comments from States.*

We reviewed all comments received from the peer reviewers for substantive and new information regarding critical habitat for the diamond darter. Two of the peer reviewers explicitly stated that: (1) They concurred with the proposed critical habitat designation; (2) the proposed rule appropriately designated the lower 45 km (28 mi) of the Elk River as critical habitat; and (3) scientific evidence provided in the proposed rule supported our conclusion that this reach of river is needed to protect the only remaining population of the diamond darter. One peer reviewer also commented that the reach of the Green River proposed for unoccupied critical habitat was a logical choice for designation, in that it was more likely than any other historical habitat to offer the potential for reestablishment of a second population of the diamond darter. Another peer reviewer suggested that additional areas should be designated as critical habitat.

(1) *Comment:* The only known collection of a young diamond darter was at the extreme lower end of the proposed critical habitat on the Elk River in West Virginia. Although the extent of diamond darter larval drift is unknown, it may include portions of the Kanawha River below the mouth of the Elk River, which is not included in the proposed designation. The extent of potential downstream larval drift should be considered in the critical habitat designation. Additional research is needed to define how far larval drift occurs and what larvae are eating in the wild.

Our Response: We concur that it is important to consider all the diamond darter's life stages, including the larval stage, when designating critical habitat. However, very little is known about the natural history of the larval and juvenile life stages of the diamond darter. As the commenter stated, the only known record of a young diamond darter captured in the wild was from benthic trawl surveys conducted in the Elk River somewhere near the confluence with the Kanawha River in West Virginia. Despite repeated requests to the researcher and his staff who captured the young diamond darter, we have been unable to more precisely determine the exact location of this capture or the habitat conditions at the capture location. Additionally, no scientific data is available on how long diamond darter larvae remain in a pelagic phase (drifting in open water) or how far they may drift downstream after they hatch. We are also unaware of any scientific data available as to where diamond darters breed in the Elk River. We concur that additional research is needed to quantify diamond darter larval and breeding requirements. However, we have used the best available scientific data to define the extent of these life history requirements. Section 3(5) of the Act requires the Service to specify the ''specific areas'' within the geographical area occupied by the species at the time of listing that are essential to the species' conservation or those areas outside the geographical areas occupied by the species at the time of listing that are essential for the species' conservation. Therefore, we have designated critical habitat based on the best available data at this time.

In both our proposed and final critical habitat designation for the Elk River, we included some areas upstream and downstream of known capture locations that have suitable habitat for the species. These areas are contiguous with known and documented capture sites, have similar habitat characteristics, have no barriers to dispersal, and are within general darter dispersal capabilities. This should allow for some upstream migrations of breeding and spawning adult diamond darters, as well as some downstream migration of larvae. However, we do not have scientific data available to be able to determine whether the aforementioned capture location of the juvenile diamond darter is downstream of or within the critical habitat designation. The reach of the Elk River downstream of the designated critical habitat to the confluence with the Kanawha River is affected by impoundment from the Winfield Lock and Dam on the Kanawha River, and is dredged by the U.S. Army Corps of Engineers (ACOE). Therefore, this area was not designated as critical habitat because it did not contain the required physical and biological features (PBFs). We have incorporated additional discussion about the uncertainty surrounding the location of the juvenile diamond darter capture, as well information about the potential for larval drift, in the final rule. Please refer to our response to comment #1 in the final listing rule (78 FR 45074, July 26, 2013) for more information on this topic.

We also note in the final critical habitat rule that habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Similarly, critical habitat designations made on the basis of the best available scientific data at the time of designation will not control the direction and substance of future

recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome. When additional information becomes available about diamond darter larval requirements, or if the location of the previous capture can be more precisely determined, we will fully consider that information during future diamond darter consultation and recovery efforts, and may revise the critical habitat designation, if necessary.

(2) *Comment:* The Service should consider designating the lower free-flowing portion of the Big South Fork of the Cumberland River as unoccupied critical habitat, similar to the Green River. Although the Big South Fork of the Cumberland River may not be quite as high in quality as the Green River, it meets the criteria for designation as cited, particularly in supporting rare and sensitive species, including streamline chubs (*Erimystax dissimilis*) and tuxedo darters (*Etheostoma lemniscatum*).

Our Response: We concur that the lower portions of the Big South Fork of the Cumberland River currently have suitable habitat for the diamond darter in that the river is free-flowing and has riffle-pool complexes and areas with suitable substrates. It also supports other rare species with similar life-history requirements, and the National Park Service provides some protections. Based on this information, we evaluated this area for inclusion in the designation as unoccupied critical habitat. To be included in the unoccupied critical habitat designation, an area must have historical darter occurrences that have been confirmed to be diamond darter. Confirmation of the historical occurrences is completed through examination of available museum specimens.

One specimen of a *Crystallaria* species was known to be collected from the Big South Fork of the Cumberland River around 1870, but very little information is available about the actual specimen. We note that it was one of the earliest collections of any *Crystallaria* species, and occurred at a time when many fishes from the Ohio River Basin were first being captured, identified, and described. Cope, who originally collected this specimen, did not formally publish any records of his *Crystallaria* capture in the Big South Fork of the Cumberland River (Comisky and Etnier 1972, p. 143). The first reference to this specimen occurred in 1906 when Fowler began curating and cataloguing Cope's collection of percid specimens after his death (Fowler 1906, p. 524). In a subsequent taxonomic review of fish from Michigan, Fowler determined that some of Cope's other *Crystallaria* specimens had been incorrectly identified (Fowler 1918, pp. 48–49). This is not surprising given the advances in fish taxonomy that occurred between 1870 and 1918. Thus, it is possible that Cope's Big South Fork of the Cumberland River *Crystallaria* specimen was also incorrectly identified. However, we searched published literature and found no records of Fowler or any subsequent taxonomists confirming or refuting Cope's original identification of this specimen, or any written descriptions or illustrations of this specimen that would have allowed us to verify its accuracy. Additionally, we have been unable to locate this specimen.

In 1918, Fowler noted that some of Cope's specimens were no longer extant, and that some were in poor preservation (Fowler 1918, pp. 2–51). The Big South Fork of the Cumberland River *Crystallaria* specimen is apparently one of those specimens that was lost or degraded since its original collection, and is no longer extant. Therefore, it cannot be inspected and verified. Conversely, museum specimens from surveys conducted in 1890 in other portions of the Cumberland River watershed are extant and have been independently reviewed and verified to be the diamond darter (Welsh and Wood 2008, p. 6). However, as described above, we do not have confirmed historical records that the diamond darter existed in the Big South Fork of the Cumberland River. Therefore, the Big South Fork of the Cumberland River did not meet the inclusion criteria for unoccupied critical habitat. However, excluding this area from critical habitat designation does not mean that it may not be important or appropriate for future diamond darter recovery efforts.

Comments From States

Section 4(i) of the Act states, ''the Secretary shall submit to the State agency a written justification for his failure to adopt regulations consistent with the agency's comments or petition.'' We received comments from two State agencies, the WVDNR and the West Virginia Department of Environmental Protection (WVDEP). Comments received from the State regarding the proposal to designate critical habitat are summarized below, followed by our responses.

The WVDNR stated that the Service provided an excellent evaluation in support of the proposed primary constituent elements (PCEs), and concurred that these components are present in the Elk River and necessary for the continued success of the diamond darter. The WVDNR also concurred with the proposed designation of the 45-km (28-mi) reach of the Elk River as critical habitat. The agency confirmed that this reach of the Elk River supported all the PCEs, and further commented that its survey data from Elk River tributaries supported our conclusion that the diamond darter rarely or never uses these tributary areas. Although the agency commented that the Service correctly proposed to designate critical habitat in the Green River based on the criteria provided, the agency deferred any additional comments on that portion of the diamond darter's habitat to the Kentucky Department of Fish and Wildlife Resources (KYDFWR). The KYDFWR did not formally comment on the proposed rule. The WVDEP provided two substantive comments regarding the proposed critical habitat, as detailed below.

(3) *Comment:* The WVDEP asserted that the primary cause of the diamond darter's decline was habitat loss and isolation of the population through the historical impoundment of streams the species inhabited. The agency therefore suggested that PCE 3, which emphasizes the darter's need for flows unimpeded by impoundment, should be the first priority PCE considered essential to the diamond darter's persistence.

Our Response: We concur that impoundment was one of the most direct and dramatic historical causes of diamond darter habitat loss. Water quality degradation and siltation also played key roles. See our response to comment #4 in the final listing rule (78 FR 45074, July 26, 2013) for more information regarding the role of impoundment and other factors in the decline and extirpation of diamond darter populations. While we agree that impoundment is an important cause of diamond darter habitat loss, we do not concur that the order of the PCEs should be changed. The diamond darter requires all the listed PCEs to survive and recover, and the PCEs are not listed in order of priority. Rather, we have listed the PCEs in an order that supports the species' basic life-history requirements. To support the diamond darter, there must first be a stream located in the historical range of the species. The stream must also be of the correct size (stream order) and have the correct substrates. For example, small headwater streams, or naturally slow-moving streams with predominately silt substrates, even if unimpounded, would not support the diamond darter.

Therefore, our PCEs describe first the type and location of stream habitat the diamond darter requires, second the type of substrate, and third the need for relatively natural flows unimpeded by impoundment. We have thus retained the original order of the PCEs.

(4) *Comment:* The WVDEP commented that the concept of embeddedness described in the proposed rule is inconsistent with the species' habitat requirements. The agency stated that, because the diamond darter occupies habitats with ample sand, some embeddedness of the larger particles in these areas is expected and quite necessary. The agency further suggested that we clarify the concepts of siltation versus sedimentation since it would appear that the diamond darter is susceptible to the effects of siltation, which is the accumulation of fines, or particles smaller than sand, while being dependent upon a relative abundance of sand to fulfill life-history functions. The agency suggested that PCE 2 should be clarified with regard to these two issues.

Our Response: We concur with the WVDEP that the diamond darter is susceptible to the effects of siltation, which is the accumulation of fines, or particles smaller than sand, while being dependent upon a relative abundance of natural sand to fulfill life-history functions. We have, therefore, reviewed our use of the terms ''siltation'' and ''sedimentation'' in the final critical habitat rule and clarified that the diamond darter requires substrates that are not embedded with fine silts or clays. See our response to comment #5 in the final listing rule (78 FR 45074, July 26, 2013) for additional information on our definitions of the terms ''substrate embeddedness,'' ''siltation,'' and ''sedimentation'' and on the relationship of these terms to the diamond darter's life-history requirements.

Public Comments

We received comments addressing the proposed critical habitat designation from eight organizations and one individual. Four organizations, the West Virginia Chamber of Commerce (WVCC), the West Virginia Oil and Natural Gas Association (WVONGA), the West Virginia Coal Association (WVCA), and the West Virginia Forestry Association (WVFA), were critical of the proposed rule and provided substantive comments in that regard. Each of these four organizations submitted comments during each of the two comment periods. Four other organizations, The Nature Conservancy (TNC), West Virginia Rivers Coalition (WVRC), Center for Biological Diversity (CBD), and Kentucky Waterways Alliance (KYWA), and the one individual were strongly supportive of the proposed critical habitat designation. The KYWA confirmed that the Green River contains the PCEs required to support the diamond darter, including connected riffle-pool complex habitats that are unaffected by any impoundments with clean sand and gravel substrates and healthy and diverse benthic macroinvertebrate prey populations. The KYWA also confirmed the Green River has a number of protective use designations that provide protections consistent with the recovery of the diamond darter.

The CBD, on behalf of itself and 16 additional organizations, submitted comments in support of the proposed critical habitat designation, reiterated information presented in the proposed rule, and suggested that the designation of unoccupied critical habitat in Kentucky will greatly increase the diamond darter's potential for survival and recovery. In addition, approximately 4,840 individuals associated with CBD provided form letters supporting the proposed critical habitat that reiterated the comments provided by CBD. One individual, the WVRC, the CBD, and associated individuals responding by form letter, urged the Service to act quickly to finalize the critical habitat designation, with the WVRC suggesting that protection is needed now while there still may be a viable breeding population of diamond darters. Additional substantive comments from the eight organizations are detailed below.

(5) *Comment:* The KYWA provided additional supporting information on the current and historical biological diversity of the Green River. The organization noted that the diamond darter is one of the native fish species currently missing from the system, and that darters play an important role in aquatic systems as indicators of good water quality and diversity. The organization suggested that reintroducing the diamond darter into the river would create a more complete aquatic ecosystem, would help to sustain other populations of fish, such as muskellunge (*Esox masquinongy*) or bass (*Micropterus spp.*), and contribute to a healthy robust native ecosystem. The KYWA concluded that the organization strongly supports all efforts to fully restore and protect all native species to the Green River.

Our Response: We appreciate the additional information on historical biodiversity in the Green River, and we have incorporated this information into the final rule, as appropriate. We also concur with the assessment of potential benefits of restoring healthy intact aquatic ecosystems.

(6) *Comment:* The KYWA and TNC described numerous ongoing efforts that the organizations and their partners have conducted to protect and enhance the Green River and to educate the public on the river's biodiversity. These efforts included river cleanups, the addition of lands to Western Kentucky University's (WKU) Upper Green River Biological Reserve, and the establishment of a Watershed Watch program under which volunteers are trained to monitor the biological conditions in the river. The organization further expressed a willingness to work with the Service and appropriate State agencies on restoration of diamond darter populations in the Green River.

Our Response: The KYWA and TNC have acted proactively to protect and restore the Green River and its aquatic species. The Service appreciates these efforts and the offer to assist in diamond darter recovery. We recognize that partnerships are essential for the conservation of aquatic habitats and the diamond darter, and we look forward to continuing to work with these organizations on Green River restoration and diamond darter conservation.

(7) *Comment:* The WVCC, WVCA, WVFA, and WVONGA all commented that data are insufficient to quantitatively define specific water quality standards required by the diamond darter. These organizations noted that conductivity was described as a threat to the diamond darter in the proposed listing rule even though an appropriate conductivity range for the diamond darter has not yet been established and scientific studies have not conclusively shown that elevated conductivity causes harm to fish species. These organizations stated that, if the final rule suggests ideal water quality conditions for parameters such as conductivity, these parameters should be based on observations where the diamond darter population currently exists in the Elk River or on direct testing on the diamond darter. Finally, the organizations recommend that the use of the crystal darter (*Crystallaria asprella*) as a surrogate for the diamond darter to establish water quality parameters is not justified because the ranges of these two species do not overlap and the two species are genetically distinct.

Our Response: See our responses to comments #12 and #13 in the final listing rule (78 FR 45074, July 26, 2013) for a detailed response to the threat that conductivity poses to the diamond

darter, and our approach to describing appropriate water quality parameters for the diamond darter, including using data from surrogate species.

(8) *Comment:* The WVCC, WVCA, WVFA, and WVONGA all suggested that the DEA inappropriately fails to consider the potential economic effects on Kanawha County, and that our justification that the county ''does not meet the definition of small government'' is insufficient. They specifically mention a sentence on page ES–9 of the DEA.

Our Response: As described in Section 4.2.1 of the DEA, the Economic Analysis takes into account all economic impacts that occur within the study area, such as impacts to coal mining in Unit 1. The study area includes Kanawha County; therefore, the economic impacts to the County are analyzed in the DEA. The DEA sentence the commenter mentioned refers specifically to the DEA's analysis of economic impacts on small entities, including governmental entities. The DEA appendix (see page A–2) further clarifies the definition of small entities under the Small Business Regulatory Enforcement Flexibility Act (SBREFA; 5 U.S.C. 801 *et seq.*) as ''small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with a population of less than 50,000.'' We note that Kanawha County has a population of 192,179, which is more than the 50,000 population-level threshold. Therefore, Kanawha County, by definition, cannot be considered ''small'' under the SBREFA. However, Chapter 4 of the DEA, in particular Exhibit 4–1, presents the overall economic impacts in the Unit 1 Study Area, which includes all impacts within Kanawha and Clay Counties, West Virginia.

(9) *Comment:* The WVCC, WVONGA, and WVCA disagreed with the DEA's assertion that, if time delay impacts to the resource extraction industry were to occur, the impacts would be attributable to the listing of the diamond darter and co-occurring mussel species rather than to the designation of the diamond darter's proposed critical habitat. The organizations also stated that the DEA fails to quantify the likely impacts to the regulated community, particularly relative to the coal mining and oil and natural gas production and manufacturing industries.

Our Response: Page 4–2 of the DEA notes that approximately 66 consultations related to coal mining and natural gas production activities are anticipated to occur over the next 20 years (a rate of approximately 3 consultations annually), and that some of these consultations may result in time delays. In addition, section 2.3.2 presents the DEA's methodology for identifying incremental impacts, which relies partly upon the Service's *Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Diamond Darter* (Incremental Memorandum) and which is provided as DEA Appendix D. The Incremental Memorandum explains that areas occupied by the diamond darter or other co-occurring listed species are unlikely to incur incremental impacts (those associated solely with a critical habitat designation) because ''there is a close relationship between the health of the diamond darter and the health of its habitat.'' This means that the conservation measures needed to avoid adverse modification of critical habitat would typically already be included in any measures required to avoid jeopardizing the continued existence of the diamond darter. In other words, there would be no substantial time delays in evaluating a project that has the potential to affect critical habitat versus a project that has the potential to affect the diamond darter.

As described in section 3.2.1, because consultations related to coal mining and natural gas production would fall within occupied habitat, the DEA finds that these consultations and any related time delays would result from the listing of the diamond darter and the presence of co-occurring listed mussel species, regardless of the designation of diamond darter critical habitat. Based on the case law and guidance from the U.S. Office of Management and Budget (OMB) reviewed in Chapter 2 of the DEA, the DEA quantifies only those economic impacts that are specifically attributable solely to the designation of critical habitat, and provides a narrative description of other forecast impacts that may stem from diamond darter conservation efforts requested under the Act's jeopardy standard. Accordingly, the DEA qualitatively describes, but does not quantify, these potential impacts to coal mining and natural gas production activities.

(10) *Comment:* The WVONGA and the WVCC stated that oil and natural gas exploration and drilling have surged within the Study Area. Based on this anticipated increased activity, the organizations expressed concern that the DEA fails to consider future impacts of the proposed critical habitat designation to oil and natural gas exploration and drilling, including the adverse outcome of increased regulatory actions that will impact the construction of stream crossings. The organizations did not provide detailed information on trends within the oil and natural gas industry to support the comment.

Our Response: As discussed in section 3.2.1 of the DEA, there is considerable uncertainty about future demand levels for oil and natural gas activity within the study area. If reliable projections of the demand for oil and natural gas were available, we would incorporate this information into the economic analysis. When drafting the DEA, we contacted WVONGA to obtain more detailed or reliable projections of the demand for oil and gas in the Study Area. However, WVONGA did not respond to our requests for information. In addition, the comment letters provided on the DEA did not provide any detailed information that would allow us to estimate future trends in the demand for oil and gas within the Study Area. Therefore, absent such projections, we rely on historical permitting data to forecast future levels of economic activity related to oil and natural gas exploration and drilling within the Study Area.

(11) *Comment:* The WVCC, WVCA, WVONGA, and WVFA stated that the DEA does not appropriately consider all economic impacts on small business entities. The organizations disagreed with the Service's amended determination certifying that, ''if promulgated, the proposed critical habitat designation would not have a significant economic impact on a substantial number of small business entities. Therefore, an initial regulatory flexibility analysis is not required.'' The organizations further stated that the amended determination should be reconsidered to adequately account for the complete economic impact on small businesses as required under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq.*), as amended by SBREFA. The WVFA also expressed concern that small businesses do not have sufficient unfilled working hours to manage the consultation process that would be contracted to third party vendors.

Our Response: Section 7 of the Act is the regulatory mechanism requiring Federal agencies, in consultation with the Service, to insure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of critical habitat. Therefore, as discussed in our proposed rule and notice of availability of the DEA, it is the Service's interpretation of the definition of a ''directly regulated entity'' that only

Federal action agencies are subject to a regulatory requirement (i.e., to avoid adverse modification) as the result of the critical habitat designation. Federal agencies are not considered small entities under the RFA as amended by SBREFA. Accordingly, the Service has determined that small businesses are not directly regulated by this designation of critical habitat. Therefore, the Service may certify that the proposed critical habitat rule will not have a significant economic impact on a substantial number of small entities, and thus no additional analysis is required.

However, we acknowledge that in some cases third-party proponents of the action subject to Federal permitting or funding may participate in a section 7 consultation and thus may be indirectly affected. While these entities are not directly regulated, the DEA provides information about the potential number of third parties participating in section 7 consultations on an annual basis and the associated per-consultation cost. This information is included to ensure a robust examination of the effects of the proposed diamond darter critical habitat. For example, the DEA estimates that 258 small entities may be affected over the next 20 years. This equates to an average of approximately 13 entities being affected per year. The large majority of these affected entities (190 or 82 percent) would be agriculture and timbering entities in Kentucky that would be receiving assistance through the Natural Resources Conservation Service (NRCS). We note that participation in NRCS assistance programs is voluntary. Potentially affected small timbering and agricultural entities could choose not to participate in these programs and thus not be affected by the critical habitat designation.

In addition, NRCS assistance programs are typically designed to restore ecological conditions and improve land management practices. Funded activities include assistance to landowners to install riparian buffers, improve water quality, and control nutrient and sediment inputs into streams. Most of these activities would provide ecological benefits to the diamond darter while also providing economic benefits to the small entity that is receiving Federal assistance. Finally, NRCS comments on the combined proposed listing and critical habitat rule (NRCS 2013) indicated a desire to develop programmatic measures to avoid and minimize any potential adverse effects to the diamond darter in Kentucky, similar to the approach that was recently completed in West Virginia. The development of programmatic measures would reduce regulatory uncertainty and the costs associated with consultation for both the Federal agencies and the 190 potentially affected small entities below the level currently estimated in the DEA.

The remaining 68 potentially affected small entities would be associated with resource extraction and other instream work. This equates to an average of fewer than four affected small entities per year. The DEA further estimates costs associated with each of these activity types. The DEA Exhibit A–1 estimates incremental costs of between $880 and $8,800 per entity; this cost is an impact of less than 0.1 percent to each entity's annual revenue. While we recognize that each of the four entities affected per year may consider the cost to be significant, the Service does not consider the total number of entities and the associated potential costs to be substantial or significant, respectively, under SBREFA. Based on our interpretation of the directly regulated entities under the RFA and the evaluation of potential impacts to third parties that may be affected by this designation, the Service concludes that the designation of diamond darter critical habitat as proposed will not have a significant economic impact on a substantial number of small entities.

(12) *Comment:* The CBD suggested that the Service should consider the economic benefits of protecting habitat for the diamond darter, including ecosystem services, the protection of clean water and the reduced cost of water treatment for drinking supplies, and the environmental justice benefits of protecting human health from mining. The CBD further stated that the Elk River is one of the most biodiverse rivers in West Virginia and the Service should also consider the economic benefits of preserving the State's natural heritage.

Our Response: Section 4.4 of the DEA discusses the economic benefits of critical habitat designation. Quantifying and monetizing the conservation and ancillary benefits associated with the proposed critical habitat designation requires information on the incremental change in the probability of diamond darter conservation that is expected to result solely from the critical habitat designation. As described in DEA Chapters 3 and 4, given the baseline protections provided to the species (including the proposed listing of the diamond darter), and the characteristics of the specific projects anticipated to occur over the 20-year timeframe of the analysis, the designation of critical habitat is unlikely to result in future project modifications. Based on the case law and guidance from OMB reviewed in Chapter 2, the DEA quantifies only those economic effects (both benefits and costs) that are specifically attributable solely to the designation of critical habitat. In addition, the CBD did not provide information that would assist the Service in quantifying such benefits. As a result, economic or environmental justice benefits are not expected to occur as a result of the critical habitat designation and are, therefore, not quantified in the DEA.

Summary of Changes From the Proposed Rule

This final rule incorporates appropriate changes to our proposed critical habitat based on the comments we received, as discussed above, and newly available scientific data. Substantive changes include new or additional information on: (1) The potential space required to provide for larval drift; (2) current conservation efforts conducted by private organizations in the Green River; and (3) recent survey efforts on the distribution of the diamond darter in the Elk River. We also clarify (1) that we excluded areas from designation as unoccupied critical habitat if extant museum specimens were not available that could be independently verified as the diamond darter; (2) the text of PCE 2 and associated discussions to indicate that the diamond darter requires stream substrates that are not embedded with and are relatively free from silts and clays, while being dependent on a natural abundance of sand in the substrate; and (3) the use of the terms ''siltation'' and ''sedimentation.'' Although the discussion of our PCEs is somewhat different from that in our proposed rule, the analysis and our conclusions are a logical outgrowth of the proposed rule commenting process, and none of the information changed our determination of critical habitat for the diamond darter.

Critical Habitat

Background

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the consultation requirements of section 7(a)(2) of the Act would apply, but even in the event of a destruction or adverse modification finding, the obligation of the Federal action agency and the landowner is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical or biological features within an area, we focus on the principal biological or physical constituent elements (PCEs such as roost sites, nesting grounds, seasonal wetlands, water quality, tide, soil type) that are essential to the conservation of the species. The PCEs are those specific elements of the physical or biological features that provide for a species' life-history processes and are essential to the conservation of the species.

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. We designate critical habitat in areas outside the geographical area occupied by a species only when a designation limited to its range would be inadequate to ensure the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific and commercial data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106–554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include the recovery plan for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, other unpublished materials, or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act, (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species, and (3) section 9 of the Act's prohibitions on taking any individual of the species, including taking caused by actions that affect habitat. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available data at the time of designation will not control the direction and substance of future recovery plans, HCPs, or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

In addition, we recognize that climate change may cause changes in the arrangement of occupied habitat and stream reaches. The synergistic interaction between climate change and habitat fragmentation results in a greater threat to biodiversity than climate change alone (Hannah and Lovejoy 2003, p. 4). Current climate change predictions for the central Appalachians indicate that aquatic habitats will be subject to increased temperatures and drought stress, especially during the summer and early fall. There will likely be an increase in the variability of stream flow, and the frequency of extreme events, such as drought, severe storms, and flooding is likely to increase statewide (Buzby and Perry 2000, p. 1774; Byers and Norris 2011, p. 20). Species with limited ranges and that have either natural or anthropomorphic barriers to movement, such as the dams that fragment and isolate diamond

darter habitat, have been found to be especially vulnerable to the effects of climate change (Byers and Norris 2011, p. 18).

Precise estimates of the location and magnitude of impacts from global climate change and increasing temperatures cannot be made from the currently available information. Nor are we currently aware of any climate change information specific to the habitat of the diamond darter that would indicate what areas may become important to the species in the future. However, among the most powerful strategies for the long-term conservation of biodiversity is establishment of networks of intact habitats and conservation areas that represent a full range of ecosystems and include multiple, robust examples of each type. The principles of resiliency and redundancy are at the core of many conservation planning efforts, and are increasingly important as the stresses of climate change erode existing habitats (Byers and Norris 2011, p. 24). Therefore, we have attempted to incorporate these principles into our determination of critical habitat by delineating two units that are representative of the range of habitats currently and previously occupied by the species.

Physical or Biological Features

In accordance with section 3(5)(A)(i) and 4(b)(1)(A) of the Act and regulations at 50 CFR 424.12, in determining which areas within the geographical area occupied by the species at the time of listing to designate as critical habitat, we consider the physical or biological features essential to the conservation of the species and which may require special management considerations or protection. These include, but are not limited to:

(1) Space for individual and population growth and for normal behavior;

(2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

(3) Cover or shelter;

(4) Sites for breeding, reproduction, or rearing (or development) of offspring; and

(5) Habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a species.

We derive the specific physical or biological features essential for the diamond darter from studies of this species' habitat, ecology, and life history as described in the Critical Habitat section of the proposed rule to list the diamond darter as endangered and designate critical habitat published in the **Federal Register** on July 26, 2012 (77 FR 43906), and in the information presented below. Additional information can be found in the final listing rule published in the **Federal Register** on July 26, 2013 (78 FR 45074). Because diamond darters are rare, very little information is available with which to quantitatively define the optimal conditions or range of suitable conditions for a specific biological or physical feature needed by the species. When species-specific information is limited, we rely on information from the crystal darter and other similar darter species. Because the crystal darter is in the same genus, shares many similar life-history traits, and was previously considered the same species as the diamond darter, information on this species can reasonably be used to suggest factors or conditions that may also be important to the diamond darter. All of the available information is sufficient for us to qualitatively discuss the PBFs needed to support the species. Based on this review, we have determined that the diamond darter requires the following physical or biological features:

Space for Individual and Population Growth and for Normal Behavior

The diamond darter inhabits moderate to large, warmwater streams with clean sand and gravel substrates (Simon and Wallus 2006, p. 52). Moderate- to large-sized warmwater streams are defined as fourth- to eighth-order streams with a drainage area exceeding 518 square kilometers (km^2) (200 square miles (mi^2)), and water temperatures exceeding 20 °C (68 °F) at some point during the year (Winger 1981, p. 40; Oliverio and Anderson 2008, p. 12). In the Elk River, adult diamond darters have been collected in transition areas between riffles and pools where substrates were greater than 40 percent sand and gravel (Welsh *et al.* 2004, p. 6; Osier 2005, p. 11; Welsh and Wood 2008, pp. 62–68). These habitat characteristics are similar to those described for the crystal darter (Welsh *et al.* 2008, p. 1).

Many studies have found that the crystal darter does not occur in areas with large amounts of silt, clay, detritus, or submerged vegetation (George *et al.* 1996, p. 71; Shepard *et al.* 1999 in Osier 2005, p. 11; NatureServe 2008, p. 1). Substrates with high levels of silt are unsuitable for the diamond darter. Siltation has been shown to negatively impact fish growth, survival, and reproduction (Berkman and Rabeni 1987, p. 285). Siltation is the pollution of water by fine particulate terrestrial material, with a particle size dominated by silt or clay. It refers both to the increased concentration of suspended sediments and to the increased accumulation (temporary or permanent) of fine sediments on stream bottoms. Both the diamond darter and the crystal darter are noted to be particularly susceptible to the effects of siltation and may have been extirpated from historical habitats due to excessive siltation (Grandmaison *et al.* 2003, pp. 17–18).

Siltation can result from increased sedimentation and erosion along streambanks and roads and deposition caused by land-based disturbances (Rosgen 1996, pp. 1–3). Additionally, coal mining, oil and gas development, timber harvesting, and all-terrain vehicle use have been identified as land-based disturbances that are sources of increased erosion and siltation within the Elk River watershed (U.S. Environmental Protection Agency 2001b, pp. 1–1, 3–4, 6; WVDEP 2008b, p. 1). Streambank erosion and the resulting sedimentation and siltation can also be a source of increased channel instability (Rosgen 1996, pp. 1–3). Geomorphically stable streams transport sediment while maintaining their horizontal and vertical dimensions (width/depth ratio and cross-sectional area), pattern (sinuosity), longitudinal profile (riffles, runs, and pools), and substrate composition, whereas unstable streams cannot maintain these features (Rosgen 1996, pp. 1–3 to 1–6). Thus, geomorphically stable streams maintain the riffles, pools, and silt-free substrates necessary to provide typical habitats for the diamond darter. Based on this information, geomorphically stable streams with clean sand and gravel substrates and low levels of silt are a critical component of diamond darter habitat.

Fragmentation and destruction of habitat has reduced the range of the diamond darter to only one stream and has isolated the last remaining population, reducing the currently available space for rearing and reproduction. Small, isolated populations may have reduced adaptive capability and an increased likelihood of extinction (Gilpin and Soulé 1986, pp. 32–34; Noss and Cooperrider 1994, p. 61). Continuity of water flow and connectivity between remaining suitable habitats is essential in preventing further fragmentation of the species' habitat and population. Free movement of water within the stream allows darters to move between available habitats. This is necessary to provide sufficient space for the population to grow and to promote genetic flow

throughout the population. Continuity of habitat helps to maintain space for spawning, foraging, and resting sites, and also permits improvement in water quality and water quantity by allowing unobstructed water flow throughout the connected habitats. Thus, free movement of water that provides connectivity between habitats is necessary to support diamond darter populations.

Little information is available on the amount of space needed by either the diamond darter or the crystal darter for population growth and normal behavior. Many individuals of other darter species that use similar habitat types have been found to remain in one habitat area during short-term mark-and-recapture studies. However, upstream and downstream movements of other darters between riffles and between riffles and pools have been documented. Within-year movements typically ranged from 36 to 420 meters (m) (118.1 to 1,378.0 feet (ft)), and movements of up to 4.8 km (3.0 mi) have been documented (May 1969, pp. 86–87, 91; Freeman 1995, p. 363; Roberts and Angermeier 2007, pp. 422, 424–427).

In addition, a number of researchers have suggested that *Crystallaria* move upstream to reproduce, and that free-floating young-of-the-year disperse considerable distances downstream during spring high water where they eventually find suitable habitat to grow and mature (Stewart *et al.* 2005, p. 472; Hrabik 2012, p. 1). This suggests that *Crystallaria* may make long-distance movements in large rivers. This type of migratory behavior has been documented in bluebreast darters (*Etheostoma camurum*) (Trautman 1981, pp. 673–675). This species inhabits moderate to large-sized streams with low turbidity and is typically found in riffles, similar to the diamond darter. Trautman (1981, pp. 673–675) found that bluebreast darters were well-distributed throughout a 51–km (32–mi) reach of river during the breeding season, but that there was a reduction in numbers in the upper half of this reach starting in September and continuing through late winter to early spring. There was a corresponding increase in numbers in the lower half of the reach during this time. Individual darters captured in the spring were documented to have moved 152 m (500 ft) in a single day. In September and October, Trautman captured bluebreast darters in deep, low-velocity pools, which are not typical habitats for the species. He concluded that bluebreast and other darter species migrated upstream in spring and downstream in the fall (Trautman 1981, pp. 673–675).

After hatching, diamond darter larvae are pelagic and drift within the water column (Osier 2005, p. 12; Simon and Wallus 2006, p. 56; NatureServe 2008, p. 1). The larva may drift downstream until they reach slower water conditions such as pools, backwaters, or eddies (Lindquist and Page 1984, p. 27). It is not known how long diamond darters or crystal darters remain in this pelagic phase. The only known record of a young diamond darter captured in the wild was from benthic trawl surveys conducted in the Elk River somewhere near the confluence with the Kanawha River. We have been unable to determine the exact location of this capture, so we cannot determine how far downstream from known adult darter capture locations this young was found (Cincotta 2009a, p. 1). For more information on diamond darter larva drift, please see the Summary of Biological Status and Threats section of the final listing rule (78 FR 45074, July 26, 2013).

Based on this information, free movement between habitat types within a significant length of stream may be important to provide sufficient space to support genetic mixing and normal behavior of the diamond darter, including potential upstream movements during the breeding period and downstream larval drift.

Based on the biological information and needs discussed above, we identify connected riffle-pool complexes in moderate- to large-sized (fourth- to eighth-order), warmwater streams that are geomorphically stable with moderate current, clean sand and gravel substrates, and low levels of siltation to be physical or biological features essential to the conservation of the diamond darter.

Food, Water, Air, Light, Minerals, or Other Nutritional or Physiological Requirements

Feeding habits of the diamond darter in the wild are not known. However, diamond darters kept in captivity were fed and survived on live blackworms, daphnia, and dragonfly larvae, frozen bloodworms, and adult brine shrimp (Ruble *et al.* 2010, p. 4). When in captivity, diamond darters were also observed resting on the bottom of the tank and taking food from slightly above their position, in front of them, or off the bottom (Welsh 2009c, p. 1). Diamond darters may also use an ambush foraging tactic by burying in the substrate and darting out at prey (Robinson 1992 and Hatch 1997 in Osier 2005, pp. 12–13; NatureServe 2008, p. 1; Ruble 2011c, p. 1). Researchers, therefore, expect that, similar to the crystal darter, adult diamond darters are benthic invertivores (NatureServe 2008, p. 8). Adult crystal darters eat midge and caddisfly larvae, and water mites in lesser quantities (Osier 2005, p. 13).

Similarly, juvenile and young crystal darters feed on immature stages of aquatic insects such as mayflies, craneflies, blackflies, caddisflies, and midges (Simon and Wallus 2006, pp. 56–57). Juvenile diamond darters hatched in captivity had teeth and a large gape width, which suggests that the larvae may feed on other smaller fish larvae (Ruble *et al.* 2010, p. 15). Researchers were unable to confirm this hypothesis due to poor survivorship of the diamond darter larvae and lack of available smaller fish larvae to provide as a potential food source (Ruble *et al.* 2010, pp. 12–14). Juveniles may also eat zooplankton prey, which is more typical for pelagic larval percids (Rakes 2011, p. 1). This information suggests that loose sand and gravel substrates suitable for ambush feeding behavior and healthy populations of benthic invertebrates and fish larvae for prey items are required to support the feeding requirements of the diamond darter.

Like most other darters, the diamond darter depends on clean water and perennial stream flows to successfully complete its life cycle (Page 1983, pp. 160–170). Sufficient water quality and quantity is required to support normal reproduction, growth, and survival. Because so few diamond darters have been captured, available data are insufficient to quantitatively define the standards for water quantity or quality that are required to support the species. However, some data available from areas that are known to support the diamond darter or the closely related crystal darter provide examples of suitable conditions.

Water quantity, including depth and current velocity, are known to be important habitat characteristics that determine whether an area is suitable to support a specific species of fish (Osier 2005, p. 3). Sites where *Crystallaria* have been captured are consistently described as having moderate to strong velocities (Grandmaison *et al.* 2003, p. 4; Osier 2005, p. 15). Moderate to strong velocities contribute to the clean-swept substrates and lack of silt commonly reported in documented crystal darter habitat (Osier 2005, p. 11). In the Elk River, the diamond darter has been collected from transition areas between riffles and pools at depths from 50 to 150 centimeters (cm) (20 to 59 inches (in)) and in moderate to strong velocities that are typically greater than 20 cm/second (sec) (8 in/sec) (Osier 2005, p. 31). Similarly, the crystal darter has

been described as generally inhabiting waters deeper than 60 cm (24 in) with strong currents typically greater than 32 cm/sec (13 in/sec) (Grandmaison *et al.* 2003, p. 4). Crystal darters were collected in Arkansas in water from 114 to 148 cm (45 to 58 in) deep with current velocities between 46 and 90 cm/sec (18 and 35 in/sec) (George *et al.* 1996 in Grandmaison *et al.* 2003, p. 4). Many of the measurements were taken at base or low flows when it is easiest to conduct fish surveys. Current velocity, water depth, and stream discharge are interrelated and variable, dependent on seasonal and daily patterns of rainfall (Bain and Stevenson 1999, p. 77; Grandmaison *et al.* 2003, p. 4). Therefore, velocities and depths at suitable habitat sites may change over time, or diamond darters may also move to other locations within a stream as seasonal and daily velocity and depth conditions change.

Water quality is also important to the persistence of the diamond darter. Specific water quality requirements (such as temperature, dissolved oxygen, pH, and conductivity) for the species have not been determined, but existing data provide some examples of conditions where *Crystallaria* were present. It is not known whether existing water quality conditions at capture sites are adequate to protect all life stages of *Crystallaria* species. Diamond darters were successfully maintained in captivity when water temperatures did not go below 2 °C (35.6 °F) in the winter or above 25 °C (77 °F) in the summer (Ruble *et al.* 2010, p. 4). In Arkansas, crystal darter capture areas had dissolved oxygen levels that ranged from 6.81 to 11.0 parts per million; pH levels from 5.7 to 6.6; specific conductivities from 175 to 250 μS/cm, and water temperatures from 14.5 to 26.8 °C (58 to 80 °F) (George *et al.* 1996, p. 71). In general, optimal water quality conditions for warmwater fishes are characterized as having moderate stream temperatures, high dissolved oxygen concentrations, and near-neutral pH levels. They are also characterized as lacking harmful levels of conductivity or pollutants including inorganic contaminants like iron, manganese, selenium, and cadmium; and organic contaminants such as human and animal waste products, pesticides and herbicides, fertilizers, and petroleum distillates (Winger 1981, pp. 36–38; Alabama Department of Environmental Management 1996, pp. 13–15; Maum and Moulton undated, pp. 1–2). Good water quality that is not degraded by inorganic or organic pollutants, low dissolved oxygen, or excessive conductivity is an important habitat component for the diamond darter.

Impoundment was one of the most direct and dramatic historical causes of diamond darter habitat loss. Impoundment of rivers for navigation may have been the final factor resulting in extirpation of the diamond darter from many of its historical habitats. Impoundment alters the quantity and flow of water in rivers, reduces or eliminates riffle habitats, reduces current velocities, and increases the amount of fine particles in the substrate (Rinne *et al.* 2005, pp. 3–5, 432–433). Diamond darters have been extirpated from many areas as a result of these effects (Grandmaison *et al.* 2003, p. 18; Trautman 1981, p. 25). Excessive water withdrawals can also reduce current velocities, reduce water depth, increase temperatures, concentrate pollution levels, and result in deposition of fine particles in the substrate, making the areas less suitable to support the diamond darter (Pennsylvania State University 2010, p. 9; Freeman and Marcinek 2006, p. 445). An ample and unimpeded supply of flowing water that closely resembles natural peaks and lows typically maintains riffle habitats, transports nutrients and food items, moderates water temperatures and dissolved oxygen levels, removes fine sediments that could damage spawning or foraging habitats, and dilutes non-point-source pollutants. Therefore, an unimpeded flowing water supply is essential to the diamond darter.

Based on the biological information and needs discussed above, we identify perennial streams with moderate velocities, seasonally moderated temperatures, good water quality, loose sand and gravel substrates, and healthy populations of benthic invertebrates and fish larvae for prey items to be physical or biological features essential to the conservation for the diamond darter. We also identify an ample and unimpeded supply of flowing water that closely resembles natural peaks and lows to be essential to the conservation for the diamond darter.

Cover or Shelter

Adult diamond darters and crystal darters typically have been captured in riffle-pool transition areas with predominately (greater than 20 percent each) sand and gravel substrates (Osier 2005, pp. 51–52). Diamond darters will bury in these types of substrates for cover and shelter. Individuals observed in captivity were frequently seen either completely buried in the substrate during the day or partially buried with only the head (eyes and top of the snout) out of the substrate. However, individuals were often on top of the substrate at night time (Welsh 2009c, p. 1). Burying occurred by the individual rising slightly up above the substrate and then plunging headfirst into the sand and using its tail motion to burrow (Welsh 2009c, p. 1). This type of burying behavior has also been reported in the crystal darter (Osier 2005, p. 11; NatureServe 2008, p. 1).

Substrates that are heavily embedded with silts and clays may impede this behavior. Embeddedness is the degree that cobble or gravel substrates are impacted by being surrounded or covered by fine silt and clay materials (Shipman 2000, p. 12). Embedded substrates are not easily dislodged, and would therefore be difficult for the diamond darter to burrow into for cover. Heavily embedded substrates can be the result of human activities increasing the amount of sedimentation and siltation occurring in the stream (Shipman 2000, p. 12). While some definitions of embeddedness include sands as ''fines'' that increase embeddedness, naturally sandy streams are not considered embedded. However, a sand-predominated stream that is the result of anthropogenic activities that have buried the natural course substrates is considered embedded (Barbour *et al.* 1999, pp. 5–13; Shipman 2000, p. 12). The diamond darter requires substrates unembedded with silts and clays with a naturally high percentage of sands intermixed with loose gravel to fulfill these life-history requirements.

Variability in the substrate and available habitat is also an important sheltering requirement for the diamond darter. Darters may shift to different habitat types during different life phases, or due to changing environmental conditions such as high water or warm temperatures (Osier 2005, p. 7). Deeper or sheltered habitats may provide refuge during warm weather, and it has been suggested that *Crystallaria* species may use deeper pools during the day (Osier 2005, p. 10). Substrate variety, such as the presence of boulders or woody materials, may provide velocity shelters for young darters during high flows (Osier 2005, p. 4). Larval and young diamond darters may also use pools (Rakes 2013, p. 1). Darter larva may be poorly developed skeletally and unable to hold position or swim upstream where stronger currents exist (Lindquist and Page 1984, p. 27). The slower velocity habitats found in pools may provide darter larva with refuge from strong currents and allow them to find cover and forage (Lindquist and Page 1984, p. 27).

Based on the biological information and needs discussed above, we identify riffle-pool transition areas with relatively silt-free sand and gravel substrates, as well as access to a variety of other substrate and habitat types, including pool habitats, to be physical or biological features essential to the conservation for the diamond darter.

Sites for Breeding, Reproduction, or Rearing (or Development) of Offspring

Very little information is available on reproductive biology and early life history of the diamond darter (Welsh *et al.* 2008, p. 1; Ruble and Welsh 2010, p. 1), and to date, only one young-of-the-year of this species has been found in the wild. We have not been able to obtain specific information on this collection, which probably occurred in 2007 in the Elk River near the confluence with the Kanawha River, West Virginia (Cincotta 2009a, p. 1). However, research on reproductive biology of the species is being conducted by Conservation Fisheries Inc. (CFI) in partnership with the U.S. Geological Service (USGS) West Virginia Cooperative Fish and Wildlife Research Unit at West Virginia University. Five individual diamond darters, consisting of at least three females, one male, and one of undetermined sex, have been held in captivity at the CFI facility and were maintained in simulated stream conditions. Water temperature and daylight were also adjusted throughout the seasons to simulate natural fluctuations that would be experienced in the wild (Ruble and Welsh 2010, p. 2).

Spawning began when water temperatures were consistently above 15 °C and ceased when temperatures reached 22 °C (Ruble 2011b, p. 2). Females showed signs of being gravid from late March to May (Ruble et al. 2010, pp. 11–12). Both eggs and hatched larvae were observed in April (Ruble *et al.* 2010, pp. 11–12; Ruble 2011, p. 1). Peak breeding time is likely mid-April when water temperatures range from 15 to 20 °C (59 to 68 °F) (Ruble *et al.* 2010, p. 12). Although incubation time is difficult to determine because most eggs that survived already showed considerable development, it is estimated that, at 15 °C (59 °F), hatch time is 7 to 9 days (Ruble *et al.* 2010, p. 11). Although eggs were produced every year, no young have survived and matured (Ruble *et al.* 2010, pp. 11–12; Ruble 2011b, p. 1).

Because no young have been successfully maintained in captivity and no studies of wild populations are available, we are not able to quantify the range of water quality conditions needed for successful reproduction. Factors that can impair egg viability include high temperatures, low oxygen levels, siltation, and other water quality conditions (Ruble 2011b, p. 2). Inadequate water flow through the substrate or low oxygen levels within the substrate can lead to poor egg development or poor larval condition (Ruble 2011b, p. 2).

In addition to information from the CFI diamond darter reproduction study, there is some information available on crystal darter reproduction (Welsh *et al.* 2008, p. 1). In Arkansas, the reproductive season was from late January through mid-April, which roughly correlates with early April in the Ohio River Basin (George *et al.* 1996, p. 75; Simon and Wallus 2006, p. 52). Evidence suggests that females are capable of multiple spawning events and producing multiple clutches of eggs in one season (George *et al.* 1996, p. 75). Spawning occurs in the spring when the crystal darters lay their eggs in side channel riffle habitats over sand and gravel substrates in moderate current. Adult darters do not guard their eggs (Simon and Wallus 2006, p. 56). Embryos develop in the clean interstitial spaces of the coarse substrate (Simon and Wallus 2006, p. 56). After hatching, the larvae are pelagic and drift within the water column (Osier 2005, p. 12; Simon and Wallus 2006, p. 56; NatureServe 2008, p. 1).

Based on the biological information and needs discussed above, we identify streams with naturally fluctuating and seasonally moderated water temperatures, high dissolved oxygen levels, and clean, relatively silt-free sand and gravel substrates to be physical or biological features essential to the conservation for the diamond darter.

Habitats That Are Protected From Disturbance or Are Representative of the Historical, Geographical, and Ecological Distributions of a Species

As described above, clean, stable substrates, good water quality, and healthy benthic invertebrate populations are habitat features essential to the diamond darter. Direct disturbance, alteration, or fill of instream habitat can degrade these essential features; kill or injure adult fish, young, or eggs; destabilize the substrates leading to increased sedimentation and erosion; and reduce the amount of available food and habitat to support fish populations. These impacts make the area less suitable for fish such as the diamond darter (Reid and Anderson 1999, pp. 235–245; Levesque and Dube 2007, pp. 396–402; Welsh 2009d, p. 1; Penkal and Phillips 2011, pp. 6–7). Direct disturbance and instream construction can also increase substrate compaction and silt deposition within the direct impact area and downstream. This reduces water flow through the substrate, and increases substrate embeddedness (Reid and Anderson 1999, p. 243; Levesque and Dube 2007, pp. 396–397; Penkal and Phillips 2011, pp. 6–7). This can impede the normal burrowing behavior of the diamond darter, which is required for successful foraging and shelter, degrade spawning habitat, result in the production of fewer and smaller eggs, and impair egg and larvae development (Reid and Anderson 1999, pp. 244–245; Levesque and Dube 2007, pp. 401–402).

Intact riparian vegetation is also an important component of aquatic habitats that support the diamond darter. Darters are particularly susceptible to impacts associated with disturbance to riparian vegetation such as alteration of instream habitat characteristics and increased sedimentation and siltation (Jones *et al.* 1999, pp. 1461–1462; Pusey and Arthington 2003, p. 1). Removal of riparian vegetation can lead to decreases in fish species, such as the diamond darter, that do not guard eggs or that are dependent on swift, shallow water that flows over relatively sediment-free substrates (Jones *et al.* 1999, p. 1462). Thus, avoiding disturbances to streambeds and banks is important to maintaining stable substrates, food availability, successful reproduction, and habitat suitability for the diamond darter.

All current and historical capture locations of the diamond darter are from moderate- to large-sized (fourth- to eighth-order), warmwater streams within the Ohio River Watershed (Welsh 2008, p. 3; Southeast Aquatics Resources Partnership 2011, pp. 1–19). The species was historically distributed in at least four major drainages throughout the watershed and is now likely extirpated from Ohio, Kentucky, and Tennessee. The current range is restricted to a small segment of one river within West Virginia. Therefore, the current range of the species is not representative of the historical or geographical distribution of the species and is not sufficient for the conservation of the diamond darter. Given that the current distribution is restricted to approximately 45 km (28 mi) within one river, the species is vulnerable to the threats of reduced fitness through genetic inbreeding, and extinction from a combination of cumulative effects or a single catastrophic event such as a toxic chemical spill (Gilpin and Soule

1986, pp. 23–33; Noss and Cooperrider 1994, p. 61). In addition, because the current range is isolated from other suitable habitats due to the presence of dams and impoundments, the species has limited ability to naturally expand its current range and recolonize previously occupied habitats (Warren *et al.* 2000 in Grandmaison *et al.* 2003, p. 18). A species' distribution that includes populations in more than one moderate to large river within the Ohio River watershed would provide some protection against these threats and would be more representative of the historical geographic distribution of the species.

Based on the biological information and needs discussed above, we identify stable, undisturbed streambeds and banks, and ability for populations to be distributed in multiple moderate- to large-sized (fourth- to eighth-order) streams throughout the Ohio River watershed to be physical or biological features essential to the conservation for the diamond darter.

Primary Constituent Elements for the Diamond Darter

Under the Act and its implementing regulations, we are required to identify the physical or biological features (PBFs) essential to the conservation of the diamond darter in areas occupied at the time of listing, focusing on the features' primary constituent elements (PCEs). The PCEs are those specific elements of the PBFs that provide for a species' life-history processes and are essential to the conservation of the species.

Based on our current knowledge of the PBFs and habitat characteristics required to sustain the species' life-history processes, we determine that the PCEs specific to the diamond darter are:

(1) PCE 1—A series of connected riffle-pool complexes with moderate velocities in moderate- to large-sized (fourth- to eighth-order), geomorphically stable streams within the Ohio River watershed.

(2) PCE 2—Stable, undisturbed sand and gravel stream substrates, that are relatively free of and not embedded with silts and clays.

(3) PCE 3—An instream flow regime (magnitude, frequency, duration, and seasonality of discharge over time) that is relatively unimpeded by impoundment or diversions such that there is minimal departure from a natural hydrograph.

(4) PCE 4—Adequate water quality characterized by seasonally moderated temperatures, high dissolved oxygen levels, and moderate pH, and low levels of pollutants and siltation. Adequate water quality is defined as the quality necessary for normal behavior, growth, and viability of all life stages of the diamond darter.

(5) PCE 5—A prey base of other fish larvae and benthic invertebrates including midge, caddisfly, and mayfly larvae.

Special Management Considerations or Protections

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features which are essential to the conservation of the species, and which may require special management considerations or protection. The area we are designating as currently occupied critical habitat for the diamond darter is not under special management or protection provided by a legally operative management plan or agreement specific to conservation of the diamond darter, and has not been designated as critical habitat for other species under the Act. This unit will require some level of management to address the current and future threats to the PBFs of the diamond darter. Various activities in or adjacent to the critical habitat unit described in this rule may affect one or more of the PCEs and may require special management considerations or protection. Some of these activities include, but are not limited to, resource extraction (coal mining, timber harvests, and natural gas and oil development activities), construction and maintenance projects, stream bottom disturbance from sewer, gas, and water lines, removal of riparian vegetation, and other sources of non-point-source pollution.

Management activities that could ameliorate these threats include, but are not limited to: use of best management practices designed to reduce sedimentation, erosion, and streambank destruction; development of alternatives that avoid and minimize streambed disturbances; implementation of regulations that control the amount and quality of point-source discharges; and reduction of other watershed and floodplain disturbances that release sediments or other pollutants. Special management consideration or protection may be required to eliminate, or to reduce to negligible levels, the threats affecting the physical or biological features of each unit. Additional discussion of threats facing individual units is provided in the individual unit descriptions below.

Criteria Used To Identify Critical Habitat

As required by section 4(b)(2)(A) of the Act, we use the best scientific data available to designate critical habitat. We reviewed the available information pertaining to the habitat requirements of the species. In accordance with the Act and its implementing regulation at 50 CFR 424.12(e), we considered whether designating additional areas—outside those currently occupied as well as those occupied at the time of listing—are necessary to ensure the conservation of the species. As discussed in more detail below, we are designating as critical habitat all habitat that is occupied by the species at the time of listing in 2013; that is, the lower Elk River. This river reach constitutes the entire current range of the species. We are also designating one specific area outside the geographical area occupied by the species at the time of listing, but that was historically occupied, because we have determined this area is essential for the conservation of the species.

For our evaluation of critical habitat, we reviewed available literature, reports, and field notes prepared by biologists, as well as historical and current survey results. We also spoke to fisheries experts and conservation professionals that are familiar with darters or the current status of aquatic systems within the current and historical range of the diamond darter.

To identify currently occupied habitats, we delineated known capture sites and reviewed habitat assessments and mapping efforts that have been conducted on the Elk River. Known occurrences of the diamond darter are extremely localized, and the species can be difficult to locate. Because it is reasonably likely that this rare and cryptic species is present in suitable habitats outside the immediate locations of the known captures, we considered the entire reach between the uppermost and lowermost known collection locations as occupied habitat. We also included some areas of the mainstem Elk River that have not been specifically surveyed for diamond darters but have been determined to have suitable habitat for the species based on species-specific habitat assessments (Osier 2005, pp. ii–50). These areas are contiguous with known capture sites, have similar habitat characteristics, have no barriers to dispersal, and are within general darter dispersal capabilities including upstream spawning movements and downstream larval drift. In addition, river habitats are highly dependent on upstream and downstream habitat

conditions for their maintenance, so these contiguous areas upstream and downstream are critical to maintaining habitat conditions of known capture sites.

Because we have not been able to obtain a precise location of the young diamond darter that was captured in the Elk River somewhere near the confluence with the Kanawha River, this capture was not included in the analysis. We cannot be sure whether the capture location of this young diamond darter is downstream of or within the critical habitat designation for this unit.

Areas of the Elk River downstream of the unit near the confluence with the Kanawha River that do not currently provide the PCEs required to support the species, and no longer have suitable habitat characteristics, were not included. Specifically, the reach of the Elk River downstream of the unit to the confluence with the Kanawha River is affected by impoundment from the Winfield Lock and Dam on the Kanawha River. It is also routinely dredged for commercial navigation by the ACOE.

The portion of the Elk River upstream of the designated unit may provide suitable habitat for the diamond darter, but we have no records of diamond darters being captured in this reach. The upper Elk River reach does contain the favorable general habitat characteristics of riffle-pool complexes with sand and gravel substrates, and there are no barriers to upstream fish movement (Service 2008, entire). However, only limited survey efforts and no diamond darter species-specific habitat assessments have been conducted that would allow us to further refine our assessment of whether this area contains any of the PCEs necessary to support the species. Surveys at four shoals in this upstream reach were conducted in 2012, and no diamond darters were located (Welsh *et al.* 2012, p. 10). Additional survey efforts may further define whether the upstream area is occupied by the diamond darter or which, if any, PCEs are present that may require special management considerations. As a result, we are not proposing to designate additional critical habitat upstream of King Shoals.

We have not included Elk River tributaries as part of the designation because we have no records of the diamond darter occurring in those locations, and there have been no species-specific habitat assessments in the tributaries documenting that these areas are suitable to support the species.

We then considered whether occupied habitat was adequate for the conservation of the species. As just described, currently occupied habitats of the diamond darter are highly localized and isolated, and are restricted to one reach of the Elk River. The range has been severely curtailed, and population size is small. Small isolated aquatic populations are subject to chance catastrophic events and to changes in human activities and land use practices that may result in their elimination. Threats to the diamond darter are imminent and are present throughout the entire range of the species. As described in the final listing rule (78 FR 45074, July 26, 2013), these threats are compounded by its limited distribution and isolation, making the species extremely vulnerable to extinction; therefore, it is unlikely that currently occupied habitat is adequate for its conservation (Soule 1980, pp. 157–158; Noss and Cooperrider 1994, p. 61; Hunter 2002, pp. 97–101; Allendorf and Luikart 2007, pp. 117–146). Larger, more dispersed populations can reduce the threat of extinction due to habitat fragmentation and isolation (Harris 1984, pp. 93–104; Noss and Cooperrider 1994, pp. 264–297; Warren *et al.* 2000 in Grandmaison *et al.* 2003, p. 18). For these reasons, we find that conservation of the diamond darter requires expanding its range into suitable, currently unoccupied portions of its historical habitat. The inclusion of essential, unoccupied areas will provide habitat for population reintroduction and will improve the species' status through added redundancy, resiliency, and representation.

To identify areas of unoccupied habitat that should be designated as critical habitat, we first selected rivers that had historical records confirmed to be of the diamond darter. By examining available museum specimens, we were able to independently verify the accuracy of the historical record. For rivers that had more than one historical capture, approximate capture locations were mapped so that the minimum previously occupied extent could be established. We then identified areas of contiguous habitat that still contained characteristics sufficient to support the life history of the species. Areas that no longer provided suitable habitat, were impounded, or did not contain a series of connected riffle-pool complexes were eliminated from consideration. For river reaches that passed this initial screen, we then applied the following criteria to identify the unoccupied, potential critical habitat: (1) The reach supports fish species with habitat preferences similar to the diamond darter such as the shoal chub (*Macrhybopsis hyostoma*) and the streamline chub; (2) the reach supports diverse populations of fish and mussels including other sensitive, rare, or threatened and endangered species; and (3) the reach has special management or protections in place such as being a designated wild river or exceptional use waters under State law. Only one reach that we identified, in the Green River of Kentucky, met all three criteria. Applying these criteria, we confirmed that the identified area had high-quality habitats sufficient to support the species and could be managed for the conservation of the species. No other areas were identified that met all three criteria.

Next, we delineated the upstream and downstream boundaries of the unit on the Green River: The Green River immediately downstream of Green River Lake (River Mile 308.8 to 294.8) is excluded from the designated critical habitat unit due to artificially variable flow, temperature, and dissolved oxygen conditions resulting from periodic discharges from Green River Dam. Fish community data collected between Greensburg and Green River Dam indicate a general trend of increasing species richness and abundance from Tebb's Bend (approximately 2.7 km (1.7 mi) below the dam) downstream to Roachville Ford (approximately 22.7 km (14.1 mi) below the dam). Also, some relatively intolerant benthic fish species present at Roachville Ford and other sites downstream within The Nature Conservancy's designated Green River Bioreserve are absent at Tebb's Bend, including mountain madtom (*Noturus eleutherus*), spotted darter (*Etheostoma maculatum*), and Tippecanoe darter (*Etheostoma tippecanoe*) (Thomas *et al.* 2004, p. 10). In contrast with Roachville Ford and other downstream sites, cobble and gravel substrates at Tebb's Bend are coated with a black substance characteristic of manganese and iron, which precipitates out and is deposited on the streambed following hypolimnetic discharge from reservoirs (Thomas 2012, p. 1). Because fish community structure and habitat conditions at Roachville Ford are more similar to other downstream locations that are not affected by impoundment, this location (River Mile 294.8) represents the upstream limit of the designated critical habitat section, which continues downstream to Cave Island (River Mile 200.3) within Mammoth Cave National Park (NP).

Downstream of Cave Island, the Green River becomes affected by impoundment from the ACOE Lock and Dam #6. The lock and dam was constructed in 1906 and was disabled in 1950. Although the lock has been disabled and is becoming unstable, the

dam still partially impedes water flow, resulting in a system with slower, warmer water and a loss of riffle and shoal habitat types (Grubbs and Taylor 2004, p. 26; Olson 2006, pp. 295–297). The delineation between the portions of the river affected by Lock and Dam #6 and those that retain free-flowing characteristics occurs distinctly at Cave Island (Grubbs and Taylor 2004, pp. 19–26). There is a marked decrease in benthic macroinvertebrates that are intolerant of siltation below this point, which is attributable to slower current velocities and a lack of shallow riffles and associated course sediments (Grubbs and Taylor 2004, p. 26). For these reasons, Cave Island was selected as the downstream limit of the critical habitat designation in this unit.

Once we determined the areas of the Elk and Green Rivers that met our criteria, we used ArcGIS software and the National Hydrography Dataset (NHD) to delineate the specific river reaches being designated. These areas include only Elk River and Green River mainstem stream channels within the ordinary high-water line. We set the upstream and downstream limits of each critical habitat unit by identifying landmarks (islands, confluences, roadways, crossings, dams) that clearly delineated each river reach. Stream confluences are often used to delineate the boundaries of a unit for an aquatic species because the confluence of a tributary typically marks a significant change in the size or habitat characteristics of the stream. Stream confluences are logical and recognizable termini. When a named tributary was not available, or if another landmark provided a more recognizable boundary, another landmark was used. In the unit descriptions, distances between the upstream or downstream extent of a stream segment are given in kilometers rounded to one decimal point and equivalent miles. Distances for the Elk River were measured by tracing the course of the stream as depicted by the NHD. Distances for the Green River were measured using river miles as designated by the Kentucky Division of Water, which were generated using the NHD.

When determining critical habitat boundaries within this final rule, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack physical or biological features essential for the conservation of the diamond darter. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this final rule have been excluded by text in the rule and are not designated as critical habitat. Therefore, a Federal action involving these lands will not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical or biological features in the adjacent critical habitat. The designation of critical habitat does not imply that streams outside of critical habitat do not play an important role in the conservation of the diamond darter.

The critical habitat designation is defined by the map or maps, as modified by any accompanying regulatory text, presented at the end of this document in the rule portion. We include more detailed information on the boundaries of the critical habitat designation in the preamble of this document. We will make the coordinates or plot points or both on which each map is based available to the public on *http://www.regulations.gov* at Docket No. FWS–R5–ES–2013–0019, on our Web site at *http://www.fws.gov/westvirginiafieldoffice/index.html,* and at the West Virginia Field Office (see **FOR FURTHER INFORMATION CONTACT** above).

Final Critical Habitat Designation

We are designating two units as critical habitat for the diamond darter. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for the diamond darter. Those units are: (1) The lower Elk River; and (2) the Green River. Table 1 shows the occupancy of the units and the ownership of the designated areas for the diamond darter.

TABLE 1—OCCUPANCY AND OWNERSHIP OF DESIGNATED DIAMOND DARTER CRITICAL HABITAT UNITS.

Unit	Location	Occupied?	Federal, State, or other public ownership km (mi)	Private ownership km (mi)	Total length km (mi)
1	lower Elk River	yes	45.0* (28.0)	***	45.0 (28.0)
2	Green River	no	16.3 (10.1)	135.8 (84.4)	152.1 (94.5)
Total**					197.1 (122.5)

* As described below, this includes a combination of State ownership and easements. The State considers the easement area under its jurisdiction. These are the best data available to us for calculating river mile ownership in the Elk River. Therefore, we have included this habitat under public ownership.

** Totals may not sum due to rounding.

*** None.

We present brief descriptions of each unit and reasons why each unit meets the definition of critical habitat below. The critical habitat units include the stream channels of the rivers within the ordinary high-water line. As defined in 33 CFR 329.11, the ordinary high-water line on nontidal rivers is the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural water line impressed on the bank; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas. In West Virginia, the State owns the bed and banks of streams between the ordinary low-water marks, and is vested with a public easement between the ordinary low-water and high-water marks (George 1998, p. 461). The water is also under State jurisdiction (WVSC § 22–26–3). In Kentucky, adjoining landowners also own the land under streams (e.g., the stream channel or bottom) in the designated unit, but the water is under State jurisdiction.

Unit 1: Lower Elk River, Kanawha and Clay Counties, West Virginia

Unit 1 represents the habitat supporting the only remaining occupied diamond darter population. This population could provide a source to repopulate other areas within the diamond darter's historical range. Unit 1 includes 45.0 km (28.0 mi) of the Elk River from the confluence with King Shoals Run near Wallback Wildlife Management Area downstream to the confluence with an unnamed tributary entering the Elk River on the right descending bank adjacent to Knollwood Drive in Charleston, West Virginia. As described above, all the habitat within this unit is under public control or ownership (see table 1 above). The State of West Virginia owns or has a public easement on the streambed and banks of the Elk River up to the ordinary high-water mark (George 1998, p. 461). The water is also publicly owned. The majority of lands adjacent to this unit are privately owned. There are two areas of public land adjacent to the unit: the 3,996-hectare (ha) (9,874-acre (ac)) Morris Creek Wildlife Management Area, which is leased and managed by the WVDNR (2007, p. 9), and Coonskin Park, an approximately 405-ha (1,000-ac) park owned by Kanawha County (Kanawha County Parks and Recreation 2008, p. 1).

Live diamond darters have been documented throughout this unit, including near the towns of Clendenin, Elk View, Blue Creek, Walgrove, Mink Shoals, Reamer Hill, and at sites between Broad Run and Burke Branch. This unit contains space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, or rearing (or development) of offspring, and is essential to the conservation of the species. Diamond darter habitat assessments have documented that this reach of the Elk River contains 28 riffle-pool transition areas with moderate currents and sand and gravel substrates that are suitable for the diamond darter (PCEs 1 and 2) (Osier 2005, p. 34). Connectivity between these habitats provides access to various spawning, foraging, and resting sites, to allow for larval drift, and promote gene flow (PCE 1). This reach of the Elk River also has a natural flow regime that is relatively unimpeded by impoundment (PCE 3), and has healthy benthic macroinvertebrate populations (PCE 5) (WVDEP 1997, pp. 20–89). However, water quality within this unit is impaired due to high levels of fecal coliform bacteria and iron (PCE 4) (WVDEP 2010, p. 16).

Within this unit, the diamond darter and its habitat may require special management considerations or protection to address threats from resource extraction (coal mining, timber harvesting, and natural gas and oil development); impoundment; water diversion or withdrawals; construction and maintenance projects; stream bottom disturbance from sewer, gas, and water line crossings; lack of adequate riparian buffers; sewage discharges, and non-point-source pollution. Special management to address water quality degradation is particularly important since prolonged water quality impairments can also affect the availability of relatively silt-free sand and gravel substrates (PCE 2) and healthy populations of fish larvae and benthic invertebrates that provide a prey base for the diamond darter (PCE 5).

Unit 2: Green River, Edmonson, Hart, and Green Counties, Kentucky

Unit 2, although it is not currently occupied by the diamond darter, represents the best remaining historically occupied habitat for future diamond darter reintroductions that will improve the species' redundancy, resiliency, and representation essential for its conservation. Unit 2 includes 152.1 km (94.5 mi) of the Green River from Roachville Ford near Greensburg (River Mile 294.8) downstream to the end of Cave Island in Mammoth Cave NP (River Mile 200.3). Approximately 16.3 km (10.1 mi) of this unit is publically owned (see table 1 above) and is contained within the 20,750-ha (51,274.1-ac) Mammoth Cave NP. The remainder of the unit, 135.8 km (84.4 mi), is privately owned. With the exception of the lands owned by Mammoth Cave NP, the lands within the Green River watershed are also privately owned. Through the U.S. Department of Agriculture's (USDA) Conservation Reserve Program (CRP) and other conservation programs, TNC owns or has easements on approximately 794.4 ha (1,962.9 ac) within the watershed, either adjacent to or in close proximity to the river. In addition, WKU owns or manages 1,300 ac (526.1 ha) along the Green River in Hart County as part of the Upper Green River Biological Preserve (WKU 2012, p. 1).

This unit is within the historical range of the species, but is not currently considered occupied. The Green River historically supported approximately 170 species of fish, including the diamond darter. Between 1890 and 1929, diamond darters were recorded from three locations within this unit: adjacent to Cave Island in Edmonson County, and near Price Hole and Greensburg, in Green County.

The Green River is a seventh-order, warmwater stream with a total drainage area of 23,879.7 km^2 (9,220 mi^2). The largely free-flowing 160.3-km (100-mi) section of the Green River from the Green River Dam downstream to its confluence with the Nolin River in Mammoth Cave NP is among the most significant aquatic systems in the United States in terms of aquatic species diversity and endemism. This reach of the Green River currently supports over 150 species of fish and 70 species of freshwater mussels, including 9 federally endangered mussel species, but there is no designated critical habitat in this section of the Green River (Thomas *et al.* 2004, p. 5; USDA 2006, p. 16). Populations of fish species that have similar habitat preferences as the diamond darter, such as the shoal chub and streamline chub are present throughout this reach (Thomas 2012, p. 1).

The entire reach of the Green River within this unit is designated by Kentucky as both Outstanding State Resource Waters and Exceptional Waters. Outstanding State Resource Waters are those surface waters designated by the Kentucky Energy and Environment Cabinet (KYEEC) as containing federally threatened and endangered species. Exceptional Waters are waterbodies whose quality exceeds that necessary to support propagation of fish, shellfish, wildlife, and recreation. These waters support excellent fish and macroinvertebrate communities (KYEEC 2012, p. 1). The entire reach of the river within Mammoth Cave NP, including the 16.3 km (10.1 mi) that are designated as critical habitat, is also designated as a Kentucky Wild River. These rivers have exceptional quality and aesthetic character and are designated by the State General Assembly in recognition of their unspoiled character, outstanding water quality, and natural characteristics (KYEEC 2012, p. 1). Each Wild River is actually a linear corridor encompassing all visible land on each side of the river up to a distance of 609.6 m (2,000 ft). To protect the features and quality of Wild Rivers, land use changes are regulated by a permit system, and certain highly destructive land use changes, such as strip mining and clearcutting, are prohibited within corridor boundaries (KYEEC 2012, p. 1).

As described in the Criteria Used To Identify Critical Habitat section above, the inclusion of this unoccupied area is

essential for the conservation of the diamond darter. This area will provide currently suitable habitat for a population reintroduction that will allow expansion of diamond darter populations into historically occupied habitat, adding to the species' redundancy, resiliency, and representation. While not required under section 3(5)(A)(ii) of the Act, this area also contains all of the PCEs. This reach of the Green River is a moderate-to-large warmwater stream with a series of connected riffle-pool complexes that is unaffected by impoundment (PCEs 1 and 3). The reach has good water quality and supports fish species that have similar habitat requirements including clean sand and gravel substrates, low levels of siltation, and healthy benthic macroinvertebrate populations for prey items (PCEs 2, 3, 4, and 5).

The reach of the Green River being designated as critical habitat is the focus of many ongoing conservation efforts. The Nature Conservancy has designated this area as the Green River Bioreserve (Thomas *et al.* 2004, p. 5), and the KYDFWR identified this portion of the Green River as a Priority Conservation Area in its Comprehensive Wildlife Conservation Strategy (USDA 2006, p. 35). Since 2001, more than 40,568.6 ha (100,000 ac) within the watershed have been enrolled in CRP (USDA 2010, p. 3). The goal of this program is to work with private landowners to greatly reduce sediments, nutrients, pesticides, and pathogens from agricultural sources that could have an adverse effect on the health of the Green River system (USDA 2006, p. 16). These organizations along with the Service, KYWA, WKU, Kentucky State University, the ACOE, private landowners, and other partners are also working toward conserving natural resources in this watershed by restoring riparian buffers, constructing fences to keep livestock out of the river, managing dam operations at the Green River Reservoir to more closely mimic natural discharges, and conducting long-term ecological research on fish and invertebrates (Hensley 2012, p. 1; TNC 2012, p. 1; WKU 2012, p. 1). The feasibility of removing Lock and Dam #6 has also been evaluated, but no decision on this proposal has been made yet (Olson 2006, pp. 295–297). There are also a number of ongoing efforts to educate the public on the biodiversity the river supports. These efforts include river cleanups and the establishment of a Watershed Watch program under which volunteers are trained to monitor the biological conditions in the river.

Land use within this watershed is primarily agriculture and forestry and also some oil and gas development. Management may be needed to address resource extraction (timber harvests, natural gas and oil development activities); water discharges or withdrawals; construction and maintenance projects; stream bottom disturbance from sewer, gas, and water line crossings; lack of adequate riparian buffers; sedimentation, sewage discharges, and non-point-source pollution.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat of such species.

Decisions by the 5th and 9th Circuit Courts of Appeals have invalidated our regulatory definition of ''destruction or adverse modification'' (50 CFR 402.02) (see *Gifford Pinchot Task Force* v. *U.S. Fish and Wildlife Service,* 378 F. 3d 1059 (9th Cir. 2004) and *Sierra Club* v. *U.S. Fish and Wildlife Service et al.,* 245 F.3d 434 (5th Cir. 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with the Service. Examples of actions that are subject to the section 7 consultation process are actions on State, tribal, local, or private lands that require a Federal permit (such as a permit from the ACOE under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat, and actions on state, tribal, local, or private lands that are not federally funded or authorized, do not require section 7 consultation.

As a result of section 7 consultation, we document compliance with the requirements of section 7(a)(2) through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect and are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat, or both, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy or destruction or adverse modification of critical habitat, or both. We define ''reasonable and prudent alternatives'' (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action,

(2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction,

(3) Are economically and technologically feasible, and

(4) Would, in the Director's opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law). Consequently, Federal agencies sometimes may need to request reinitiation of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Application of the ''Adverse Modification'' Standard

The key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species. Activities that may destroy or adversely modify critical habitat are those that alter the physical or biological features to an extent that appreciably reduces the conservation value of critical habitat for the diamond darter. As discussed above, the role of critical habitat is to support life-history needs of the species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may destroy or adversely modify such habitat, or that may be affected by such designation.

Activities that may affect critical habitat, when carried out, funded, or authorized by a Federal agency, should result in consultation for the diamond darter. These activities include, but are not limited to:

(1) Actions that would alter the geomorphology of stream habitats. Such activities could include, but are not limited to, instream excavation or dredging, impoundment, channelization, removal of riparian vegetation, road and bridge construction, discharge of mine waste or spoil, and other discharges of fill materials. These activities could cause aggradation or degradation of the streambed or significant bank erosion, result in entrainment or burial of these fishes, and cause other direct or cumulative adverse effects to the species.

(2) Actions that would significantly alter the existing flow regime or water quantity. Such activities could include, but are not limited to, impoundment, water diversion, water withdrawal, and hydropower generation. These activities could eliminate or reduce the habitat necessary for growth and reproduction of the diamond darter.

(3) Actions that would significantly alter water chemistry or water quality (for example, dissolved oxygen, temperature, pH, contaminants, and excess nutrients). Such activities could include, but are not limited to, hydropower discharges or the release of chemicals, biological pollutants, or toxic effluents into surface water or connected groundwater at a point source or by dispersed release (non-point source). These activities could alter water conditions beyond the tolerances of these fish and result in direct or cumulative adverse effects to the species.

(4) Actions that would significantly alter streambed material composition and quality by increasing sediment deposition or embeddedness. Such activities could include, but are not limited to, certain construction projects, oil and gas development, mining, timber harvest, and other watershed and floodplain disturbances if they release sediments or nutrients into the water. These activities could eliminate or reduce habitats necessary for the growth and reproduction of these fish by causing excessive siltation or nutrification.

Exemptions

Application of Section 4(a)(3) of the Act

Section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) provides that: ''The Secretary shall not designate as critical habitat any lands or other geographic areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan [INRMP] prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation.'' There are no Department of Defense lands with a completed INRMP within the proposed critical habitat designation.

Exclusions

Application of Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. The statute on its face, as well as the legislative history, is clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor in making that determination.

Under section 4(b)(2) of the Act, we may exclude an area from designated critical habitat based on economic impacts, impacts on national security, or any other relevant impacts. In considering whether to exclude a particular area from the designation, we identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and evaluate whether the benefits of exclusion outweigh the benefits of inclusion. If the analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, the Secretary may exercise his discretion to exclude the area only if such exclusion would not result in the extinction of the species.

Exclusions Based on Economic Impacts

Under section 4(b)(2) of the Act, we consider the economic impacts of specifying any particular area as critical habitat. To consider economic impacts, we prepared a DEA of the proposed critical habitat designation and related factors (Industrial Economics Inc. 2013a, entire). The draft analysis, dated February 27, 2013, was made available for public review from March 29, 2013, through April 29, 2013 (78 FR 19172). Following the close of the comment period, a final analysis (dated June 2013) of the potential economic effects of the designation (FEA) was developed taking into consideration the public comments and any new information (Industrial Economics Inc. 2013b, entire).

The intent of the FEA is to quantify the economic impacts of all potential conservation efforts for the diamond darter. The economic impact of the final critical habitat designation is analyzed by comparing scenarios ''with critical habitat'' and ''without critical habitat.'' The ''without critical habitat'' scenario represents the baseline for the analysis, considering protections already in place for the species (e.g., listing under the Act as well as other Federal, State, and local authorities). The baseline therefore represents the costs incurred regardless of whether critical habitat is designated. The ''with critical habitat'' scenario describes the incremental impacts associated specifically with the designation of critical habitat for the species, and which are not expected to occur absent the designation of critical habitat for the species. In other words, the incremental costs are those attributable solely to the designation of critical habitat above and beyond the baseline costs. These are the costs we consider in the final designation of critical habitat. The FEA looks at baseline impacts occurring due to listing

the species, and forecasts both baseline and incremental impacts likely to occur with the designation of critical habitat.

The FEA also addresses how potential economic impacts are likely to be distributed, including an assessment of any local or regional impacts of habitat conservation and the potential effects of conservation activities on government agencies, private businesses, and individuals. The FEA measures lost economic efficiency associated with residential and commercial development and public projects and activities, such as economic impacts on water management and transportation projects, Federal lands, small entities, and the energy industry. Decision-makers can use this information to assess whether the effects of the designation might unduly burden a particular group or economic sector. Finally, the FEA looks at costs that may occur in the 20 years following the designation of critical habitat, which was determined to be the appropriate period for analysis because limited planning information was available for most activities to forecast activity levels for projects beyond a 20-year timeframe. The FEA quantifies economic impacts of diamond darter conservation efforts associated with the following categories of activity: (1) Resource extraction (coal mining, gravel and rock mining, and oil and natural gas exploration) and utilities; (2) timber management, agriculture, and grazing; (3) other instream work (dredging, channelization, diversions, dams, instream construction of boat docks, etc.); (4) transportation (roads, highways, bridges); and (5) water quality/sewage management.

The FEA concludes that the types of conservation efforts requested by the Service during section 7 consultation regarding the diamond darter were not expected to change due to critical habitat designation. The results of consultation under the adverse modification and jeopardy standards are likely to be similar because there is a close relationship between the health of the diamond darter and the health of its habitat. Alterations of habitat that diminish the value (e.g., actions that alter hydrology, water quality, or suitability of substrate) and the amount of diamond darter habitat would likely affect its population size and ability to recruit young, would likely cause further range declines, and could appreciably reduce the species' likelihood of survival and recovery in the wild. Such habitat alterations could, therefore, constitute jeopardy to the species. In most cases, the results of consultation on projects in occupied diamond darter habitat under the adverse modification and jeopardy standards are likely to be similar because the diamond darter's entire life history is reliant on the presence of all the PCEs being present within one contiguous stream reach. Thus, project modifications that minimize impacts to the species to avoid jeopardy would coincidentally minimize impacts to critical habitat.

In addition, although one of the critical habitat units for the diamond darter is unoccupied, incremental impacts of the critical habitat designation will be limited because the unit is currently occupied by nine federally endangered mussels. Management recommendations made to avoid adverse effects during previous mussel consultations included using enhanced sedimentation and erosion control measures, avoiding water quality degradation through the use of spill and run-off prevention and control measures, avoiding instream disturbances through the use of project alternatives such as directional drilling, conducting project activities away from the river, and minimizing disturbances to and fill of lands adjacent to the river and stream tributaries. These recommendations are similar to the types of management recommendations that would be used to avoid adverse modifications to diamond darter critical habitat.

The FEA concludes that incremental impacts of critical habitat designation are limited to additional administrative costs of consultations and that indirect incremental impacts are unlikely to result from the designation of critical habitat for the diamond darter. The present value of the total direct (administrative) incremental cost of critical habitat designation is $800,000 assuming a 7 percent discount rate, or $70,000 on an annualized basis. Transportation activities are likely to be subject to the greatest incremental impacts at $320,000 over 20 years, followed by timber management, agriculture, and grazing activities collectively at $260,000; resource extraction activities at $150,000; other instream work at $50,000; and water quality/sewage management at $18,000. These numbers represent present value at a 7 percent discount rate and may not total due to rounding.

Our economic analysis did not identify any disproportionate costs that are likely to result from the designation. Consequently, the Secretary is not exerting his discretion to exclude any areas from this designation of critical habitat for the diamond darter based on economic impacts.

A copy of the FEA with supporting documents may be obtained by contacting the West Virginia Field Office (see **ADDRESSES**) or by downloading from the Internet at *http://www.regulations.gov.*

Exclusions Based on National Security Impacts

Under section 4(b)(2) of the Act, we consider whether there are lands owned or managed by the Department of Defense where a national security impact might exist. In preparing this final rule, we have determined that no lands within the designation of critical habitat for the diamond darter are owned or managed by the Department of Defense, and therefore we anticipate no impact on national security. Consequently, the Secretary is not exerting her discretion to exclude any areas from this final designation based on impacts on national security.

Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security. We consider a number of factors, including whether the landowners have developed any HCPs or other management plans for the area, or whether any conservation partnerships would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at any tribal issues, and consider the government-to-government relationship of the United States with tribal entities. We also consider any social impacts that might occur because of the designation.

In preparing this final rule, we have determined that there are currently no HCPs or other management plans for the diamond darter, and the final designation does not include any tribal lands or trust resources. We anticipate no impact on tribal lands, partnerships, or HCPs from this critical habitat designation. Accordingly, the Secretary is not exercising his discretion to exclude any areas from this final designation based on other relevant impacts.

Required Determinations

Regulatory Planning and Review (Executive Orders 12866 and 13563)

Executive Order (E.O.) 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. The OIRA has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The E.O. directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. The E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the RFA (5 U.S.C. 601 *et seq.*), as amended by SBREFA of 1996 (5 U.S.C 801 *et seq.*), whenever an agency must publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of an agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities. In this final rule, we are certifying that the critical habitat designation for the diamond darter will not have a significant economic impact on a substantial number of small entities. The following discussion explains our rationale.

According to the Small Business Administration, small entities include small organizations, such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; as well as small businesses. Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business, special trade contractors doing less than $11.5 million in annual business, and agricultural businesses with annual sales less than $750,000. To determine if potential economic impacts on these small entities are significant, we consider the types of activities that might trigger regulatory impacts under this rule, as well as the types of project modifications that may result. In general, the term ''significant economic impact'' is meant to apply to a typical small business firm's business operations.

To determine if the rule could significantly affect a substantial number of small entities, we consider the number of small entities affected within particular types of economic activities (e.g., resource extraction; timber management, agriculture, and grazing; instream activities; transportation; and water quality and sewer management). We apply the ''substantial number'' test individually to each industry to determine if certification is appropriate. However, the SBREFA does not explicitly define ''substantial number'' or ''significant economic impact.'' Consequently, to assess whether a ''substantial number'' of small entities is affected by this designation, this analysis considers the relative number of small entities likely to be impacted in an area. In some circumstances, especially with critical habitat designations of limited extent, we may aggregate across all industries and consider whether the total number of small entities affected is substantial. In estimating the number of small entities potentially affected, we also consider whether the activities have any Federal involvement.

Designation of critical habitat only affects activities authorized, funded, or carried out by Federal agencies. Some kinds of activities are unlikely to have any Federal involvement and so will not be affected by critical habitat designation. In areas where the species is present, Federal agencies already are required to consult with us under section 7 of the Act on activities they authorize, fund, or carry out that may affect the diamond darter. Federal agencies also must consult with us if their activities may affect critical habitat. Designation of critical habitat, therefore, could result in an additional economic impact on small entities due to the requirement to reinitiate consultation for ongoing Federal activities (see *Application of the ''Adverse Modification Standard''* section).

In our final economic analysis of the critical habitat designation, we evaluated the potential economic effects on small business entities resulting from conservation actions related to the listing of the diamond darter and the designation of critical habitat. The analysis is based on the estimated impacts associated with the rulemaking as described in Chapters 3 through 4 and Appendix A of the analysis and evaluates the potential for economic impacts from resource extraction; timber management, agriculture, and grazing; instream activities; transportation; and water quality and sewer management.

We determined from our analysis (Appendix A in FEA) that there will be minimal additional economic impacts to small entities resulting from the designation of critical habitat, because almost all of the potential costs related to modification of activities and conservation that were identified in the economic analysis represent baseline costs that would be realized in the absence of critical habitat. The economic analysis estimates that approximately 245 small entities may be affected over the next 20 years. This equates to fewer than 13 entities affected per year. The large majority of these affected entities (190 or 82 percent) are agriculture and timbering entities in Kentucky that receive assistance through the NRCS. Participation in NRCS assistance programs is voluntary. The remaining 68 potentially affected small entities are associated with resource extraction and other instream work. This equates to an average of fewer than four affected small entities per year. The FEA estimates incremental costs of between $880 and $8,800 per affected entity engaging in resource extraction or other instream work; this cost equals an impact of less than 0.1 percent to each entity's annual revenue. All of these costs are derived from the added effort associated with considering adverse modification in the context of section 7 consultations.

In summary, we considered whether this designation would result in a significant economic effect on a substantial number of small entities. Based on the above reasoning and currently available data, we conclude that this rule would not result in a significant economic impact on a substantial number of small entities. Therefore, we are certifying that the designation of critical habitat for the diamond darter will not have a significant economic impact on a substantial number of small entities, and a regulatory flexibility analysis is not required.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. The OMB has provided guidance for implementing this E.O. that outlines nine outcomes that may constitute ''a significant adverse effect'' when compared to not taking the regulatory action under consideration. The FEA considered the potential effects of the diamond darter critical habitat designation on coal, oil, and gas development. The FEA found that some limited impacts to these energy development activities are anticipated, but they will mostly be limited to the administrative costs of consultation. Therefore, reductions in energy production are not anticipated, and consultation costs are not anticipated to increase the cost of energy production or distribution in the United States in excess of one percent. None of the nine outcome thresholds of impact are exceeded, and the economic analysis finds that none of these criteria are relevant to this analysis. Thus, based on information in the economic analysis, energy-related impacts associated with diamond darter conservation activities within critical habitat are not expected. As such, the designation of critical habitat is not expected to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*), we make the following findings:

(1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or tribal governments, or the private sector, and includes both ''Federal intergovernmental mandates'' and ''Federal private sector mandates.'' These terms are defined in 2 U.S.C. 658(5)–(7). ''Federal intergovernmental mandate'' includes a regulation that ''would impose an enforceable duty upon State, local, or tribal governments'' with two exceptions. It excludes ''a condition of Federal assistance.'' It also excludes ''a duty arising from participation in a voluntary Federal program,'' unless the regulation ''relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and tribal governments under entitlement authority,'' if the provision would ''increase the stringency of conditions of assistance'' or ''place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding,'' and the State, local, or tribal governments ''lack authority'' to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. ''Federal private sector mandate'' includes a regulation that ''would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.''

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) We do not believe that this rule will significantly or uniquely affect small governments. The FEA concludes incremental impacts may occur due to administrative costs of section 7 consultations for projects in the following categories that have a Federal nexus: resource extraction; timber management, agriculture, and grazing; instream activities; transportation; and water quality and sewer management. Small governments will be affected only to the extent that they must ensure that their actions that involve Federal funding or authorization will not adversely affect the critical habitat. This rule will not produce a Federal mandate of $100 million or greater in any year; that is, it is not a ''significant regulatory action'' under the Unfunded Mandates Reform Act. Consequently, we do not believe that the critical habitat designation would significantly or uniquely affect small government entities. As such, a Small Government Agency Plan is not required.

Takings—Executive Order 12630

In accordance with E.O. 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for the diamond darter in a takings implications assessment. As discussed above, the designation of critical habitat affects only Federal actions. Although private parties that receive Federal funding, assistance, or require approval or authorization from a Federal agency for an action may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. The takings implications assessment concludes that this designation of critical habitat for the diamond darter does not pose significant takings implications for lands within or affected by the designation.

Federalism—Executive Order 13132

In accordance with E.O. 13132 (Federalism), this rule does not have significant Federalism effects. A federalism impact summary statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of, this critical habitat designation with appropriate State resource agencies in West Virginia and Kentucky. We received comments from the State of West Virginia and have addressed them in the Summary of Comments and Recommendations section of the rule. The designation of critical habitat in areas currently occupied by the diamond darter imposes no additional restrictions to those currently in place and therefore has little incremental impact on State and local governments and their activities. The designation may have some benefit to these governments in that the areas that contain the PBFs essential to the conservation of the species are more clearly defined, and the elements of the features of the habitat necessary to the

conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist local governments in long-range planning (rather than having them wait for case-by-case section 7 consultations to occur).

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) would be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

Civil Justice Reform—Executive Order 12988

In accordance with E.O. 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the applicable standards set forth in sections 3(a) and 3(b)(2) of the Executive Order. We are designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, the rule identifies the elements of PBFs essential to the conservation of the diamond darter. The designated areas of critical habitat are presented on maps, and the rule provides several options for the interested public to obtain more detailed location information, if desired.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain any new collections of information that require approval by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County* v. *Babbitt,* 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), E.O. 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes. We determined that there are no tribal lands occupied by the diamond darter at the time of listing that contain the PBFs essential to conservation of the species, and that there are no tribal lands unoccupied by the diamond darter that are essential for the conservation of the species. Therefore, we are not designating critical habitat for the diamond darter on tribal lands.

References Cited

A complete list of all references cited in this rule is available on the Internet at *http://www.regulations.gov* or upon request from the Field Supervisor, West Virginia Field Office (see **ADDRESSES** section).

Author(s)

The primary author of this document is staff from the West Virginia Field Office (see **ADDRESSES**).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; 16 U.S.C. 4201–4245; unless otherwise noted.

■ 2. Amend § 17.11(h) by revising the entry for ''Darter, diamond'' under ''Fishes'' in the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
*	*	*	*	*	*		*
FISHES							
*	*	*	*	*	*		*
Darter, diamond	*Crystallaria cincotta*	U.S.A. (IN, KY, OH, TN, WV)	Entire	E	815	17.95(e)	NA
*	*	*	*	*	*		*

■ 3. In § 17.95, amend paragraph (e) by adding an entry for ''Diamond Darter (*Crystallaria cincotta*),'' in the same alphabetical order that the species appears in the table at § 17.11(h), to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(e) *Fishes.*

* * * * *

Diamond Darter (*Crystallaria cincotta*)

(1) Critical habitat units are depicted for Kanawha and Clay Counties, West Virginia, and Edmonson, Hart, and Green Counties, Kentucky, on the maps below.

(2) Within these areas, the primary constituent elements of the physical or biological features essential to the conservation of diamond darter consist of five components:

(i) A series of connected riffle-pool complexes with moderate velocities in moderate- to large-sized (fourth- to eighth-order), geomorphically stable streams within the Ohio River watershed.

(ii) Stable, undisturbed sand and gravel stream substrates that are relatively free of and not embedded with silts and clays.

(iii) An instream flow regime (magnitude, frequency, duration, and seasonality of discharge over time) that is relatively unimpeded by impoundment or diversions such that there is minimal departure from a natural hydrograph.

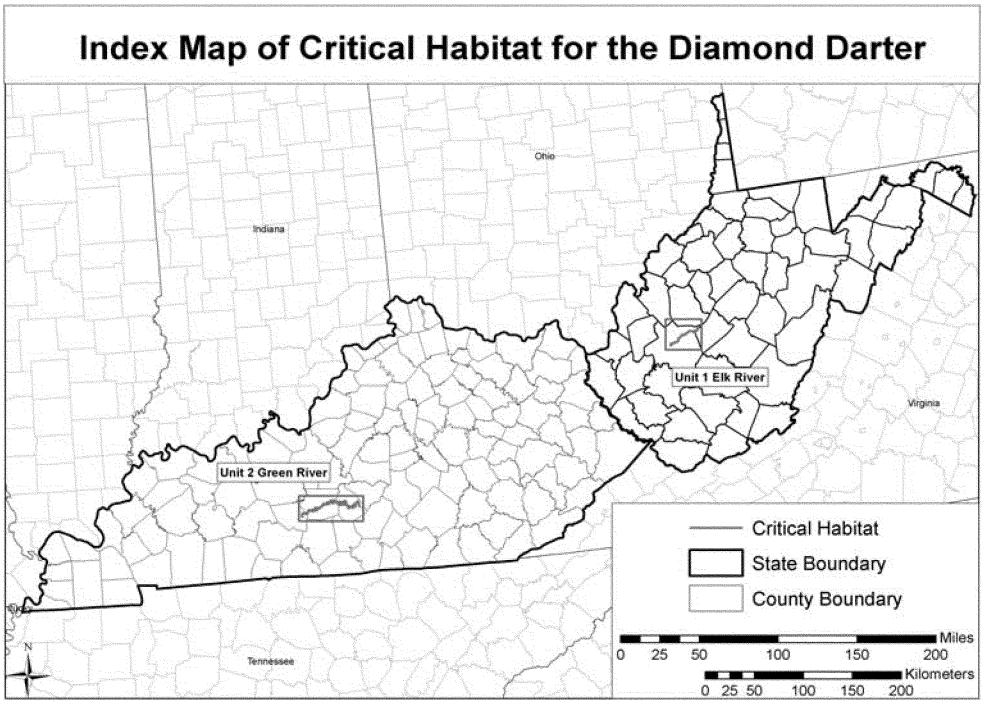
(iv) Adequate water quality characterized by seasonally moderated temperatures, high dissolved oxygen levels, and moderate pH, and low levels of pollutants and siltation. Adequate water quality is defined as the quality necessary for normal behavior, growth, and viability of all life stages of the diamond darter.

(v) A prey base of other fish larvae and benthic invertebrates including midge, caddisfly, and mayfly larvae.

(3) Critical habitat does not include manmade structures (such as bridges, docks, aqueducts and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of this rule.

(4) *Critical habitat map units.* Data layers defining map units were created with U.S. Geological Survey National Hydrography Dataset Geographic Information System data. Esri's ArcGIS 10.1 software was used to determine longitude and latitude in decimal degrees for the river reaches. The projection used in mapping was Universal Transverse Mercator (UTM), NAD 83, Zone 16 North for the Green River, Kentucky, unit; and UTM, NAD 83, Zone 17 North for the Elk River, West Virginia, unit. The following data sources were referenced to identify features used to delineate the upstream and downstream reaches of critical habitat units: USGS 7.5′ quadrangles and topographic maps, NHD data, 2005 National Inventory of Dams, Kentucky Land Stewardship data, pool and shoal data on the Elk River, Esri's Bing Maps Road. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at the field office Internet site (*http://www.fws.gov/westvirginiafieldoffice/index.html*), *http://www.regulations.gov* at Docket No. FWS–R5–ES–2013–0019, and at the Service's West Virginia Field Office. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

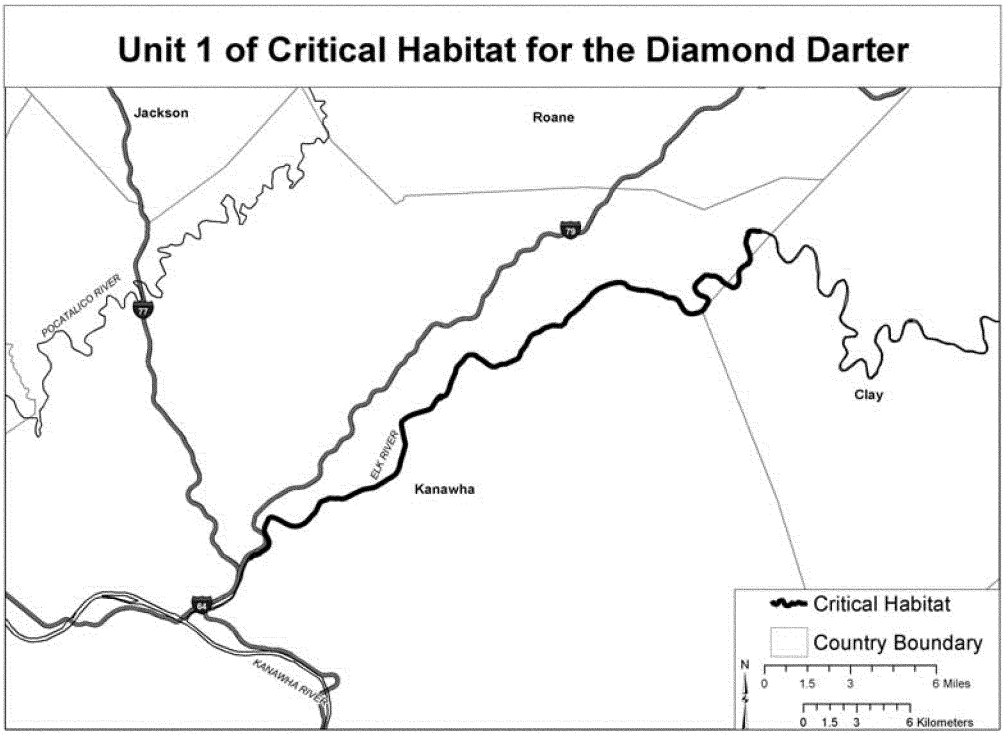
(5) *Note:* Index map of critical habitat locations for the diamond darter in West Virginia and Kentucky follows:



(6) Unit 1: Lower Elk River, Kanawha and Clay Counties, West Virginia.

(i) Unit 1 includes 45.0 km (28.0 mi) of the Elk River from the confluence with King Shoals Run near Wallback Wildlife Management Area downstream to the confluence with an unnamed tributary entering the Elk River on the right descending bank adjacent to Knollwood Drive in Charleston, West Virginia.

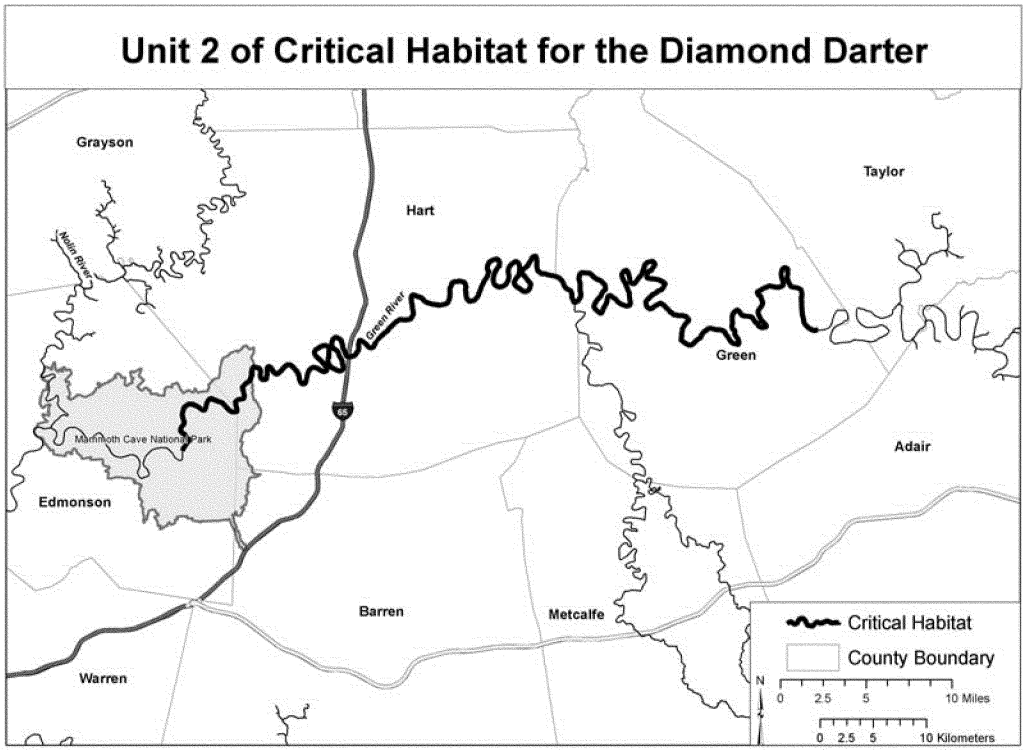
(ii) Note: Map of Unit 1 (lower Elk River) follows:



(7) Unit 2: Green River, Edmonson, Hart, and Green Counties, Kentucky.

(i) Unit 2 includes 152.1 km (94.5 mi) of the Green River from Roachville Ford near Greensburg (River Mile 294.8) downstream to the downstream end of Cave Island in Mammoth Cave National Park (River Mile 200.3).

(ii) Note: Map of Unit 2 (Green River) follows:



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Dated: August 6, 2013.

Rachel Jacobson,

Principal Deputy Assistant Secretary for Fish and Wildlife and Parks.

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