United States Department of the Interior

FISH AND WILDLIFE SERVICE
Florida Ecological Services Field Office

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MEMORANDUM

To: Industrial Economics, Incorporated

From: Lourdes Mena, Classification and Recovery Division Manager, Florida Ecological Services Field Office LOURDES MENA Digitally signed by LOURDES MENA Date: 2024.04.22 07:57:00 -04'00'

Subject: Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for the Black Creek Crayfish (*Procambarus pictus*)

The purpose of this memorandum is to provide information for use in conducting an economic analysis of the proposed designation of critical habitat for the Black Creek crayfish.

Section 4(b)(2) of the Endangered Species Act (Act) requires us to consider the economic, national security, and other impacts of designating a particular area as critical habitat. We may exclude an area from critical habitat if it is determined that the benefits of exclusion outweigh the benefits of inclusion, unless the exclusion will result in the extinction of the species. In part to comply with section 4(b)(2) of the Act and consider the economic impacts of a proposed critical habitat designation, we have an economic analysis conducted that describes and monetizes, where possible, the probable economic impacts of the proposed regulation. The data in the economic analysis may be used in the discretionary balancing evaluation under section 4(b)(2) of the Act to consider any particular area for exclusion from the final designation.

Determining the economic impacts of a critical habitat designation involves evaluating the "without critical habitat" baseline scenario versus the "with critical habitat" designation scenario, to identify those economic effects expected to occur solely due to the designation of critical habitat for a species, and not from the listing of that species under the Act. Economic effects solely due to the critical habitat designation equal the difference, or increment, between these two scenarios, and include both: (1) The economic impacts that could result from recommended changes to Federal agency actions when it is determined that the effects of such actions would result in destruction or adverse modification of the designated critical habitat, and (2) the costs of increased administrative efforts for Federal agencies that result from evaluating effects of their actions on the designation. Specific measured differences between the baseline scenario and the designation scenario may also include, but are not limited to, the economic effects stemming from project modifications and administrative efforts implemented by State and local governments or private third parties in response to designation of critical habitat. These are the incremental effects that serve as the basis for the economic analysis.

What follows in this memorandum is the relevant information we will be providing the contractor conducting the incremental effects economic analysis for the Black Creek crayfish.

I. INTRODUCTION

Section 7(a)(2) of the Act requires Federal agencies to consult with the U.S. Fish and Wildlife Service (Service) to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of its designated critical habitat. Section 7's implementing regulations, at 50 CFR 402, lay out the process for determining when the need for consultation is triggered. Essentially, if a listed species or designated critical habitat "may be present" in the action area of a project (i.e., all areas to be affected directly or indirectly by the Federal action, and not merely the immediate area involved in the action), the Federal agency must conduct a biological assessment to evaluate any effects their action may have on the species or critical habitat. If the proposed action "may affect" either the listed species or critical habitat, consultation with the Service is required. Consultation may be informal (the proposed action may affect but *is not* likely to adversely affect listed species or critical habitat) or formal (the proposed action may affect and *is* likely to adversely affect listed species or critical habitat).

For the purposes of evaluating the incremental economic effect of designating critical habitat, the difference between the baseline scenario and the designation scenario, it is necessary to evaluate whether there are any situations for which economic impacts could occur solely due to the critical habitat designation, i.e., not due to the species being listed. There are two scenarios for which this outcome could occur: (1) Critical habitat may be present in the action area, but it is determined that the listed species may not be present; and (2) both the listed species and critical habitat may be present in the action area, it is determined that the action is likely to adversely affect critical habitat to such an extent that protective measures are deemed necessary to avoid destruction or adverse modification, and these measures are different than any protective measures deemed necessary for addressing effects to the listed species (e.g., protective measures needed to address effects to the species determined to jeopardize its continued existence).

(1) Only Critical Habitat is Present in Action Area

While this scenario can occur when the Service designates unoccupied critical habitat (i.e., the species is not present, neither continuously nor occasionally), it is significantly less likely to occur in occupied critical habitat. However, the Service recognizes that the "geographical area occupied by the species" at the time of listing as stated under section 3(5)(A)(i) of the Act is the geographical area which may generally be delineated around the species' occurrences, as determined by the Secretary (i.e., range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (e.g., migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals). Accordingly, the species may not be continuously present within every acre of its known range. Thus, the "geographical area occupied by the species" can, depending on the species at issue and the relevant data available, be defined on a relatively coarse scale.

As a result, it is possible that in occupied critical habitat, a listed species may not be present within the bounds of an action area at the time the proposed action is implemented. In such a situation, if the proposed action may affect critical habitat, it is possible that consultation (either formal or informal) would be required solely as a result of the effects to that critical habitat.

However, consultation is based on evaluating the "may be present" and "may be affected" thresholds simultaneously. As described above, the geographical range of a species includes resources or conditions the species needs for some aspect of its life history, which may only be used sporadically. So while it is possible that a species may not be present within an action area at the time of a proposed action, should that action affect the resources or conditions the species depends on when it is present (which would be the case if the action would affect critical habitat), such an action also "may affect" the species and consultation under the jeopardy standard would be required, in addition to assessing the impacts to critical habitat.

In conclusion, the incremental effect of economic impacts arising solely as a result of a critical habitat designation could occur with section 7 consultations for proposed actions in unoccupied critical habitat, as well as in the rare situation of section 7 consultations in occupied critical habitat where it is determined that the proposed action will have no effect whatsoever to the listed species itself (i.e., no effect to the species or any of the resources it depends on).

(2) Different Protective Measures for Avoiding Destruction/Adverse Modification

As noted above, Federal agencies are required under section 7 to consult with the Service to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of its designated critical habitat. If during section 7 consultation it is determined that a proposed Federal action is likely to result in a finding of either jeopardy to the species or destruction/adverse modification of critical habitat, or both, the Service must develop Reasonable and Prudent Alternatives (RPAs). RPAs are alternative actions identified during formal consultation that can be implemented in a manner consistent with the intended purpose of the action, that can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction, that are economically and technically feasible, and that the Director believes would avoid the likelihood of jeopardizing the continued existence of the species or result in the destruction or adverse modification of critical habitat. Economic impacts to a proposed action can result from project modifications developed in response to RPAs.

Jeopardizing the continued existence is defined at 50 CFR 402.02 as "…to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." Destruction or adverse modification is defined as "…a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species." While these are different standards under the Act, they are similar in that the scale and magnitude of a proposed action's effects needed to reach these thresholds are such that they have significant consequences for the species as a whole or for the entire critical habitat designation.

In situations requiring RPAs, economic impacts can potentially arise from subsequent project modifications to avoid jeopardy or destruction/adverse modification. While it is conceivable that scenarios could occur whereby a proposed action could result in a determination of jeopardy for the species without also resulting in a determination of destruction/adverse modification for critical habitat (e.g., a species is directly impacted without any adverse effects to its essential habitat), the reverse is significantly less likely. Actions whose adverse effects to the essential habitat needs of a species reach a level of destruction/adverse modification of the designated

critical habitat will therefore most likely have a concurrent significant level of adverse effects to the species itself. That is, effects reaching the scale and magnitude of destroying or adversely modifying the critical habitat essential to the conservation of the species would likely also reach the scale of jeopardizing the continued existence of the species. This is true even for critical habitat designations that include unoccupied units.

In conclusion, it is likely rare that economic impacts from RPA-directed project modifications would arise solely as a result of a critical habitat designation (i.e., an incremental effect), as any such RPAs would typically be the same as those needed to avoid jeopardy of the species. However, the information provided below is intended to identify the possible differences for the Black Creek crayfish under the different section 7 standards for jeopardy to the species and destruction or adverse modification of critical habitat.

II. DESCRIPTION OF SPECIES AND PROPOSED CRITICAL HABITAT

A. Black Creek Crayfish Summary Description

The Black Creek crayfish is a small to medium sized crayfish endemic to the lower St. Johns watershed within Clay, Duval, Putnam, and St. Johns counties in northeast Florida. Black Creek crayfish have adaptations for cool water and rely on flowing, sandy bottom, tannic-stained streams that are highly oxygenated (Franz and Franz 1979, p. 14; Franz 1994, p. 212). These high-quality streams typically originate in sandhills and may flow through swampy terrain (Franz and Franz 1979, p. 14; Brody 1990, pp. 8-11; FNAI 2001, pp. 102; Nelson and Floyd 2011, p.1). Locations that fulfill the species' habitat requirements are typically headwater sections of streams that maintain a constant flow; however, they are found in small and large tributary streams that fulfill other habitat criteria (e.g., high oxygen levels, sandy bottom) (Franz and Franz 1979, p. 14). Within these streams, Black Creek crayfish require aquatic vegetation and debris for shelter with alternation of shaded and open canopy cover. In forested sections of habitat, surrounding riparian areas provide shade which cools the air and water temperature, and provides woody detritus which serves as refuge and a food source (Franz et al. 2008, p. 16; FWC 2013, pp. 2, 19). In open stretches of habitat, Black Creek crayfish rely on aquatic vegetation for cover.

The Black Creek crayfish was historically known from 21 subwatersheds of the St. Johns River basin; it currently occupies 19. The range is bisected by the St. Johns River which acts as a barrier to natural migration.

Threats Affecting Black Creek Crayfish Habitat

The presence of white tubercled crayfish (*Procambarus spiculifer*) is the main threat to Black Creek crayfish occupancy and abundance throughout most of its range. The white tubercled crayfish, native to other watersheds within the southeast, was first documented within the Lower St. Johns watershed in 2008. Recent evidence of invasions suggests that the Black Creek crayfish is at a high risk of local extirpation in the presence of white tubercled crayfish, which has invaded 73% of all sites. Since 2019, the white tubercled crayfish has completely replaced the Black Creek crayfish in 55% of its known locations. Other threats that influence Black Creek

crayfish vary by location, but include disease, water withdrawals for various uses, human development, extractive land use (e.g., mining, gravel pits, quarries), silviculture, agriculture, bridge and road construction and maintenance, utility corridor maintenance and construction, and climate change. The subwatersheds west of the St. Johns River that currently do not have white tubercled crayfish are at a high risk of invasion and those on the east side are more influenced by anthropogenic activities.

B. physical or Biological Features

The proposed critical habitat units for the Black Creek crayfish are based on known (current (2008-2023)) occurrence records for the species. All units are within the current range of the species and contain the physical and biological feature essentials to the conservation of the species. The features are as follows:

1. Small to medium flowing streams with sandy bottom substrate with sufficient water quantity and velocity to support normal behavior, growth, and viability of all life stages.

2. Moderate amounts of instream aquatic cover, such as woody debris, overhanging terrestrial vegetation, and aquatic plants for refugia, prey, and temperature moderation.

3. Stream banks with intact riparian cover to maintain stream morphology and reduce erosion.

4. Water quality characterized by seasonally moderated water temperatures (maximum of 30°C) and physical and chemical parameters (e.g., dissolved oxygen) sufficient for the normal behavior, growth, reproductions, and viability of all life stages.

5. Adequate food base, indicated by a healthy aquatic community structure including native benthic macroinvertebrates and plant matter (e.g., leaf litter, algae, detritus).

6. An interconnected network of streams and rivers that have the physical or biological features described in 1 through 6, above, that allow for movement of individual crayfish in response to environmental, physiological, or behavioral drivers.

C. Unit Descriptions

We have identified 15 critical habitat units totaling 1,057 stream kilometers (km) (656 stream miles (mi) (Table 1). These units are in Clay, Duval, Putnam, and St. Johns counties, in northeast Florida. The proposed critical habitat designation includes streams with adjacent lands in State (22 percent), local government (City or County; 3 percent), State and private (0.8 percent), local government and private (0.3 percent) and private (74 percent) jurisdictions (Table 1). Approximately 43.6 km (27.1 mi) of the proposed units are on private lands managed for conservation by the St. Johns River Water Management District (29.3 km (18.2 mi) or North Florida Land Trust (14.3 km (8.9 mi). Additionally, 38.4 km (23.9 mi) are on private lands managed as mitigation banks. Streams may have different land ownership on each bank; therefore, the following table includes categories of ownership as State, State and Local, Local, Local and Private, or Private. State and Local ownership includes adjacent lands that are held by

the state on one bank and are in private ownership on the other bank. Local and Private ownership includes adjacent lands that are held by a local government on one bank and are in private ownership on the other bank. Each unit may also include road and bridge rights-of-way that are publicly owned but cannot be determined using available information.

Table 1. Proposed Critical Habitat Units for the Black Creek crayfish.

Unit	Land Ownership Adjacent to Streams					
	State	State & Private	Local	Local & Private	Private	Total Length*:
	km [mi]	km [mi]	km [mi]	km [mi]	km [mi]	km [mi]
1. Julington Creek	4.4 [2.7]		1.9 [1.2]	1.2 [0.7]	34.2 [21.3]	41.7 [25.9]
2. Durbin Creek	5.6 [3.5]	6.1 [3.7]	0.3 [0.2]		11.9 [7.4]	23.9 [14.8]
3. Trout Creek					13.7 [8.5]	13.7 [8.5]
4. Governors Creek	2.5 [1.5]	0.2 [0.1]			45.8 [28.5]	48.5 [30.1]
5. Clarks Creek	18.2 [11.3]				55.9 [34.8]	74.1 [46.1]
6. Black Creek					23.7 [14.7]	23.7 [14.7]
7. Peters Creek					35.1 [21.8]	35.1 [21.8]
8. Yellow Water Creek	33.3 [20.7]		25.0 [15.5]	1.6 [1.0]	32.6 [20.3]	92.5 [57.5]
9. North Fork of Black Creek	89.0 [55.3]		2.6 [1.6]		125.0 [77.7]	216.5 [134.6]
10. South Fork of Black Creek	21.0 [13.0]				119 [74]	140.2 [87.1]
11. Greens Creek					91.8 [57.0]	91.8 [57.0]
12. Simms Creek					58.1 [36.1]	58.1 [36.1]
13. Kingsley Creek	8.4 [5.2]				15.9 [9.9]	24.4 [15.1]
14. Ates Creek	25.6 [15.9]	1.7 [1.1]			47.5 [29.5]	74.8 [46.5]
15. Etonia Creek	21.4 [13.3]				76.7 [47.7]	98.1 [61.0]
Total	234 [145]	8.0 [4.9]	29.8 [18.5]	2.8 [1.7]	782.0 [486.1]	1056.3 [656.4]

*Totals may not sum due to rounding

Table 2. Percentages of Adjacent Land Ownership for Proposed Critical Habitat for the Black Creek crayfish

Land Ownership	Percent Ownership
Federal	0
State	22
Local	3
Private	74
State and Private	0.8
Local and Private	0.3
Total	**100**

Unit 1: Julington Creek, Duval and St. Johns Counties, Florida

Unit 1 includes stream/river habitat consisting of portions of Julington Creek, Oldfield Creek, Flora Branch, and Comorant Branch and their tributaries and other unnamed streams that contain the physical or biological features within the Julington Creek (HUC12: 030801031302) subwatershed. This unit is considered occupied. Riparian lands that border the unit are in State, local government, and private ownership. Approximately 11 percent (4.4 km (2.7 mi)) are State lands: the Julington-Durbin Preserve, managed by the St. Johns Water Management District, and the Freedom Commerce Center, managed by the City of Jacksonville. The Lower St. Johns Mitigation Bank (8 percent; 3.5 km (2.2 mi) is a privately owned conservation area adjacent to the Freedom Commerce Center.

The physical or biological features in this unit may require special management considerations or protection measures to address threats from climate change, development, extractive land use (e.g., mining, gravel pits, rock quarries), and agricultural and silvicultural activities.

Unit 2: Durbin Creek, Duval and St, Johns Counties, Florida

Unit 2 includes stream/river habitat consisting of portions of Durbin Creek and its tributaries that contain the physical or biological features within the Durbin Creek (HUC12: 030801031301) subwatershed.
This unit is considered occupied. Riparian lands that border the unit are in State, local government, and private ownership. Approximately 49 percent (11.7 km (7.2 mi) are State lands managed by the St. Johns River Water Management District as the Twelve-mile Swamp Conservation Area, Gourd Island Conservation Area, and Julington-Durbin Preserve.

The physical or biological features in this unit may require special management considerations or protection measures to address threats from climate change, development, and agricultural and silvicultural activities.

Unit 3: Trout Creek, St. Johns County, Florida

Unit 3 includes stream/river habitat consisting of portions of Trout Creek and its tributaries and Molasses Branch that contain the physical or biological features within the Trout Creek-St. Johns

River (HUC12: 030801031202) subwatershed. This unit is considered occupied and adjacent riparian lands are in private ownership.

The physical or biological features in this unit may require special management considerations or protection measures to address threats from climate change, development, and agricultural and silvicultural activities.

Unit 4: Governors Creek, Clay and St. Johns Counties, Florida

Unit 4 includes stream/river habitat consisting of portions of Governors Creek and its tributaries and other unnamed streams that contain the physical or biological features within the Governors Creek (HUC12: 030801031204) subwatershed. This unit is considered occupied. Riparian lands that border the unit are in State and private ownership. Approximately 6 percent (2.7 km (91.6 mi)) are State lands managed by the St. Johns River Water Management District as the Bayard Conservation Area.

The physical or biological features in this unit may require special management considerations or protection measures to address threats from climate change, development, extractive land use (e.g., mining, gravel pits, or rock quarries), and agricultural and silvicultural activities.

Unit 5: Clarks Creek, Clay and Putnam Counties, Florida

Unit 5 includes stream/river habitat consisting of portions of Clarkes Creek and its tributaries and other unnamed streams that contain the physical or biological features within the Clarks Creek (HUC12: 030801030804) subwatershed. This unit is considered occupied. Riparian lands that border the unit are in State and private ownership. Approximately 25 percent (18.5 km (11.2 mi)) are State lands managed by the St. Johns River Water Management District as the Bayard Conservation Area. A portion of this unit (4 percent; 3.2 km (2.0 mi) is in private conservation as the Sundew Mitigation Bank.

The physical or biological features in this unit may require special management considerations or protection measures to address threats from climate change, development, extractive land use (e.g., mining, gravel pits, or rock quarries), and agricultural and silvicultural activities.

Unit 6: Black Creek, Clay County, Florida

Unit 6 includes stream/river habitat consisting of portions of Pecks Branch, Mill Log Creek, and Bradley Creek, and their tributaries and other unnamed streams that contain the physical or biological features within the Black Creek-St. Johns River (HUC12: 030801031103) subwatershed. This unit is considered occupied and adjacent riparian lands are in private ownership.

The physical or biological features in this unit may require special management considerations or protection measures to address threats from invasive crayfish, climate change, development, and agricultural and silvicultural activities.

Unit 7: Peters Creek, Clay County, Florida

Unit 7 includes stream/river habitat consisting of portions of Peters Creek and its tributaries that contain the physical or biological features within the Peters Creek (HUC12: 030801031102) subwatershed.
This unit is considered occupied and adjacent riparian lands are in private ownership.

The physical or biological features in this unit may require special management considerations or protection measures to address threats from climate change, development, and agricultural and silvicultural activities.

Unit 8: Yellow Water Creek, Clay and Duval Counties, Florida

Unit 8 includes stream/river habitat consisting of portions of Yellow Water Creek and its tributaries that contain the physical or biological features within the Yellow Water Creek (HUC12: 030801031003) subwatershed. This unit is considered occupied. Riparian lands that border the unit are in State, local government, and private ownership. Jennings State Forest, managed by the Florida Department of Agriculture and Consumer Services, encompasses approximately 36 percent (33.3 km (20.7 mi) of adjacent lands. Approximately 33 percent (30.8 km (19.2 mi)) are in local government or private conservation. The Cecil Field Conservation Corridor, Loblolly Mitigation Preserve, Loblolly Park, Sal Taylor Creek Preserve, and Yellow Water Branch Trail Head are co-owned by Duval County and the City of Jacksonville (25.0 km (15.5 mi)). Private conservation lands include the Peterson Tract (3.8 km (2.4 mi)), managed by the Jacksonville Electric Authority, and the Normandy Mitigation Bank. A portion of the Moore Branch (1.6 km (1.0 mi)) forms the border between the Normandy Mitigation Bank and the Loblolly Mitigation Preserve.

The physical or biological features in this unit may require special management considerations or protection measures to address threats from invasive crayfish, climate change, development, and agricultural and silvicultural activities.

Unit 9: North Fork of Black Creek, Clay and Duval Counties, Florida

Unit 9 includes stream/river habitat consisting of portions of the North Fork Black Creek, Dillaberry Branch, Grog Branch and their tributaries, and other unnamed streams that contain the physical or biological features within the Upper North Fork of Black Creek (HUC12: 030801031002) and Lower North Fork of Black Creek (HUC12: 030801031004) subwatersheds. This unit is considered occupied. Riparian lands that border the unit are in State, local government, and private ownership. Approximately 40 percent of adjacent lands (88.2 km (54.8 mi)) are within the Jennings State Forest managed by the Florida Department of Agriculture and Consumer Services. Private conservation lands (0.4 percent; 0.9 km (0.6 mi)) include the Trail Ridge and Rideout Point Preserves managed by the North Florida Land Trust.

The physical or biological features in this unit may require special management considerations or protection measures to address threats from invasive crayfish, climate change, development,

extractive land use (e.g., mining, gravel pits, or rock quarries), and agricultural and silvicultural activities.

Unit 10: South Fork of Black Creek, Clay County, Florida

Unit 10 includes stream/river habitat consisting of portions of the South Fork Black Creek and its tributaries and other unnamed streams that contain the physical or biological features within the Upper South Fork of Black Creek (HUC12: 030801030903) and Lower South Fork of Black Creek (HUC12: 030801030904) subwatersheds. This unit is considered occupied. Riparian lands that border the unit are in State and private ownership. Approximately 15 percent (21 km (13 mi)) are State lands within the Belmore State Forest, managed by the Florida Department of Agriculture and Consumer Services. Approximately 7 percent (9.7 km (6 mi)) are within three private conservation easements managed by the St. Johns River Water Management District: Longbranch Crossing Conservation Easement, Halloran Conservation Area, and Arahatchee Conservation Easement).

The physical or biological features in this unit may require special management considerations or protection measures to address threats from invasive crayfish, climate change, development, extractive land use (e.g., mining, gravel pits, or rock quarries), and agricultural and silvicultural activities.

Unit 11: Greens Creek, Clay County, Florida

Unit 11 includes stream/river habitat consisting of portions of Greens Creek and its tributaries that contain the physical or biological features within the Greens Creek (HUC12: 030801030902) subwatershed. This unit is considered occupied and adjacent lands are in private ownership.

The physical or biological features in this unit may require special management considerations or protection measures to address threats from invasive crayfish, climate change, development, and agricultural and silvicultural activities.

Unit 12: Simms Creek, Clay and Putnam Counties, Florida

Unit 12 includes stream/river habitat consisting of portions of Simms Creek and its tributaries and other unnamed streams that contain the physical or biological features within the Simms Creek (HUC12: 030801030603) subwatershed. This unit is considered occupied and adjacent lands are in private ownership.

The physical or biological features in this unit may require special management considerations or protection measures to address threats from climate change, development, and agricultural and silvicultural activities.

Unit 13: Kingsley Lake, Clay County, Florida

Unit 13 includes stream/river habitat consisting of portions of the North Fork Black Creek and its tributaries and other unnamed streams that the physical or biological features within the Kingsley Lake (HUC12: 030801031001) subwatershed. This unit is considered occupied. Riparian lands that border the unit are in State and private ownership. Approximately 34 percent (8.4 km (5.2 mi)) are State lands within the Jennings State Forest, managed by the Florida Department of Agriculture and Consumer Services. Private conservation lands (44 percent; 10.8 km (6.7 mi)) include the Trail Ridge Preserve, managed by the North Florida Land Trust, and the Highlands Ranch Mitigation Bank.

The physical or biological features in this unit may require special management considerations or protection measures to address threats from invasive crayfish, climate change, development, extractive land use (e.g., mining, gravel pits, or rock quarries), and agricultural and silvicultural activities.

Unit 14: Ates Creek, Clay County, Florida

Unit 14 includes stream/river habitat consisting of portions of the Ates Creek and its tributaries and other unnamed streams that contain the physical or biological features within the Ates Creek (HUC12: 030801030901) subwatershed. This unit is considered occupied. Riparian lands that border the unit are in State and private ownership. Approximately 34 percent (25.6 km (15.9 mi)) are Sate lands within the Belmore State Forest, managed by the Florida Department of Agriculture and Consumer Services. Approximately 20 percent (15.3 km (9.5 mi)) of adjacent lands are within three private conservation easements: Longbranch Crossing Conservation Easement managed by the St. Johns River Water Management District and the McArthur Trust and Bear Bay Conservation Easements managed by the North Florida Land Trust.

The physical or biological features in this unit may require special management considerations or protection measures to address threats from invasive crayfish, climate change, development, and agricultural and silvicultural activities.

Unit 15: Etonia Creek, Clay and Putnam Counties, Florida

Unit 15 includes stream/river habitat consisting of portions of the Etonia Creek and its tributaries and other unnamed streams that contain the physical or biological features within the Lower Etonia Creek (HUC12: 030801030601) and Upper Etonia Creek (HUC12: 030801030504) subwatersheds.
This unit is considered occupied. Riparian lands that border the unit are in State and private ownership. Approximately 22 percent (21.4 km (13.3 mi)) are State lands within the Etoniah State Forest, managed by the Florida Department of Agriculture and Consumer Services, and the Palatka to Lake Butler State Trail, managed by the Florida Department of Environmental Protection. Private conservation lands (8 percent; 7.6 km (4.7 mi)) include the Highbrighton Conservation Easement, managed by the St. Johns River Water Management District, and the Nochaway Mitigation Bank.

The physical or biological features in this unit may require special management considerations or protection measures to address threats from climate change, development, and agricultural and silvicultural activities.

D. Exemptions Under Section 4(a)(3)

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 geographical areas owned or controlled by the DoD, 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. Approximately 186 km (116 mi) occur on lands managed by the Camp Blanding Joint Training Center which has an active INRMP and CCAA. The following critical habitat segments that occur on Camp Blanding are being are being excluded: Ates Creek (16.1 km (10 mi)), Kingsley Lake (60.5 km, (37.6 mi)), Lake Geneva (10.5 km (6.5 mi)), and South Fork of Black Creek (98.9 km, (61.4 mi)).

E. Considered Exclusions Under Section 4(b)(2)

Section 4(b)(2) of the Act states that the Secretary shall designate and revise 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 she determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless she 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. Currently, we have not identified any areas for the Secretary's consideration to exclude from this critical habitat designation.

III. BASELINE ANALYSIS

In the following section, we describe conservation efforts and protections that are part of the baseline; that is, those protections or efforts that currently exist and provide some level of conservation for the Black Creek crayfish. These efforts and protections will occur with or without critical habitat designation.

A. ESA Protections for the species absent critical habitat designation

Protection of the species that occurs because of the listing of the species is often the most substantial baseline protection provided to the species absent critical habitat designation. In particular, section 7 consultations and associated conservation efforts that would be taken to be protective of the species often provide baseline protections to critical habitat as well. This section describes these protections. For threats identified in Section II of this memorandum, the following ESA protections are anticipated for Black Creek crayfish.

1. **Section 7 protections.** Section 7 of the Act provides protections to the species following its listing. The consultation history for this species is described in Section IV.A. These actions and associated conservation recommendations would be expected to occur even absent critical habitat for this species.

    - **General Management Practices:** For the Black Creek crayfish, the following practices would likely be recommended to the federal action agency:
        - To the maximum extent possible, keep structures, equipment, and materials out of the stream.
            - Bridges should completely span the stream (rather than placing supports in the stream).
            - Avoid use of causeways.
            - Minimize the number of stream crossings for pipelines.
        - When instream work is unavoidable, minimize disturbance to Black Creek crayfish and its habitat via:
            - Avoid disturbing higher quality habitat.
            - Minimize duration of instream activity.
            - Use of cofferdams, including filtration of intake and discharge water.
            - Minimize instream foot or equipment traffic.
        - Avoid construction in and adjacent to streams during periods of heavy rain.
        - Develop and implement Service-approved spill prevention and contingency plans.
        - Avoid and minimize riparian damage and disturbance, including:
            - Locating the project footprint away from the riparian buffer area.
            - Replant when the project is complete, using native, woody, non-invasive species.
            - Implement invasive species control measures.
        - Adhere to best erosion and sediment control practices (e.g., Florida Sediment and Erosion Control Manual).
        - Prohibit water withdrawal from and discharge into streams.
        - Minimize grubbing and clearing staging areas, especially in riparian buffers.
        - Implement biological monitoring, including:
            - Onsite biological monitoring during project implementation.
            - Baseline (pre-project) and post-construction monitoring.
            - Documentation and reporting of monitoring results.
        - Relocate the species out of cofferdams and construction areas prior to dewatering.

    - **Watershed restoration activities**, such as planting of riparian vegetation and fencing to protect riparian areas from livestock and other deleterious

activities are generally considered beneficial to Black Creek crayfish when implemented in accordance with the general management practices listed above. Design features such as stream access points should be strategically placed in habitats that are currently degraded (avoiding good habitats), in accordance with the NRCS' National Conservation Practice Standards.

- In addition to the general management practices described above, recommendations for **timber harvest and vegetation management** will include wide stream management zones (with limited to no tree clearing or disturbance within these zones), avoiding large clearcuts in Black Creek crayfish watersheds, minimizing the number of skidder roads, and reclaiming roads post-harvest.

- Recommendations for **prescribed fire** projects in Black Creek crayfish watersheds will include the applicable general management practices. Avoidance of large burn units and placement of fire breaks away from Black Creek crayfish streams will also be recommended.

- Recommendations for **pipeline and utility crossings** (in addition to the applicable general management practices) will be to construct and place the pipe so that it goes underneath the streambed without causing direct impacts to the stream. Drilling should minimize disturbance of riparian areas and be kept as far away from the stream as possible.

- Specific recommendations for **road maintenance and bridge replacement and maintenance** will include features to intercept stormwater runoff from bridges and channel it to discharge points away from the stream. Bridge containment tarps will be recommended to trap any materials, including paint and solvents, preventing them from accidentally falling into the river. Bridge removal should be designed to minimize disturbance to the streambed. Pieces of old bridges should be removed to offsite disposal areas. The general management practices will also be recommended as applicable.

- For projects requiring **pesticide use**, the general management practices will be augmented to include recommended application via "hack-and-squirt" (also called bark injection) methods instead of broadcast application. Use of aquatic-specific pesticides will also be recommended in and near Black Creek crayfish streams.

- Recommendations for **construction of recreation improvements and management of recreation activities** will focus on avoiding disturbance of riparian habitat, as well as siting and design of facilities to minimize sedimentation and foot-traffic in Black Creek crayfish habitats.

- Recommendations for **Black Creek crayfish surveys** will include appropriate permit conditions to avoid and minimize injury or death.

- In addition to the general management practices described above, recommendations for **hydropower** proposals will include management of flow discharges to mimic the natural flow regime and avoid deleterious water temperatures.

- Recommendations will include avoidance of **dam construction** in Black Creek crayfish steams. In the event that dam construction cannot be avoided, then the general management practices and those for dam maintenance will be recommended.

- Recommendations for **dam maintenance** will include minimizing deviations from the natural flow regime, as well as the applicable general management practices.

- Specific recommendations for **NRCS activities** other than watershed and stream restoration will include strategic placement of facilities (e.g., confined animal feeding operations) to avoid or minimize water discharges or sedimentation into Black Creek crayfish streams. Assessment of the cumulative effects of any water withdrawals will also be recommended. These will supplement the applicable general management recommendations.

- General management recommendations for **emergency response activities** such as removal of stream blockages and bank stabilization will emphasize minimizing stream and bank disturbance and siting equipment on the bank above the stream (i.e., keeping equipment of the stream).

Habitat Conservation Plans or other ESA protections - In the range of the Black Creek crayfish, there are currently no habitat conservation plans in place or in preparation that cover (or are contemplating coverage of) aquatic species.

2. Other Listed Species Protections, Including Other Critical Habitat Designations

There are no critical habitat designations within the streams that are occupied by the Black Creek crayfish. Some Black Creek crayfish critical habitat streams are direct tributaries of larger streams that have been designated as critical habitat for the West Indian manatee and are included within the manatee consultation range. However, the Black Creek crayfish and West Indian manatee do not have similar habitat requirements. The other listed species within the range of the Black Creek crayfish include Florida scrub-jay, red-cockaded woodpecker, eastern indigo snake, etonia rosemary, eastern black rail, wood stork, and Everglade snail kite. Conservation measures for these species that minimize tree removal and disturbance to streams, wetlands and riparian areas would provide protections for Black Creek crayfish and their habitat. However, because these species occupy uplands or wetlands, and the Black Creek crayfish is a stream species, new recommendations would be given to protect water quality and

aquatic habitat. Refer to Table 3 below for which listed species overlap with which proposed critical habitat units for the Black Creek crayfish.

Table 3: Unit and Co-occurring Federally Listed Species

Critical Habitat Unit(s)	Co-occurring Listed Species and/or Consultation Areas for Other Listed Species	Approximate Area of Overlap km [mi]	Does species have overlapping conservation requirements with subject species?
5, 7, 10-15	Everglade Snail Kite (*Rostrhamus sociabilis plumbeus*)	595.8 [370.2]	Partial
1, 2, 3	Wood Stork (*Mycteria americana*)	66.1 [41.1]	Partial
5, 12, 15	Etonia Rosemary (*Conradina etonia*)	87.5 [54.4]	Partial
1, 8-15	Red-cockaded Woodpecker (*Picoides borealis*)	597.7 [371.4]	Partial
6, 8-10, 12-15	Florida Scrub-jay (*Aphelocoma coerulescens*)	71.6 [44.5]	Partial
1-15	Eastern Black Rail (*Laterallus jamaicensis ssp. Jamaicensis)*	1057.4 [657.1]	Partial
1-15	Eastern Indigo Snake (*Drymarchon couperi)*	1057.4 [657.1]	Partial

B. Other regulatory mechanisms that provide protection to Black Creek crayfish and its habitat absent the critical habitat designation

The following regulatory mechanisms are relevant to the analysis of potential impacts of critical habitat designation because they provide some conservation benefits to the species under the baseline for the threats and specific activities identified in Section III.A.1 of this memorandum. Such regulatory mechanisms may include Federal, state, or local laws, regulations, policies, or plans. Conservation efforts under these regulatory mechanisms are considered part of the baseline because these benefits will continue with or without critical habitat designation.

1. *Federal Regulations/Acts*

The following Federal laws and regulations provide some benefits to the Black Creek crayfish and are considered part of the baseline because these benefits will continue with or without critical habitat designation.

Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), as amended (Act)

The Black Creek crayfish is proposed for listing as endangered under the Act. Listing provides the opportunity for conservation and protection under sections 6, 7, 9, and 10 of the Act. These sections include cooperative actions with States (Section 6), consultation with Federal agencies for actions that may affect the species (Section 7(a)(2)), protection against take of the species

("take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct) (Section 9), cooperative actions with other entities and landowners for the purpose of scientific or enhancement of survival activities involving take (Section 10(a)(l)(A) permit); and lastly, habitat conservation planning under Section 10(a)(l)(B). Protection of the species that occurs because of the listing of the species is often the most substantial baseline protection provided to the species absent critical habitat designation. In particular, section 7 consultations and associated conservation efforts that would be taken to be protective of the species often provide baseline protections to critical habitat as well. More information is available at: *https://www.fws.gov/law/endangered-species-act*

National Environmental Policy Act of 1969

All Federal agencies are required to adhere to the National Environmental Policy Act (NEPA) for projects they fund, authorize, or carry out. Prior to implementation of such projects with a Federal nexus, the agency is required to analyze the project for potential impacts to the human environment, including natural resources. The Council on Environmental Quality's regulations for implementing NEPA state that agencies shall include a discussion on the environmental impacts of the various project alternatives (including the proposed action), any adverse environmental effects that cannot be avoided, and any irreversible or irretrievable commitments of resources involved. The public notice provisions of NEPA provide an opportunity for the Service and other interested parties to review proposed actions and provide recommendations to the implementing agency. More information is available at: *https://www.epa.gov/nepa/what-national-environmental-policy-act*

Clean Water Act

Congress passed the Federal Water Pollution Control Act Amendments of 1972 and the Clean Water Act (CWA) of 1977 to provide for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's lakes, streams, and coastal waters. Primary authority for the implementation and enforcement of the CWA now rests with the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (COE). In addition to the measures authorized before 1972, the CWA implements a variety of programs, including Federal effluent limitations and state water quality standards, permits for the discharge of pollutants and dredged and fill materials into navigable waters, and enforcement mechanisms.

Section 404 of the CWA is the principal Federal program that regulates activities affecting the integrity of wetlands. Section 404 prohibits the discharge of dredged or fill material in jurisdictional waters of the United States, unless permitted by COE under § 404(a) (individual permits), 404(e) (general permits), or unless the discharge is exempt from regulation as designated in § 404(f).

Section 402 of the CWA is the principal Federal program that regulates activities affecting water quality. One of the most significant features of the 1972 CWA is the creation of a National Pollutant Discharge Elimination System (NPDES). Except as otherwise provided in the CWA, industrial sources and publicly owned treatment works may not discharge pollutants into

navigable waters without a permit. The EPA or state authorized programs may issue a permit for discharge upon condition that the discharge meets applicable requirements, which are outlined extensively in the CWA and which reflect, among other things, the need to meet Federal effluent limitations and state water quality standards.

The EPA's policies are carried out by Florida Department of Environmental (FDEM) and consist of CWA triennial review (Section 303(c)(1)), water quality standards (Section 303(c)(3)), impaired waters (Section 303(d), and the National Pollution Discharge Elimination System (NPDES) programs (Section 402). The EPA's responsibility under the triennial review is to encourage the States to hold public hearings for the purpose of reviewing applicable water quality standards, and, as appropriate, modifying and/or adopting the State water quality standards (i.e., water body uses, numeric criteria, narrative criteria, and anti-degradation policy). The EPA's responsibility under the water quality standards program is to determine if any water quality standards submitted by the State as a new or revised standard meets the requirements of the CWA. All units would receive protections under this law.

2. *Federal Land Management*

There are no federal land holdings in the range of the Black Creek crayfish that would be considered part of the baseline.

3. *State Laws and Management that may provide Protections/Conservation*

The Black Creek crayfish is protected under Florida's Wildlife Rule (68A-21.00s of the Florida Administrative Code) as a threatened species. This provides protection from harm, which includes significant habitat modification, killing, or harassment. The Florida Fish and Wildlife Conservation Commission developed a species action plan to guide conservation actions for the Black Creek crayfish. The objectives are to identify and reduce threats to quality of habitat throughout its range, and to locate and conserve Black Creek crayfish populations outside the Black Creek watershed. Conservation actions include working with land managers and landowners to protect, monitor, and enhance the habitat quality of known sites, drafting and disseminating stream-centered habitat management recommendations to reduce threats and safeguard crayfish and riparian corridors, and complete surveys to identify occupied habitat and extend the known range. More information is available at:
https://myfwc.com/wildlifehabitats/profiles/invertebrates/black-creek-crayfish/

Florida Water Resources Act

This law established regional Water Management Districts and each district creates a Regional Water Supply Plan every 5 years. Florida law (Chapter 373.042, Florida Statutes) requires the state water management districts or the Department of Environmental Protection to establish minimum flows and levels (MFLs) for aquifers, surface watercourses, and other surface water bodies to identify the limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area. Rivers, streams, estuaries and springs require minimum flows, while minimum levels are developed for lakes, wetlands and aquifers. MFLs were adopted for Georges Lake in 2023. Although the lake is not designated as critical habitat, stream

segments that flow in and out of the lake are designated critical habitat within the Etonia Creek unit. The MFLs for Georges Lake should provide some benefit to the Black Creek crayfish streams.

Florida Surface Water Improvement and Management Act

The Surface Water Improvement and Management or SWIM Program evaluates priority water bodies, identifies issues and drivers, and implements projects to improve water quality and habitat. In 1987, the Florida Legislature established the SWIM Act to protect, maintain, and restore Florida's surface water bodies. The Act required the five water management districts to identify and select a list of priority water bodies of statewide significance within their boundaries and develop programs to improve them. With the help of state agencies, local governments and other organizations, the SWIM Program focuses on water quality and natural systems restoration projects to accomplish these initiatives. Objectives were established to improve the health of the lower St. Johns River through on-farm and regional water management projects and practices that reduce the movement of nutrients to the river, improve water conservation, and result in more efficient farm management while maintaining the long-term viability of agriculture in the tri-county agricultural area. All units would receive protections under this law.

Florida Outstanding Waters

Surface waters in Florida may receive protections through the Outstanding Florida Waters (OFW) rule (62-302.700 of the Florida Administrative Code). This special designation protects the waterbody from degradation from its current water quality classification. OFWs generally include waters within the boundaries of publicly owned lands managed for conservation and/or recreation. In general, discharges regulated through a permitting program of the Florida Department of Environmental Protection or a Water Management District that are proposed within an OFW must not lower background ambient water quality. For purposes of an OFW designation, background water quality is the water quality a year prior to OFW designation or the year before a complete permit application, whichever water quality is better. More information is available at *https://floridadep.gov/dear/water-quality-standards/content/outstanding-florida-waters*.

The following units include critical habitat designated as a Florida Outstanding Water: North Fork of Black Creek, Yellow Water Creek, Kingsley Lake, and South Fork of Black Creek.

Florida State Wildlife Action Plan

Congress created the State and Tribal Wildlife Grants (SWG) program in 2000, recognizing the need to fund programs for the conservation of wildlife diversity. Congress mandated each state and territory to develop a State Wildlife Action Plan (SWAP) that provided a comprehensive wildlife conservation strategy to continue receiving Federal funds through the SWG program. The SWAPs serve as the blueprints for conserving our nation's fish and wildlife and preventing endangered species. Each state, territory, and the District Columbia submitted their plan for approval by the Service in 2005, and the plans were recently updated with the latest science and information to guide conservation of over 12,000 species in greatest conservation need. The

Florida SWAP was updated in 2019 and includes the Black Creek crayfish as a threatened species. Congress currently appropriates about $61 million annually to the 56 states, territories, and the District of Columbia to implement the plans. More information is available at: *https://myfwc.com/conservation/special-initiatives/swap/*

Florida State Parks Management Plans

Black Creek crayfish proposed critical habitat units are not located within a Florida state park; however, a portion of the Etonia Creek unit flows through the Palatka to Lake Butler state trail system. This is a paved, multi-use recreational trail adjacent to the Etoniah Creek State Forest and is managed by the Florida Department of Environmental Protection within the state park system. All waters along the trail have been designated as Outstanding Florida Waters. Objectives include invasive plant species removal and assessing hydrological restoration.

Florida State Forests

Three state forests (Belmore State Forest, Etoniah Creek State Forest, Jennings State Forest) overlap with the proposed critical habitat units for the Black Creek crayfish. These state Forests are located on the North Fork of Black Creek, Yellow Water Creek, Kingsley Lake, South Fork of Black Creek, and Ates Creek units. The Management Plans for each state forest include goals for the protection and restoration of upland and aquatic habitats and promote conservation efforts for listed species. As part of the active management of these forests, the Florida Department of Agriculture and Consumer Services conducts habitat restoration and management that benefits Black Creek crayfish. More information is available at: *https://www.fdacs.gov/Forest-Wildfire/Our-Forests/Land-Planning-and-Administration/State-Forest-Land-Management-Plans/Current-State-Forest-Management-Plans*

St. Johns River Water Management District Lands

The St. Johns River Water Management District (SJRWMD) is an environmental regulatory agency focused on protecting drinking water supply and protecting and restoring waterbodies within 18 counties in northeast Florida. State conservation lands managed by the SJRWMD within the Black Creek crayfish critical habitat units are the Julington-Durbin Preserve, Freedom Commerce Center, Twelve-mile Swamp Conservation Area, Gourd Island Conservation Area, and Bayard Conservation Area. These units are a protected mix of uplands and wetlands managed to promote natural ecosystems through habitat restoration and enhancement, and to provide recreational access. Protection and management of these habitats provides benefits to the Black Creek crayfish in the Julington Creek, Durbin Creek, Governors Creek, and Clarks Creek units. More information is available at: *https://www.sjrwmd.com/documents/land-management/*

4. *Local and Private Conservation Plans/Efforts*

The following are ongoing conservation efforts by local governments, private parties, or non-profit organizations that provide some benefits to the Black Creek crayfish and are considered

part of the baseline because these activities will occur with or without critical habitat designation.

In Florida, local governments have authority to regulate land use practices for the protection and conservation of natural resources, including wildlife and wildlife habitats (Schaefer et al. 2012, p. 1). The protection and management of riparian areas contributes to beneficial water quality and may also provide the necessary canopy cover for Black Creek crayfish shelter and stream temperature moderation.

Mitigation Banks

Highlands Ranch Mitigation Bank is a 638-hectare (ha; 1,576-acre (ac)) parcel in Clay that serves as mitigation for wetland impacts within the St. Johns River basin. The site includes pine restoration, mesic flatwoods, and sandhill communities. Isolated and contiguous mixed forested wetlands and bay swamp within the Ocala to Osceola Greenway corridor. Upland habitat also serves as a gopher tortoise recipient site. More information is available at: *https://res.us/projects/highlands-ranch-mitigation-bank/*

The Normandy Mitigation Bank plan includes preservation and enhancement of both uplands and wetlands. This bank totals 355 ha (878 ac) within Duval County and is contiguous with the Loblolly Mitigation Bank.

Loblolly, Nochaway, and Sundew Mitigation Banks consist of approximately 5.665 ha (14,000 ac) throughout Duval, Clay, and St. Johns counties. These banks provide credits to private property owners, commercial land developers, and other related business to help preserve or offset wetland areas impacted by their projects. Management includes hydrological restoration, invasive plant species control, and native forest and wetland restoration. More information is available at: *https://ehmitigation.com/index.html*

Lower St. Johns Mitigation Bank is a 238-ha (588-ac) parcel in Duval County adjacent to the publicly owned Freedom Commerce Center property. The site is permitted by the St. Johns River Water Management District as a mitigation bank and is primarily wetlands.

Private Conservation Easements

Conservation easement agreements allow the landowner to continue to own and use the property but permanently limits how the land can be used to protect its conservation values.

Four conservation easements adjacent to Black Creek crayfish critical habitat are managed by the St. Johns River Water Management District in Clay, Duval, and Putnam counties: Longbranch Crossing, Halloran Conservation Area, Arahatchee, and Highbrighton. All properties are adjacent to each other or other conservation easements, state forests, and mitigation banks. These easements were established to "preserve and protect in perpetuity the natural, ecological, wildlife and plant life features and values of the property and to prevent any use of the property that will significantly impair or interfere with the conservation value of the property" (SJRWMD 2009, p. 6). A mix of wetland and upland habitats within the riparian areas

of the South Fork of Black Creek, Ates Creek, Etonia Creek units will benefit from these private conservation areas.

The North Florida Land Trust (NFLT) is a not-for-profit organization that seeks to protect Florida's natural resources. They manage four properties for conservation within Clay and Bradford counties: Trail Ridge Preserve, Rideout Point Preserve, McArthur Family Trust Conservation Easement, and Bear Bay Timber Conservation Easement. These parcels are primarily contiguous with other conservation easements, mitigation banks, and state forests within the Ocala to Osceola Wildlife Corridor. The corridor is an effort to protect natural landscapes within public and private lands connecting the Ocala and Osceola National Forests. The NFLT units contain pine forests, streams, mixed hardwood forest, and wetlands. Management plans include upland habitat enhancement, hydrological restoration, rare species management, and invasive species control. More information is available at: *https://www.nflt.org/preservation-priorities/#O2O*

The Peterson Tract, managed by JEA (formerly called Jacksonville Electric Authority), within Duval County is part of a conservation corridor being established by the City of Jacksonville. Situated between two publicly owned conservation areas (Cecil Field and Loblolly Mitigation Preserve), the parcel includes a mosaic of pine plantations and wetlands. The easement was created to protect the headwaters of Yellow Water Creek (*https://www.jea.com/Environment/Wildlife_Protection/*) and will benefit Black Creek crayfish critical habitat in the Yellow Water Creek unit.

Local Government Conservation Lands

The Cecil Field Conservation Corridor and Sal Taylor Creek Preserve are adjacent public parks managed by the City of Jacksonville. These parks provide recreational opportunities and protect natural areas within Duval County from development. Duval County manages two adjacent conservation lands, Loblolly Park and Loblolly Mitigation Preserve. The preserve is encumbered by a conservation easement from the St. Johns River Water Management District and is part of a public and private partnership to establish a mitigation bank in western Duval County. Management objectives include maintaining native natural habitats through hydrological and forest restoration (*https://geodata.dep.state.fl.us/datasets/mitigation-banks/explore?location=30.180540%2C-81.721830%2C8.97*). Loblolly Park is a protected parcel of restored forest and mixed wetlands co-owned by Duval County and the City of Jacksonville. Riparian areas of the Yellow Water Creek unit will benefit from the protection of these public lands.

5. *Tribal Land Management and Regulations*

There are no Tribal regulations that apply to the Black Creek crayfish.

Table 4: Summary of Regulatory Mechanisms that provide protection to the Black Creek Crayfish and its habitat even absent critical habitat for this species (other than protections under the Act)

Critical Habitat Unit(s)	Regulatory Mechansim(e.g., regulation, conservation plan, etc.)	Activities Covered

All	National Environmental Policy Act	Conservation; Regulatory
All	Clean Water Act	Conservation; Regulatory
All	Florida's Wildlife Rule	Conservation; Regulatory
15	Florida Water Resources Act	Conservation; Management; Regulatory
All	Florida Surface Water Improvement and Management Act	Conservation; Management; Regulatory
8, 9, 10, 13	Florida Outstanding Waters	Conservation; Management; Regulatory
All	Florida's State Wildlife Action Plan	Conservation; Management; Restoration
15	Florida State Parks Management Plans	Conservation; Management; Restoration
8, 9, 10, 13, 14	Florida State Forests	Conservation; Management; Restoration
1, 2, 4, 5	SJRWMD Conservation Lands	Conservation; Management; Restoration
10, 14, 15	SJRWMD Conservation Easements	Conservation; Management; Restoration
1, 5, 8, 13, 15	Mitigation Banks	Conservation; Management; Restoration
9, 13, 14	North Florida Land Trust	Conservation; Management; Restoration
8	Local Government Parks and Preserves	Conservation; Management; Restoration

IV. ANTICIPATED ACTIVITIES WITHIN OR WHICH MAY AFFECT PROPSED CRITICAL HABITAT

A. Past Consultations

As the species is not yet listed, no consultation history exists. However, we have identified approximately 59 consultations for other listed species within the proposed Black Creek crayfish critical habitat units since October 1, 2013 (Table 7). These types of projects include bridge maintenance, sand mining, telecommunications towers, placement of dredge material for development, and military operations.

Table 7. Summary of consultation activities (October 1, 2013 through February 7, 2024) for other listed species within the proposed Black Creek crayfish critical habitat units.

Consultation Type	Number of Consultations
Technical Assistance	-
Informal	55
Formal	4
Total	**59**

B. Reasonably Foreseeable Activities that may affect critical habitat for the Black Creek crayfish

In the baseline scenario, section 7 of the Act requires Federal agencies to consult with the Service to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of the Black Creek crayfish.

Some of the Federal agencies and projects that would likely go through the section 7 consultation process whether or not critical habitat is designated include the following:

- **Federal Communications Commission:** construction, maintenance, and management of telecommunications towers.
- **Federal Emergency Management Agency**: alternations to both habitats and developments to increase coastal resiliency and/or to facilitate recovery of human communities following disasters or emergencies (such as coastal storms or floods).
- **Federal Energy Regulatory Commission:** hydroelectric projects requiring licensing, non-Federal activities that require Federal authorization, such as liquefied natural gas facilities and associated pipeline infrastructure.
- **U.S. Army Corps of Engineers:** Clean Water Act 404 permitting for bridge projects, stream restoration, utility and energy infrastructure, geotechnical surveys, and habitat restoration.
- **U.S. Department of Agriculture (Natural Resource Conservation Service):** funding agreements for endangered species management and habitat restoration activities.
- **U.S. Department of Transportation:** highway and bridge construction and maintenance, railroad and bridge construction and maintenance.
- **U.S. Environmental Protection Agency:** modifications to water quality standards and criteria, discharge permits, and pesticide permitting.
- **U.S. Fish and Wildlife Service:** intra-service consultations on section 10 permits for habitat conservation plans and safe harbor agreements; recovery permits; Partners for Fish and Wildlife and Coastal program projects; SWG funded projects; traditional section 6 grant projects; and other Service-funded projects.

Table 6: Anticipated projects that may affect the critical habitat designation for the Black Creek crayfish or require consultation under Section 7 of the Act

Critical Habitat Unit	Known/Probable Project or Activity	Lead Federal Agency	Timing	Consultation Required Absent CH?
All	Bridge maintenance/repair	FDOT* or USACE** (permitting)	Unknown	Yes
All	Dam maintenance	USACE for permits	Unknown	Yes
All	Wastewater permit application or renewals	USEPA – delegated to State Water Quality programs	Unknown	Yes
All	CWA Water Quality Standards Review of new or revised standards	USEPA (evaluation of new or revised water quality standards)	Unknown	Yes
All	Road widening/construction/repair	FDOT*	Near term	Yes

*U.S. Department of Transportation delegated permitting authority to the Florida Department of Transportation
**U.S. Army Corps of Engineers delegated permitting authority related to Section 404 of the Clean Water Act (1972 and amended) to the Florida Department of Environmental Protection

Economic Activities that May Be Affected by the Designation of Critical Habitat
Agriculture, silviculture, grazing, development, recreation, restoration activities, flood control, transportation, and utilities will be economic activities that will occur in all proposed areas. A federal nexus exists for many of these activities, most often via permit requirements from the USACE or via federal funding provided for a given project.

Within the Yellow Water Creek unit, a portion of the Peterson Tract owned by the JEA has been planned for a solar farm development. This property is currently in a conservation status; however, should the solar farm be installed conservation measures may be required to address sedimentation and other pollutant discharge into Black Creek crayfish critical habitat.

V. INCREMENTAL IMPACTS ANALYSIS

A. Adverse modification analysis in occupied areas

Black Creek crayfish are present year-round in all areas that are proposed for designation, so there is no potential for consultations that will affect the critical habitat that will not also affect the species. We know of no project modifications that would be recommended to avoid adverse alteration of the physical and biological features of the critical habitat that would not also be recommended to avoid adverse effects to the species (see description of conservation recommendations that are anticipated without critical habitat for Black Creek crayfish in Section III.A.1). Because habitat degradation adversely affects the Black Creek crayfish, we anticipate that any proposed action that would result in a finding of adverse modification of occupied habitat would also result in a finding of jeopardy to the species. Furthermore, in the event of an adverse modification determination, we expect that reasonable and prudent alternatives to avoid jeopardy to the species would also avoid adverse modification of the critical habitat.

Federal agencies and project proponents that would likely or potentially go through the section 7 consultation process if critical habitat is designated include the same agencies that would go through consultation without designation of critical habitat. See Section IV.B above for a list of Federal agencies that are likely to consult with the Service after the Black Creek crayfish is listed whether or not critical habitat is designated.

B. Adverse effects analysis for unoccupied areas (areas unoccupied by the species at the time of consultation)

We are not proposing any unoccupied critical habitat units.

C. New Information Provided by Critical Habitat

We do not anticipate behavior changes because of the critical habitat designation alone. The only potential change in behavior that we anticipate is the increased focus on protection and restoration of the designated habitat, particularly by the NRCS, EPA, and the Service.

Critical habitat designation alone is not anticipated to increase the likelihood of consultations in occupied habitat, initiation of HCPs in occupied habitat, or changes to State or local permitting processes.

D. Administrative Efforts

We anticipate some increase in overall consultation workload and administrative efforts for Federal agencies and the Service. However, we would consider the vast majority of the increase to result from the listing of the species and not solely from the designation of critical habitat. The amount of increased administrative effort due to proposed critical habitat is difficult to foresee and quantify due to a lack of consultation history. Nevertheless, when we complete a consultation for the Black Creek crayfish with critical habitat, each consultation will evaluate whether that project would result in adverse modification. As a result, each formal consultation that "may adversely affect" critical habitat must consider adverse modification. This effort will depend on the nature and complexity of any future consultation. Overall, we do not anticipate a substantial number of consultations that would result in adverse modification and, therefore, neither do we anticipate a substantial increase in administrative effort to work on measures to avoid adverse modification.

VI. CONCLUSION

Because all the units being proposed for designation as critical habitat are occupied, we do not expect that the critical habitat designation will result in any additional consultations. The conservation recommendations provided to address impacts to the occupied critical habitat will be the same as those recommended to address impacts to the species because the habitat tolerances of the Black Creek crayfish are inextricably linked to the health, growth, and reproduction of the crayfish, which are present year-round in their occupied streams. Furthermore, because the critical habitat and known species range are identical, any proposed action that would result in a finding of adverse modification of occupied habitat would also result in a finding of jeopardy to the species. In the event of an adverse modification determination, we expect that reasonable and prudent alternatives to avoid jeopardy to the species would also avoid adverse modification of the critical habitat. The only incremental impact of critical habitat designation that we anticipate is the small administrative effort required during section 7 consultation to document effects on the physical and biological features of the critical habitat.

If you have any questions or require additional information, please contact Gayle Martin of my staff via email at: Gayle_Martin@fws.gov.

cc: electronic only
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