



## NOAA FISHERIES

**PROPOSED ACTION** Issuing an Incidental Take Permit to Barney M. Davis, L.P.

**TYPE OF STATEMENT** Draft Environmental Assessment

**DATE** September 23, 2019

**LEAD AGENCY:** U.S. Department of Commerce  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Office of Protected Resources

**RESPONSIBLE OFFICIAL:** Donna S. Wieting  
Director, Office of Protected Resources

**FOR FURTHER INFORMATION** Shannon Bettridge  
Chief, Marine Mammal and Sea Turtle Conservation Division,  
Office of Protected Resources  
National Marine Fisheries Service  
1315 East West Highway  
Silver Spring, MD 20910  
(301) 427-8402

**LOCATION:** Barney M. Davis Power Station, Corpus Christi, Texas

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**Abstract:** The National Marine Fisheries Service proposes to issue an incidental take permit to Barney M. Davis, L.P. under Section 10(a)(1)(B) of the Endangered Species Act of 1973 as amended (16 U.S.C. 1539(a)(1)(B)), and the regulations governing the incidental taking of endangered and threatened species (50 CFR 222.307). The permit would authorize the incidental take of green sea turtles, North Atlantic Distinct Population Segment (*Chelonia mydas*) and Kemp's ridley sea turtles (*Lepidochelys kempii*) during the conduct of otherwise lawful activities associated with the operation of the Barney M. Davis Power Station. The permit would be valid for ten years. On October 23, 2018 Barney M. Davis, L.P., submitted a complete application for an incidental take permit, including a conservation plan to further monitor, minimize, and mitigate the impacts of incidental take of green and Kemp's ridley turtles to the maximum extent practicable.

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## CHAPTER 1 INTRODUCTION AND PURPOSE AND NEED

The National Marine Fisheries Service (NMFS) received an application from Barney M. Davis, L.P (herein “Barney Davis”) requesting an Incidental Take Permit (ITP) for take of threatened and endangered sea turtle species associated with operation of the Barney M. Davis Power Station located in Corpus Christi, Texas. NMFS has a statutory responsibility to authorize take of threatened and endangered species pursuant to the Endangered Species Act (ESA), Section 10(a)(1)(B) after receipt and review of an application and if certain findings and determinations are made. In addition, the National Environmental Policy Act (NEPA), 40 Code of Federal Regulations (CFR) Parts 1500 -1508, and the National Oceanic and Atmospheric Administration (NOAA) policy and procedures<sup>1</sup> require all proposals for major federal actions be reviewed with respect to environmental consequences on the human environment. Therefore, NMFS conducted an environmental review of the application submitted by Barney Davis and determined an Environmental Assessment (EA) is appropriate for NMFS consideration whether to issue an ITP to Barney Davis.

This Chapter presents a summary of NMFS’ authority pursuant to the ESA to authorize take of threatened and endangered species associated with an applicant’s specified activities (Section 1.1), a summary of the applicant’s request (Sections 1.2), and identifies NMFS proposed action and purpose and need (Section 1.3). This Chapter also explains the environmental review process (1.4) and provides other information relevant to the analysis in this EA, such as the scope of the analysis (Section 1.5). The remainder of this EA is organized as follows:

- Chapter 2 describes the applicant’s activities and the alternatives carried forward for analysis as well as alternatives not carried forward for analysis.
- Chapter 3 describes the baseline conditions of the affected environment and the direct, indirect, and cumulative impacts to the affected environment, specifically impacts to two species of sea turtles associated with NMFS’ proposed action and alternatives.
- Chapter 4 lists document preparers and agencies consulted and
- Chapter 5 lists references cited.

### 1.1 Overview of the Endangered Species Act and Relevant Authorities

The ESA establishes a national policy for conserving threatened and endangered species of fish, wildlife, plants and the habitat they depend on. An endangered species is a species in danger of extinction throughout all or a significant portion of its range, and a threatened species is one that is likely to become endangered within the near future throughout all or in a significant portion of its range. The U.S. Fish and Wildlife Service (USFWS) and NMFS jointly administer the ESA and are responsible for listing a species as either threatened or endangered, as well as designating critical habitat where applicable, developing recovery plans for these species, and undertaking other conservation actions pursuant to the ESA. Section 9 of the ESA prohibits the “take”<sup>2</sup>, including incidental take, of endangered sea turtles. Pursuant to section 4(d) of the ESA, NMFS has issued regulations extending the prohibition of take, with exceptions, to threatened sea turtles

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<sup>1</sup> National Oceanic and Atmospheric Administration Administrative Order (NAO) 216-6A “Compliance with the National Environmental Policy Act and Executive Order 12114 Environmental Effects Abroad of Major Federal Actions 11988 and 13690 Floodplain Management; and 11990 Protection of Wetlands” and the Companion Manual for NAO 216-6A.

<sup>2</sup>Take, as defined in Section 3 of the ESA, means to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”

(50 CFR 223.205 and 223.206). NMFS may grant exceptions to the take prohibitions with an incidental take statement or an incidental take permit issued pursuant to ESA section 7 or 10, respectively. To do so, NMFS must determine the activity that will result in incidental take is not likely to jeopardize the continued existence of the affected listed species.

Section 10(a) of the ESA includes allowable circumstances for permitting which includes any act otherwise prohibited by Section 9 for scientific purposes or to enhance the propagation or survival of the affected species, including, but not limited to, acts necessary for the establishment and maintenance of experimental populations (Section 10(a)(1)(A)) or any taking otherwise prohibited by section 9(a)(1)(B) if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity (Section 10(a)(1)(B)).

As provided in 50 CFR 222.307, NMFS may issue Section 10(a)(1)(B) permits to non-Federal entities to take endangered and threatened species when such taking is incidental to an otherwise lawful activity, and when specific issuance criteria have been met. The applicant must submit a completed application and conservation plan detailing the anticipated impact of the activity on listed species, the anticipated impacts to habitat, steps that will be taken to monitor, minimize, and mitigate such impacts, and the funding available to do so, as well as alternative actions that have been considered.

Section 7(a)(2) of the ESA requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitat. Federal agencies must do so in consultation with NMFS (or the USFWS) for actions that may affect species listed per Section 4 of the ESA as threatened or endangered or critical habitat designated for such species. Section 7(b)(3) of the ESA requires that at the conclusion of formal consultation, the consulting agency provides an opinion stating whether the federal action agency's action is likely to jeopardize ESA-listed species or destroy or adversely modify designated critical habitat.

## 1.2 Incidental Take Permit Application Summary

Barney Davis owns the Barney M. Davis Power Station (herein "facility"), which is a natural gas-fired electric power generating facility that operates continuously, (i.e., electric generation occurs year-round, with the exception of some outage periods as necessary). The facility is located in Nueces County, Texas on the south side of the City of Corpus Christi, see Figure 1 at the end of the application and conservation plan found on NOAA's website at <https://www.fisheries.noaa.gov/action/incidental-take-permit-barney-davis-lp>. The plant has approximately 1,992 acres of land between the Laguna Madre and Oso Creek. The facility is comprised of two natural gas fired combustion turbines, two Heat Recovery Steam Generators, one steam turbine, one gas-fired boiler for the Westinghouse steam turbine, Continuous Emission Monitoring Buildings, multiple warehouses, a central building (administrative offices, control room and laboratory), switch gear house, a Resource Center, emergency generator building, and two chillers. The facility also utilizes a 0.75-mile cooling water intake canal leading to the Cooling Water Intake Structure (CWIS) from Laguna Madre. The canal leading to the CWIS and the operation of the CWIS is the primary aspect of the facility operations under consideration for this ITP for Barney Davis due to the potential impacts to the ESA-listed sea turtles that are the subject of the ITP request. Although the facility has been in operation since 1974, the presence of sea turtles in the intake canal has only been documented over the past ten years and is associated

with cold stunning events. Cold stunning is when sea turtles experience a hypothermic reaction when exposed to prolonged cold water temperatures. Once the sea turtles are cold-stunned they are unable to swim normally and end up floating into the intake canal. In addition, facility personnel have been noticing an increase in the number of sea turtles entering the intake canal in recent years during winter months. As part of the facility operations, Barney Davis is proposing to remove sea turtles from the intake canal and to implement a suite of mitigation and monitoring measures to avoid or minimize the number of incidental takes of sea turtles. Thus, Barney Davis determined it was necessary to apply for an ITP in accordance with the requirements under Section 10(a)(1)(B) of the ESA. Chapter 2 of this EA includes more explanations about this aspect of the facility operation associated with take of ESA-listed sea turtles and Chapter 3 of this EA discusses more about effects of cold stunning and the facility operation to the ESA-listed sea turtles that are the subject of the ITP request.

### 1.3 Proposed Action and Purpose and Need

NMFS is proposing to issue an ITP to Barney Davis pursuant to Section 10(a)(1)(B) of the ESA and the regulations governing the incidental taking of endangered and threatened species (50 CFR 222.307). The ITP will be valid for ten years from the date the ITP is issued and will authorize incidental take of up to 210 live and 39 dead green sea turtles and 3 live and 0 dead Kemp's ridley sea turtles during any consecutive three-year period for the duration of the ITP. The potential for take of Kemp's ridley or green sea turtles that have migrated (while cold-stunned) into the facilities intake canal warrant a permit from NMFS in the form of an ITP. NMFS' proposed action is a direct outcome of Barney Davis's request for an ITP to take ESA-listed sea turtles.

Since NMFS's proposed action is a direct outcome of Barney Davis's request for a permit to take ESA-listed sea turtles incidental to conducting an otherwise lawful activity, the purpose of NMFS's action is to evaluate Barney Davis's application pursuant to Section 10(a)(1)(B) of the ESA. The need for NMFS's action is to meet its obligation to grant or deny the permit request under the ESA. Barney Davis submitted an adequate and complete application demonstrating the potential eligibility for the ITP, thus NMFS has a corresponding duty to determine whether and how to authorize take of the ESA-listed sea turtles incidental to the activities described in the application.

To authorize take of ESA-listed species, NMFS evaluates the application to determine if the taking is incidental to, not the purpose of, an otherwise lawful activity and that the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild. NMFS also evaluates the best available scientific information to determine whether the mitigation proposed by the applicant, to the maximum extent practicable, will minimize and mitigate the impacts of such taking and whether any additional conservation measures are required to ensure that the taking will not jeopardize the survival and recovery of the ESA-listed species and that the applicant can ensure adequate funding to implement its commitments under the conservation plan and ITP. An ITP must also include requirements or conditions pertaining to monitoring and reporting. NMFS cannot issue an ITP if this criteria cannot be met.

### 1.4 Environmental Review Process

Under NEPA, federal agencies are required to examine the environmental impacts of their proposed actions within the United States and its territories. An EA is a concise public document

that provides an assessment of the potential effects a major federal action may have on the human environment. Major federal actions include activities that federal agencies fully or partially fund, regulate, conduct or approve. Because the issuance of an ITP would allow for the taking of ESA-listed species, consistent with provisions under Section 10(a)(1)(B) of the ESA, and incidental to the applicant's lawful activities, NMFS considers this to be a major federal action subject to NEPA; therefore, NMFS analyzes the environmental effects associated with authorizing takes of ESA-listed species and prepares the appropriate NEPA documentation. In addition, NMFS, to the fullest extent possible, integrates the requirements of NEPA with other regulatory processes required by law or by agency practice so that all procedures run concurrently, rather than consecutively. This includes coordination within the National Oceanic Atmospheric and Administration (NOAA), (e.g., the Office of the National Marine Sanctuaries) and with other regulatory agencies (e.g., the U.S. Fish and Wildlife Service), as appropriate, during NEPA reviews prior to implementation of a proposed action to ensure that all applicable requirements are met.

#### 1.4.1 Compliance with Other Laws

NMFS must comply with all applicable federal environmental laws and regulations or Executive Orders (as applicable) necessary to implement a proposed action. NMFS evaluation of and compliance with environmental laws and regulations is based on the nature and location of the applicant's proposed activities and NMFS' proposed action. Therefore, this section only summarizes environmental laws and consultations applicable to NMFS' consideration whether to issue the ITP to Barney Davis.

**Compliance with ESA:** NMFS' issuance of an ITP is a federal action that is also subject to the requirements of the consultation requirements under Section 7 of the ESA. As a result, the Office of Protected Resources (OPR) Marine Mammal and Sea Turtle Conservation Division is required to ensure the issuance of this ITP to Barney Davis is not likely to jeopardize the continued existence of any threatened and endangered species or result in the destruction or adverse modification of designated critical habitat for these species. Because the green sea turtles-North Atlantic DPS and Kemp's ridley sea turtles are listed species with confirmed or possible occurrence in vicinity of the facility operation (i.e., Oso creek and the .75 mile cooling water intake canal in the Laguna Madre leading to the CWIS), NMFS' OPR Marine Mammal and Sea Turtle Conservation Division initiated formal ESA Section 7 consultation with NMFS OPR ESA Interagency Cooperation Division on the proposed issuance of ITP, pursuant to section 7 of the ESA on May 16, 2019. The consultation is in-progress and a biological opinion will be issued by the ESA Interagency Cooperation Division at the conclusion of the consultation process. As appropriate, the final EA will be informed by the analysis in the final biological opinion.

**Compliance with the Magnuson-Stevens Fishery Conservation (MSFCMA):** Under Section 305(b)(2), Federal agencies are required to consult with the Secretary of Commerce with respect to any action authorized, funded, undertaken, or proposed to be authorized, funded or undertaken, by such agency which may adversely affect essential fish habitat (EFH) identified under the MSFCMA. OPR determined the issuance of an ITP to Barney Davis will not adversely affect EFH for any species and there is no designated EFH in the action area (i.e., Oso creek and the .75 mile cooling water intake canal in the Laguna Madre leading to the CWIS). Therefore, an EFH consultation for the issuance of this ITP is not required.

#### 1.4.2 Public Involvement

Per the ESA, once NMFS receives a completed application with adequate information included, NMFS is required to publish a Notice of Receipt (NOR) in the Federal Register. In the NOR, NMFS presents information relevant to the environmental impacts associated with the agency's consideration whether to issue the ITP for the activities and species described in the application.

On December 23, 2015, Barney M. Davis, L.P. submitted an application for an incidental take permit (ITP) for ESA-listed sea turtles associated with otherwise lawful activities associated with the operations of its power generating activities including monitoring of the intake canal in an effort to intercept sea turtles prior to their contact with the facility's CWIS. The application included a conservation plan and analytical methods for estimating potential takes. After review by and discussions with NMFS, Barney Davis, L.P. submitted an updated application on November 4, 2016. Discussions continued, and Barney Davis submitted additional information on August 25, 2017. At that time the application was considered complete. On September 14, 2017, the National Marine Fisheries Service (NMFS) published an NOR of the Barney M. Davis, L.P. application (ITP 21316) in the *Federal Register* (82 FR 43224). The comment period ended on October 16, 2017, and two comments were received. The information in these comments was incorporated into the permit. After additional discussions between NMFS and the applicant, additional revisions were made to the application and conservation plan, and final application was submitted on October 19, 2018.

The October 2018 revised application provides additional necessary details on the protocols and procedures for locating and handling sea turtles during the facility operation, and provides additional information on historic take information from the facility as justification for the requested take necessary for the development of this draft EA and the issuance of the ITP. Given that additional revisions were made to the application and conservation plan after our original public comment period, and that NMFS relies substantially on the public process pursuant to the ESA to develop and evaluate environmental information relevant to an analysis under NEPA, NMFS will make the updated application and conservation plan available to the public for review at the same time that the draft EA is made available for public review and public comment.

#### 1.5 Scope of the Environmental Assessment

This draft EA was prepared in accordance with NEPA (42 USC 4321, et seq.), 40 CFR 1500-1508 and NOAA policy and procedures (NAO 216-6A and the Companion Manual for the NAO 216-6A). The analysis in this EA addresses potential direct, indirect, and cumulative impacts to green and Kemp's ridley sea turtles resulting from NMFS' proposed action to authorize incidental take associated with the operation of the facility. However, the scope of this analysis is limited to the decision for which we are responsible (*i.e.*, whether to issue the ITP). This EA is intended to provide focused information on the primary issues and impacts of environmental concern, which is the issuance of an ITP to Barney Davis, authorizing the incidental take of green and Kemp's ridley sea turtles and the mitigation and monitoring measures to minimize the effects of that take (*i.e.*, the proposed section 10(a)(1)(B) ITP would only authorize incidental take of green and Kemp's ridley sea turtles so NMFS anticipates effects would be limited to



these species). In addition, the action area is limited to the location where the green and Kemp's ridley turtles migrate from and into the intake canal leading to the CWIS from Laguna Madre. For these reasons, this EA does not provide a detailed evaluation of the effects to the elements of the human environment listed in Table 1 below.

<b>TABLE 1</b>		
<b>Biological</b>	<b>Physical</b>	<b>Socioeconomic/Cultural</b>
Benthic Communities	Air Quality	Commercial Fishing
Coral Reef Systems	Farmland Geography	Historic and Cultural Resources
Essential Fish Habitat	Geology/sediments	Indigenous Cultural Resources
Fisheries Resources	Land Use	Low Income Populations
Humans	Oceanography	Military Activities
Invertebrates	State Marine Protected Areas	Minority Populations
Invasive Species	Federal Marine Protected Areas	National Historic Preservation Sites
Marine and Coastal Birds	National Estuarine Research Reserves	Other Marine Uses: Military activities, Shipping and marine transportation, and Boating
Threatened and Endangered Fishes	National Marine Sanctuaries	Recreational Fishing
	National Wildlife Refuges	Public Health and Safety
	Park Land	
	Water Quality	
	Wetlands	
	Wild and Scenic Rivers	

## CHAPTER 2      ALTERNATIVES

As indicated in Chapter 1, NMFS' proposed action is issuance of an ITP to Barney Davis, which would authorize take of endangered green sea turtles (North Atlantic Distinct Population Segment) and Kemp's ridley sea turtles incidental to the operation of the facility and require implementation of a conservation plan, in accordance with the requirements of the ESA. NMFS's proposed action is triggered by Barney Davis's request for a permit under Section 10(a)(1)(B) of the ESA. In accordance with the NEPA and the Council on Environmental Quality (CEQ) Regulations, NMFS is required to consider a reasonable range of alternatives to a proposed action as well as the no action alternative. The evaluation of alternatives under NEPA assists NMFS with ensuring that any unnecessary impacts are avoided through an assessment of alternative ways to achieve the purpose and need for our proposed action and that may result in less environmental harm. For the purposes of this EA, an alternative will only meet the purpose and need if it satisfies the requirements under Section 10(a)(1)(B) of the ESA. Therefore, NMFS applied the screening criteria and considerations outlined in section 2.1 to identify which alternatives to carry forward for analysis.

### 2.1      Considerations for Selecting Alternatives

Section 10(a)(2)(B) of the ESA specifies that an ITP can be issued if the following criteria are met in the application and conservation plan:

- (i)      the taking will be incidental;
- (ii)     the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;
- (iii)    the applicant will ensure that adequate funding for the plan will be provided;
- (iv)    the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and
- (v)    any additional conservation measures are met to meet the requirements of condition iv, above.

Under Section 10 of the ESA, NMFS' primary responsibility in evaluating an ITP application is to determine if the above criteria are met for the applicant's activities and conservation plan. Per NMFS regulation found at 50 CFR 222.307, NMFS will evaluate the sufficiency of the application and conservation plan. To issue a permit, NMFS must determine that the issuance criteria are met, including determining that the taking will be incidental, the applicant will monitor, minimize and mitigate the taking, the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild, and the applicant has amended the conservation plan to include any measures NMFS deems necessary or appropriate. NMFS has worked with Barney M. Davis, L.P. since the first draft application was received to ensure these criteria have been met. The current conservation plan includes updates and changes requested by NMFS to minimize the impact of this action.

Given that NMFS has already worked collaboratively with the applicant to refine the conservation plan, the only alternatives we are considering in this draft EA are the no action alternative (i.e. not issuing the permit) and issuing the permit as requested in the revised and final application and conservation plan. The applicant provided several alternatives for their facility operation to minimize take, all of which they deemed to be non-feasible for the continued

operation of their facility, therefore, NMFS has evaluated those options below in section 2.5, but has not carried them forward for evaluation.

## 2.2 Description of Specified Activities

As indicated in Chapter 1, the facility is a natural gas-fired electric power generating facility and the primary aspect of this facility operation having the potential to impact sea turtles is the cooling water intake canal leading to the CWIS and the operation of the CWIS. Up to 540 million gallons per day of water are drawn from the Laguna Madre to be used for non-contact cooling at the facility. This water travels down the 0.75-mile cooling water intake canal prior to reaching the facility's CWIS. Cooling water passes through an automated rake system that removes dead and dying seagrass fragments, referred to as "wrack" prior to entering the intake. Intake water for each unit passes through a traveling-trash rack composed of 0.5-inch steel bars on 3.5-inch centers, a concrete receiving area (bay) that is 13 feet wide, traveling-water screens, and then to sumps for the cooling water pumps. Passavant finemesh, center-flow screens operate continuously to reduce the numbers of entrained organisms. The current CWIS screens are constructed with 1x2 mm rectangular nylon mesh to reduce clogging with a calculated maximum through-screen velocity of 1.15 ft/sec. As the screens rotate, high-pressure wash water flushes the back side of each panel at the top of the vertical cycle into an overhead trough which carries the impinged organisms (i.e., fish, shellfish or sea turtles) and debris to a peripheral fish handling device. The screen-wash water goes to a sluiceway which empties into a concrete sump and from there is pumped directly into the facility's cooling pond via pipeline. Barney Davis is proposing to monitor for and remove cold-stunned green and Kemp's ridleys sea turtles from the intake canal. Refer to the Barney Davis ITP Application and Conservation Plan for more information about the facility operations, removal procedures and suite of mitigation and monitoring measures Barney Davis is proposing to implement to avoid and minimize the number of incidental takes of green and Kemp's ridley sea turtles.

## 2.3 Alternative 1: No Action Alternative

In accordance with the NOAA Companion Manual (CM) for NAO 216-6A, Section 6.B.i , NMFS is defining the no action alternative as not authorizing the requested incidental take of ESA-listed green sea and Kemp's ridley sea turtles. This is consistent with our statutory obligation under Section 10(a)(1)(B) of the ESA to either: (1) deny the requested ITP or (2) grant the requested ITP and prescribe mitigation, monitoring, and reporting requirements. Under the no action alternative, NMFS would not issue the ITP, in which case we assume Barney Davis would continue to operate the facility as described in the application without implementing the full suite of specific mitigation measures, monitoring, reporting explained in the Conservation Plan, and that would be required in the ITP. Although the no action alternative would not meet the purpose and need to allow incidental take of the green sea and Kemp's ridley sea turtles under certain conditions (i.e., when the statutory requirements are satisfied), the CEQ Regulations and the Companion Manual for NAO 216-6A require consideration and analysis of a no action alternative for the purposes of presenting a comparative analysis to the action alternatives. The no action alternative serves as a baseline against which the impacts of the action alternative will be compared and contrasted.

## 2.4 Alternative 2: Issuance of the Incidental Take Permit as Requested in Application (Proposed Action)

Under this alternative, NMFS would issue the ITP pursuant to Section 10(a)(1)(B), exempting Barney Davis from the ESA prohibition on take for the green (*Chelonia mydas* North Atlantic DPS) and Kemp's ridley (*Lepidochelys kempii*) sea turtles during the otherwise lawful operation of the facility. The ITP would be valid for ten years and will authorize, for the duration of the ITP, the incidental take of up to 210 live and 39 dead green sea turtles, and 3 live and 0 dead Kemp's ridley sea turtles, during any consecutive three-year period and subject to the mandatory mitigation measures, monitoring and reporting requirements designed to avoid or minimize the number of takes or adverse impacts to sea turtles.

### 2.4.1 Mitigation, Monitoring and Reporting

To minimize the number of takes associated with the facility operation; Barney Davis is proposing to implement several monitoring and mitigation measures for the ESA-listed sea turtles specified in the application. The Conservation Plan and ITP, if issued, would require the following mitigation and monitoring measures to avoid or minimize impacts to sea turtles:

#### Conditions to Monitor, Minimize, and Mitigate Impacts to Listed Species

1. Facility personnel will visually monitor from the area immediately surrounding the crib house, which includes the bulkhead, trash racks, and intake canal on a seasonal schedule, to intercept turtles prior to impingement in the facility's CWIS.
  - a. From December 1st through March 31st, monitoring will be conducted a minimum of four (4) times per twelve (12) hour shift, spaced at approximately three (3) hour intervals.
  - b. From April 1st through November 30th, monitoring will be conducted one (1) time per shift, or once approximately every twelve (12) hours.
  - c. Visual monitoring will last for approximately fifteen (15) minutes during each monitoring event. The frequency and length of each monitoring event provides sufficient opportunity to identify turtles in the intake canal and bulkhead prior to the turtles reaching the traveling trash racks. Monitoring will only be conducted from the crib house due to safety concerns at the facility (i.e. lighting, guardrails, and safe walking surfaces are not available for the entire length of the intake canal).
2. Facility staff responsible for monitoring the intake canal will be trained upon hiring, and again annually, on the proper procedures required for the collection of turtles. This training is to be conducted by the National Park Service (NPS), Division of Sea Turtle Science and Recovery, Padre Island National Seashore, Sea Turtle Stranding and Salvage Network (PAIS STSSN). Training records will be kept on site for the duration of this permit.
3. When a sea turtle is observed within the facility intake canal, the following procedures will be followed. These conditions apply regardless of time of year or condition of the animal (live or dead).
  - a. Facility employees work together to rescue the turtle using available nets and equipment, and following the capture procedures provided during training.
  - b. Contact Texas Parks and Wildlife Hatchery Rescue immediately upon observation and/or collection of the animal. If Texas Parks and Wildlife is unavailable, facility employees must contact NPS, PAIS STSSN. Facility staff must follow any seasonal

- instructions that may be provided by Texas Parks and Wildlife or NPS for the handling and holding of the animal until the animal is collected.
- c. Facility employees shall safely and securely hold the animal in a dry open topped container until Texas Parks and Wildlife (or NPS) can collect the animal, following procedures provided during training.
  - d. Facility employees must document the turtle by photograph once the animal has been collected and assistance has been requested.

## 2.5 Alternatives Considered and Eliminated

In coordination with the applicant, NMFS considered whether other alternatives could meet the purpose and need while also supporting the applicant's operation of the facility. We considered issuance of an ITP with an additional mitigation measure for Barney Davis to implement seasonal closures. This would require a seasonal closure of the facility during winter months (December through March) when the take of sea turtles is more likely to occur in order to reduce or eliminate the likelihood of mortality from facility operations. However, as Barney Davis explains in the application, this alternative is not a feasible option given the power that is supplied by this facility to the surrounding community and would be an economic hardship on facility personnel, as Barney Davis employs 34 full time personnel. Additionally, the closure of the facility would not prevent cold-stunned sea turtles from entering the canal during the winter months, and may result in increased mortality rates given that monitoring and relocation efforts would also be suspended during the seasonal closure. A second alternative considered was requiring additional monitoring in the form of electronic monitoring within the intake canal just before the CWIS. Although the addition of electronic monitoring equipment could reduce the potential impingement of sea turtles, due to the variability in the size of sea turtles and other debris that migrates up the intake canal to the CWIS, this technology is not feasible. As Barney Davis explains in the application, the equipment may not be able to differentiate between sea turtles and other debris and would result in excessive man-hours verifying alarm notifications to identify the trigger. A third alternative considered was requiring physical barriers at the entrance of the intake canal on the Laguna Madre. However, as Barney Davis explains in the application, due to the volume of water moving through the intake canal and other debris that migrates into the intake canal this is not a feasible or viable option. While each of these options have the potential to reduce the likelihood of mortality from facility operations, these were not carried forward for analysis in this EA because they would require changes and modifications to facility operations that are not technically or economically feasible to implement and the criteria for an ITP required by Section 10(a)(2)(B) of the ESA can be met with the current range of alternatives.

## CHAPTER 3      **AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

NMFS reviewed all relevant environmental, cultural, historical, social and economic resources based on the specific geographic region associated with NMFS' proposed action and alternatives and Barney Davis's request for a permit. Based on this review, this chapter describes the affected environment and existing (baseline) conditions and the analysis of environmental impacts associated with the affected environment. As explained in Chapter 1, certain resource categories were not carried forward for further consideration or evaluation in this EA (see Table 1 in Section 1.5) and where appropriate, NMFS relied on and incorporated by reference information in the [\*Barney M. Davis Incidental Take Permit Application and Conservation Plan\*](#) related to resource categories and environmental impacts.

### 3.1      Physical and Biological Environment

This section discusses the physical and biological environments associated with the underlying activity, which is the facility location and operation.

#### *3.1.1. Physical Environment*

The facility is located at 4301 Waldron Road, Corpus Christi, Nueces County, Texas. The facility has approximately 1,992 acres of land between Laguna Madre and Oso Creek. The proposed action area is the 0.75-mile cooling water intake canal leading to the facilities Cooling Water Intake Structure (CWIS) from Laguna Madre as well as the CWIS on the facility grounds. Figure 1 depicts the facility grounds. A detailed description of the action area and associated maps can be found in the Barney M. Davis ITP Application and Conservation Plan can be found on NOAA's website at <https://www.fisheries.noaa.gov/action/incidental-take-permit-barney-davis-lp>.



**Figure 1** Barney Davis Power Plant Corpus Christi, Texas

Photo Credit: *Talen Energy-Barney Davis*, 2019, <https://www.talenenergy.com/plant/barney-davis/>

The primary component of the physical environment is the habitat it provides for sea turtles. The facility intake canal is fed from Laguna Madre, which provides habitat for several sea turtle species. Laguna Madre is a large shallow saltwater lagoon or basin located on the southeast coast of Texas, on the western side of the Gulf of Mexico. Five species of sea turtles inhabit the northern Gulf of Mexico: Kemp's ridley (*Lepidochelys kempii*), loggerhead (*Caretta caretta*), green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), and leatherback (*Dermochelys coriacea*). The Gulf of Mexico provides habitat for sea turtles throughout their lifestages, including nesting and foraging habitat.

### 3.1.2 *Biological Environment*

The primary component of the biological environment affected by NMFS' proposed action and alternatives are two sea turtle species, the green sea turtle (North Atlantic Distinct Population Segment) and the Kemp's ridley sea turtle, which would be directly impacted by the incidental take associated with the intake canal and the operation of the CWIS.

As mentioned above, there are five species of sea turtles that inhabit the northern Gulf of Mexico: Kemp's ridley, loggerhead, green turtle, hawksbill, and leatherback; and all five can be found in Texas waters. However, based on the distribution and habitat requirements of sea turtles in Texas, and more specifically in Laguna Madre, green and Kemp's Ridley sea turtles are the two species most likely to be affected by the continued operation of the Barney M. Davis power station. To date, facility personnel have not encountered any hawksbill, loggerhead, or leatherback sea turtles in the intake canal, thus determined the likelihood of these sea turtles species entering the intake canal is minimal to none, and subsequently, did not request take for these species. In addition, Barney Davis indicated that their facility operations will not adversely modify any designated sea turtle critical habitat, and there are no planned construction activities or operational changes that would affect sea turtle habitat in the general vicinity of the facility. Therefore, the information and analysis herein only addresses impacts to the two sea turtle species that are the subject of the permit request, green and Kemp's ridley sea turtles. Below is a summary of the status of these two sea turtle species.

Green sea turtle (North Atlantic Distinct Population Segment). The green sea turtle was listed as threatened under the ESA on July 28, 1978, except for the Florida and Pacific coast of Mexico breeding populations, which were listed as endangered. On September 2, 1998, critical habitat for green sea turtles was designated in coastal waters surrounding Culebra Island, Puerto Rico ([63 FR 46693](#)). On April 6, 2016, NMFS and USFWS issued a final rule to list 11 distinct population segments (DPSs) of the green sea turtle, three DPSs were listed as endangered species and eight DPSs were listed as threatened species ([81 FR 20057](#)). This rule superseded the 1978 final listing rule for green sea turtles and applied the existing protective regulations to the DPSs. Critical habitat was not designated but, in the interim, the existing critical habitat designation (i.e., waters surrounding Culebra Island, Puerto Rico) was to remain in effect for the North Atlantic DPS. The range of the North Atlantic DPS extends from the boundary of South and Central America, north along the coast to include Panama, Costa Rica, Nicaragua, Honduras, Belize, Mexico, and the United States. It extends due east across the Atlantic Ocean at 48° N. and follows the coast south to include the northern portion of the Islamic Republic of Mauritania (Mauritania) on the African continent to 19° N. It extends west at 19° N. to the Caribbean basin

to 65.1° W., then due south to 14° N., 65.1° W., then due west to 14° N., 77° W., and due south to 7.5° N., 77° W., the boundary of South and Central America. It includes Puerto Rico, the Bahamas, Cuba, Turks and Caicos Islands, Republic of Haiti, Dominican Republic, Cayman Islands, and Jamaica. Detailed information on the status of green sea turtles, including information on population structuring, taxonomy and life history, distribution and abundance, and threats throughout each range, can be found in the [Status Review](#) (Seminoff et. al. 2015) and the final rule ([81 FR 20057](#)).

Kemp's ridley sea turtle. The Kemp's ridley sea turtle was listed as endangered on December 2, 1970, under the Endangered Species Conservation Act of 1969, a precursor to the ESA. Critical habitat has not been designated for Kemp's ridley sea turtles. The Kemp's ridley sea turtle is the smallest of all sea turtles. Hatchlings generally range from 1.65-1.89 in (42-48 mm) in straight-line carapace length (SCL), 1.26-1.73 in (32-44 mm) in width, and 0.3-0.4 lbs. (15-20 g) in weight. Adults generally weigh less than 100 lbs. (45 kg) and have a carapace length of around 2.1 ft. (65 cm). Adult Kemp's ridley shells are almost as wide as they are long. Coloration changes significantly during development from the grey-black dorsum and plastron of hatchlings, a grey-black dorsum with a yellowish-white plastron as post pelagic juveniles, and then to the lighter grey-olive carapace and cream-white or yellowish plastron of adults. There are two pairs of prefrontal scales on the head, five vertebral scutes, usually five pairs of costal scutes, and generally 12 pairs of marginal scutes on the carapace. In each bridge adjoining the plastron to the carapace, there are four scutes, each of which is perforated by a pore. Kemp's ridley habitat largely consists of sandy and muddy areas in shallow, nearshore waters less than 120 ft. (37 m) deep, although they can also be found in deeper offshore waters. These areas support the primary prey species of the Kemp's ridley sea turtle, which consist of swimming crabs, but may also include fish, jellyfish, and an array of mollusks. The primary range of Kemp's ridley sea turtles is within the Gulf of Mexico basin, with substantial numbers also inhabiting coastal and offshore waters of the U.S. Atlantic Ocean. Juvenile Kemp's ridley sea turtles, possibly carried by oceanic currents, have been recorded as far north as Nova Scotia. Historic nesting records range from Mustang Island, Texas, in the north, to Veracruz, Mexico, in the south. As the population has grown, a few Kemp's ridley nests have been discovered along the Atlantic Coast of the United States, with a few nests recorded from beaches in Florida, Georgia, and the Carolinas. More detailed information on the status of Kemp's ridley turtles, including information on population structuring, taxonomy and life history, distribution and abundance, and threats throughout each range, can be found in the [Kemp's ridley 5-year review \(NMFS and USFWS 2015\)](#), the [Bi-National Recovery Plan for the Kemp's Ridley](#) (NMFS, USFWS, and SEMARNAT 2011).

### 3.2 Environmental Consequences Common to All Alternatives

This section address the relevant direct (short-term), indirect (long-term), and cumulative, impacts to sea turtles associated with NMFS alternatives.

#### 3.2.1 *Incidental Take of Green and Kemp's Ridley Sea Turtles*

Each alternative is expected to result in the incidental take of green and Kemp's ridley sea turtles in the intake canal and operation of the CWIS. In Alternative 1, NMFS must assume the status quo, in which takes are occurring and either none or some mitigation and monitoring measures *may* be implemented voluntarily by facility personnel to identify, capture and recover the green



and Kemp's ridley sea turtles prior to the turtles reaching the CWIS. However, this activity would not be monitored through a formal conservation plan and take would not be tracked, reported or regulated. In Alternative 2, takes would occur; however, the number of takes of green and Kemp's ridley sea turtles will be specified and authorized through the issuance of the ITP. Thus, take would be monitored, tracked, reported and regulated and mitigation and monitoring measures would be required and implemented to avoid or minimize take the green and Kemp's ridley sea turtles, in accordance to the ITP and conservation plan. See Sections 3.3 and 3.4 for additional explanations.

### *3.2.2 Cold Stunning*

“Cold stunning” refers to the hypothermic reaction that occurs when sea turtles are exposed to prolonged cold water temperatures. Initial symptoms include a decreased heart rate, decreased circulation, and lethargy, followed by shock, pneumonia and possibly death. Sea turtles are cold-blooded reptiles that depend on external sources of heat to determine their body temperature (i.e., they assume the temperature of their surroundings). Therefore, in cold water they do not have the ability to warm themselves, and must instead migrate to warmer waters. When sea turtles are exposed to frigid water temperatures (about 50 degrees F) over a period of several days, their circulatory systems can slow to the point that they become cold-stunned and unable to swim or function properly. The phenomenon of “cold stunning” appears to occur to the green and Kemp's ridley sea turtles in the waters around the facility's intake, the Laguna Madre. During cooler months, green and Kemp's ridley sea turtles in the Laguna Madre may become “cold-stunned” and therefore unable to swim. Once the green and Kemp's ridley sea turtles are cold-stunned, they float into the facility's intake canal, toward the CWIS. In their application, Barney Davis, LP indicated that the flow velocity in the intake canal is unknown; however, an impingement and entrainment study conducted at the facility from March 2006 – February 2007 found that the average hourly intake flow was not correlated with total impingement of fish or shellfish. Barney Davis, LP also indicated that the velocity of the canal affects the number of turtles found in the canal. Water temperatures in the Laguna Madre and intake canal were compared to determine if water temperatures in the intake canal were a contributing factor to the cold stunning of sea turtles. The application included water temperature tables on pages 2-3 which indicate the temperature in the canal is similar to Laguna Madre, indicating that the water temperature in the facility's intake canal is not solely or directly related to the cold stunning of the green and Kemp's ridley sea turtles, rather it is consistent with the surrounding habitat.

### *3.2.3 Impingement*

Based on the information provided in the application, Barney Davis LP has indicated turtles are typically found in the intake canal prior to reaching the CWIS, however, it is also possible that a green or Kemp's ridley sea turtle may become impinged on the automated rake system or travelling-trash rack prior to entering the CWIS. Due to the equipment type and operation of the CWIS, impingement of these turtles can be lethal. Based on facility records, lethality is not certain for all green and Kemp's ridley sea turtles located on the automated rake system or travelling trash rack, but for the purposes of this analysis, it is assumed that impingement in the CWIS will result in a lethal interaction.

### *3.2.4 Capture Method: Dip Net*

Facility and Texas Parks and Wildlife staff will use dip nets to extract turtles from the canal. This capture method poses a low risk to the sea turtles because staff is able to immediately remove

individuals from the water and eliminate the possibility of drowning or other injury. This capture method is considered simple and non-invasive but may result in raised levels of stressor hormones. We do not expect that individual turtles would experience more than short-term stress and temporary physiological changes during this type of capture. Additionally, no injury or mortality would be expected from this capture method when following the required mitigation measures.

### 3.3 Effects of the Take Under the No Action Alternative

If an ITP is not issued to Barney Davis, for the purposes of this analysis, NMFS assumes the status quo for the facility would be maintained and that Barney Davis is not likely to implement the suite of specific monitoring, reporting and mitigation measures identified in the application and conservation plan and that would be included as a requirement of the ITP. If Barney Davis stopped monitoring the intake canal and collecting these turtles before they reach the CWIS, there would be a potential for an increase in the mortality rate for the green and Kemp's ridley sea turtles because all turtles would have a higher potential of ending up in the CWIS. Without monitoring and minimization measures in place via the ITP and conservation plan, it is possible that we would see an increase in lethal take of sea turtles at the facility. Therefore, under the no action alternative, it is reasonable to conclude a higher level of lethal take, especially during colder months. Lethal take higher than what is presented in Alternative 2 has the potential to result in adverse impacts to the species and population by further reducing the likelihood of the survival and recovery of these species in the wild, which is already compromised by other factors.

### 3.4 Effects of Take under Alternative 2 - Issue Permit as Requested in Application (Proposed Action)

Issuance of an ITP authorizing incidental take of green sea turtles<sup>3</sup> and Kemp's ridley sea turtles<sup>4</sup> during any consecutive three-year period for the duration of the permit (ten years) has potential to result in adverse effects to individual animals (e.g., impingement on CWIS or mortality). However, this is not likely to result in adverse effects to the species and population or further reduce the likelihood of the survival and recovery of these species in the wild since most individuals would be recovered, rehabilitated and relocated through the implementation of the monitoring and mitigation measures required by the ITP and the conservation plan. Although this alternative may result in impingement on the CWIS or mortality of some individual sea turtles, several individual sea turtles are expected to recover during the capture, rehabilitation and relocation process for these individuals. For example, when a cold-stunned sea turtle floats into the canal and is observed by facility staff during required monitoring, the potential for that individual's chance of survival increases due to rapid response and recovery time (i.e., the animal is captured and revived before impingement on the CWIS). A faster response time to cold-stunned sea turtles improves their survival outcome, giving them a chance for recovery and rehabilitation in a facility with trained personnel (Texas Parks and Wildlife) who collect the recovered animals for rehabilitation and release them back into the wild. Thus, the number of individuals potentially removed from the population due to impingement on the CWIS or mortality is reduced or offset by the recovery and return of other cold-stunned individuals.

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<sup>3</sup> Up to 210 live and 39 dead

<sup>4</sup> 3 live and 0 dead

Therefore, under Alternative 2, it is reasonable to conclude a lower level of lethal take, especially during colder months.

### 3.5 Cumulative Impacts

In reviewing the definition of cumulative effects, per 40 CFR 1508.7<sup>5</sup> and the information provided in the application about the project area, we determined that there are no other NMFS ITPs issued pursuant to section 10(a)(1)(B) and no other activities currently occurring in the action area beyond the proposed project activity. The intake canal flows from the Laguna Madre basin, which is an important habitat for sea turtles. As indicated in section 3.1.2, the North Atlantic Distinct Population Segment of green turtles is listed as threatened and the Kemp's ridley sea turtle is listed as endangered under the ESA. Although the Laguna Madre provides an important habitat for green and Kemp's ridley sea turtles, critical habitat has not been designated for these species in the action area; therefore, the destruction or adverse modification of critical habitat will not occur from the operation of the facility. These species are protected under the ESA, and as such, an ESA Section 7 consultation is underway which includes evaluating the cumulative effects of this action on the species.

The incidental take of the green and Kemp's ridley sea turtles is the primary environmental effect associated with the issuance of this ITP. A number of natural and human activities occur within the vicinity of the action area (i.e. nearby to Corpus Christi, Texas) that may impact the status of green and Kemp's ridley sea turtles. In general, these natural and human threats include:

*Fisheries:* Incidental bycatch in commercial fisheries is identified as a major contributor to past declines, and threat to future recovery for Kemp's ridley and green sea turtles in their respective Recovery Plans (NMFS and USFWS 2008; NMFS, USFWS, and SEMARNAT 2011).

Alteration of prey abundance and alteration of bottom habitats from bottom-tending fishing gear (e.g., bottom trawlers) have also been identified as a threat to sea turtles.

*Non-Fishery In-Water Activities:* In nearshore waters of the United States, the construction and maintenance of federal navigation channels has been identified as a source of sea turtle mortality. Hopper dredges, which are frequently used in ocean bar channels and sometimes in harbor channels and offshore borrow areas, move relatively rapidly and can entrain and kill sea turtles (NMFS 1997). Sea turtles entering coastal or inshore areas have also been affected by entrainment in the cooling-water systems of electrical generating plants. Other nearshore threats include harassment and/or injury resulting from private and commercial vessel operations, military detonations and training exercises, in-water construction activities (NMFS and USFWS 2008; NMFS, USFWS, and SEMARNAT 2011).

Given the many threats that face green and Kemp's ridley sea turtles, the potential impingement of a few animals, with the unlikely chance of mortality, would not be adding a significant

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<sup>5</sup> "Cumulative effects is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time".

cumulative effect. Research and recovery efforts around the world have shown promise in some areas, which have the potential to offset the small take of sea turtles considered for the issuance of this ITP. Additionally, the findings of the ESA Section 7 consultation process in progress on the issuance of this ITP will be incorporated into the cumulative impacts analysis of the final EA.

### 3.6 Conclusion

Based on the considerations identified in this EA regarding potential impacts to green and Kemp's ridley sea turtles, we preliminarily determined Alternative 2 is likely to result in minimal impacts to the populations and the increased survival outcomes for individuals during cold-stun events. The frequent, continuous monitoring and recovery efforts (i.e., retrieving and transferring of cold-stunned sea turtles from the intake canal to TPWD and the TX STSSN for rehabilitation and release back into the wild) required by the ITP and conservation plan will facilitate the return of more individuals to Texas waters, thus provides for minimal to no impacts to green and Kemp's ridley populations.

## **CHAPTER 4        LIST OF PREPARERS AND AGENCIES CONSULTED**

This document was prepared by the Marine Mammal and Sea Turtle Conservation Division (F/PR2) and Endangered Species Conservation Division of NMFS' Office of Protected Resources (F/PR3) in Silver Spring, Maryland.

## CHAPTER 5      REFERENCES

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