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**MARINE MAMMAL MONITORING PLAN FOR WATERFRONT PILE  
REPAIR, REPLACEMENT, AND FACILITIES MAINTENANCE AT  
NAVAL SUBMARINE BASE KINGS BAY, GEORGIA**

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Submitted to:

**Office of Protected Resources,  
National Marine Fisheries Service,  
National Oceanographic and Atmospheric Administration**

Prepared by:

**Naval Facilities Engineering Command Southeast**

For:

**Naval Submarine Base Kings Bay**

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## ACRONYMS AND ABBREVIATIONS

EA	Environmental Assessment
ft	foot / feet
LOA	Letter of Authorization
m	meter
MMPA	Marine Mammal Protection Act
NAVFAC	Naval Facilities Engineering Command
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
POC	point of contact
Project	Waterfront Pile Repair, Replacement, and Facilities Maintenance Project
SUBASE	Naval Submarine Base
ZOI	Zone of Influence

## **1.0 INTRODUCTION**

### **1.1 Purpose of the Monitoring Plan**

The purpose of this Monitoring Plan is to provide protocols for marine mammal monitoring in the vicinity of the proposed repair and maintenance activities at Naval Submarine Base (SUBASE) Kings Bay, Georgia (Figure 1). Details are based on the best available science and project information. Figure 2 illustrates the specific locations of each project covered by the pending Letter of Authorization. This plan was developed to support the application for a Letter of Authorization (LOA) being submitted pursuant to the requirements of the Marine Mammal Protection Act (MMPA). Bottlenose dolphins are the only marine mammal species for which potential Level B exposures were modeled; modeling for all other marine mammals resulted in no estimated Level A or Level B incidental takes.

Marine mammal construction observation will be conducted before, during, and after pile driving activities within the zones detailed in Section 3.6, and will represent an important protective measure to reduce the likelihood of potential impacts.

### **1.2 Scope**

The scope of this Monitoring Plan includes pile driving activities associated with waterfront pile repairs, replacement, and facilities maintenance.

### **1.3 Management**

The Monitoring Plan will be managed by Naval Facilities Engineering Command (NAVFAC) Southeast. Marine mammal monitoring and acoustic data collection shall be carried out by private contractors supported by technical staff from NAVFAC Southeast and SUBASE Kings Bay.

### **1.4 Concurrent Responsibilities**

Marine mammal construction observers and compliance monitors shall also read and ensure adherence to the following conditions (Attachment 1):

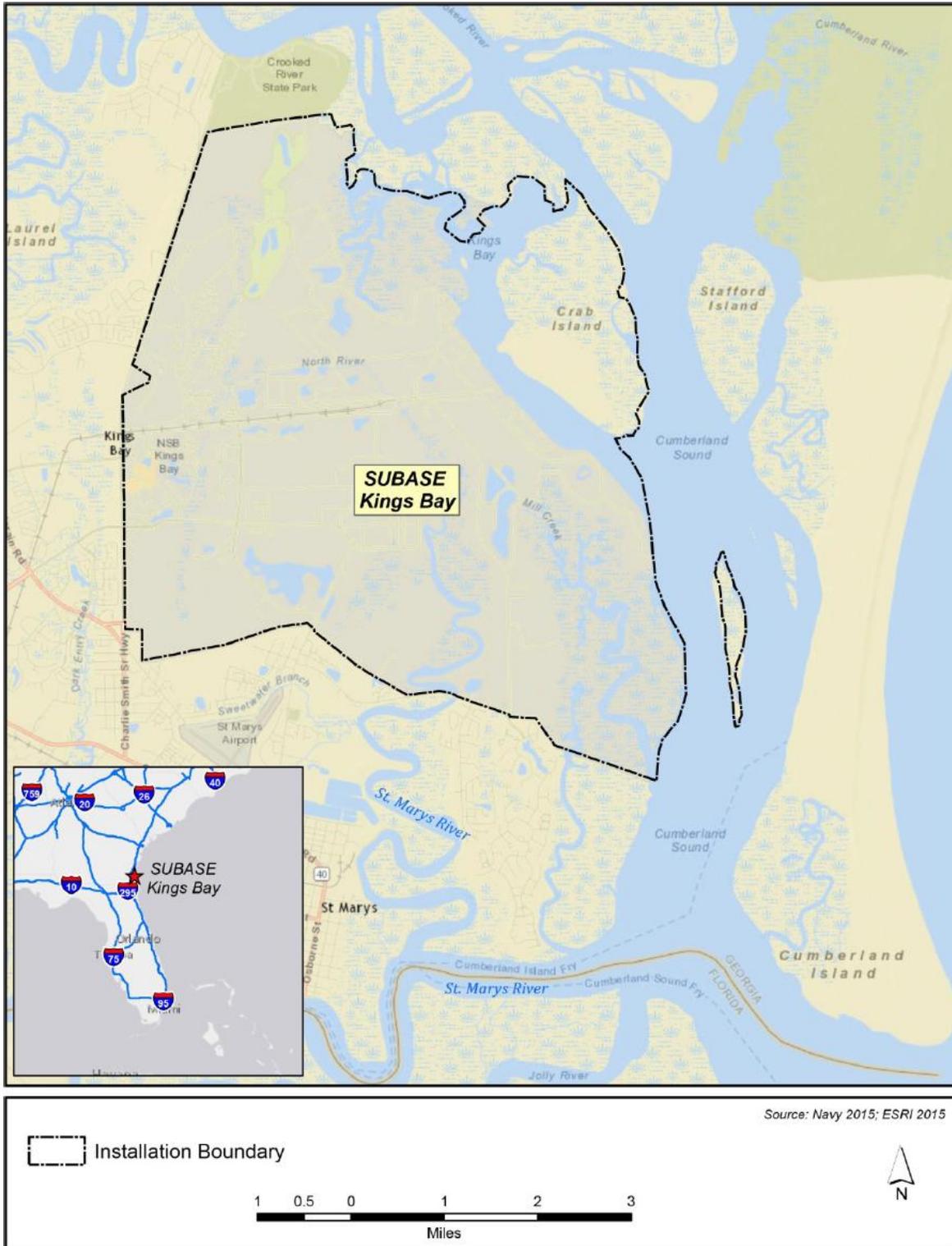
- *NFMS Southeast Region Marine Mammal and Sea Turtle Viewing Guidelines*
- *Sea Turtle and Smalltooth Sawfish Construction Conditions*
- *Special Provisions for Manatees*

## **2.0 WHARF REPAIRS AND FACILITIES MAINTENANCE**

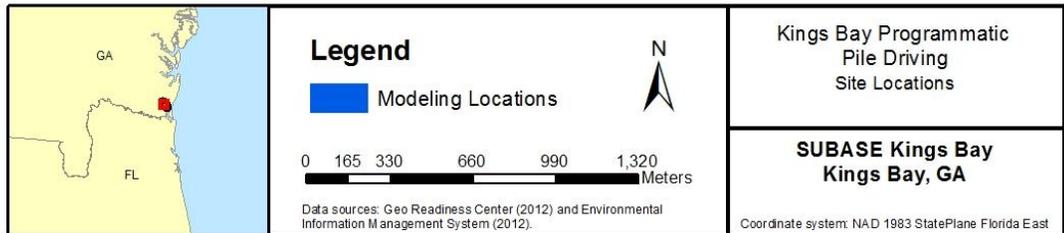
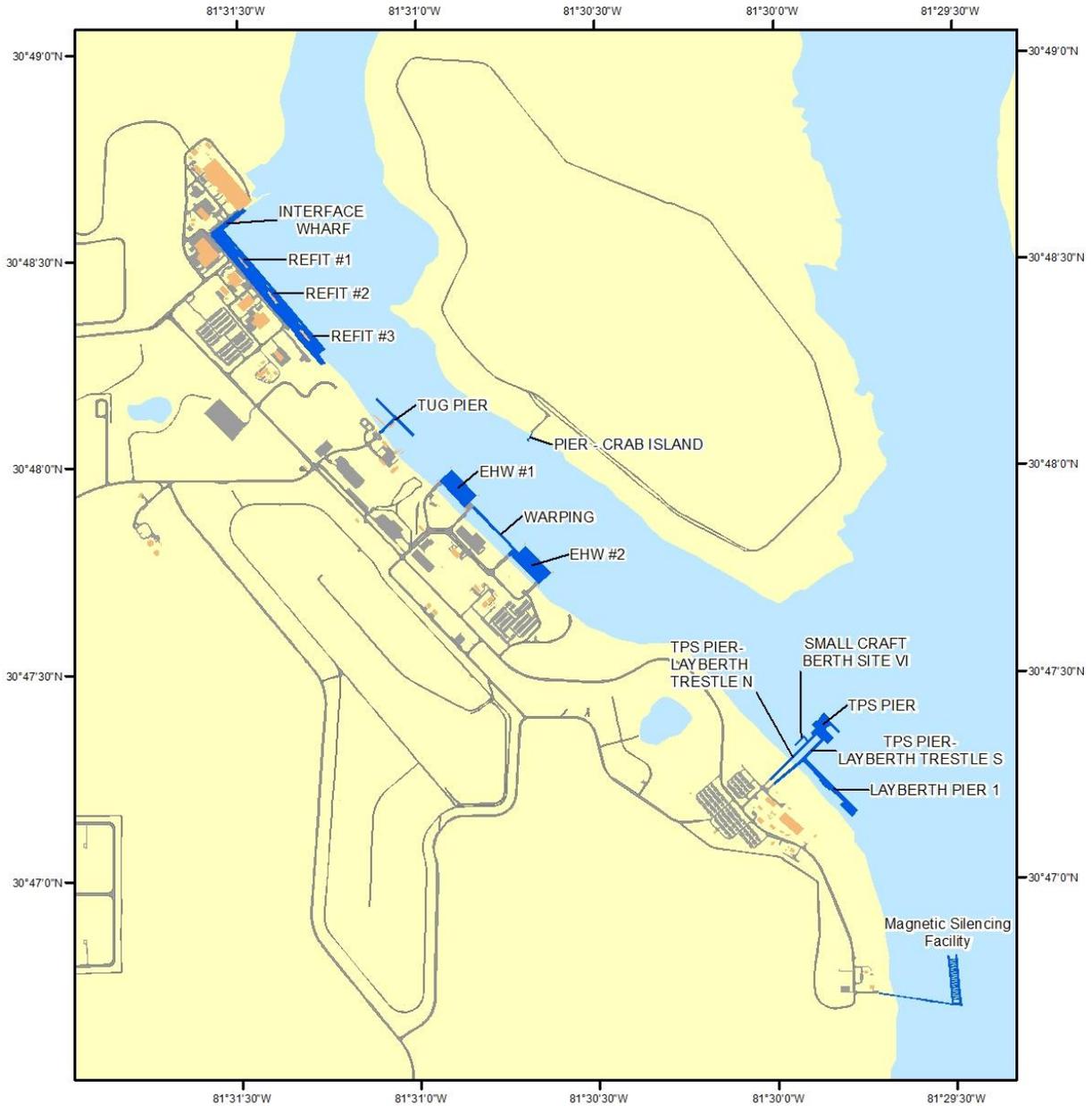
Refer to the *Draft Environmental Assessment for Waterfront Pile Repair, Replacement, and Facilities Maintenance at Naval Submarine Base Kings Bay, GA* and LOA application for a full description of the Project.

### **2.1 Proposed Action Area**

SUBASE Kings Bay is located in the southeastern corner of Georgia, approximately 8 miles north of the Georgia-Florida border, four miles inland from the Atlantic Ocean, and two miles north of the St. Mary's River along the western shore of Cumberland Sound. The installation provides berthing and support services to naval submarines and other assets.



**Figure 1. Regional Location - SUBASE Kings Bay, Georgia**



**Figure 2. Repair, Maintenance, and Construction Locations**

## **2.2 Construction Observer and Compliance Monitor Responsibilities**

“Construction Observers” are posted specifically to view the shutdown zone during all in-water construction, and promptly communicate with construction operators using cell phones, radios, or other reliable means of communication if a temporary cease of activity is required.

Construction observers shall have no other construction-related responsibilities, and at least one will be in place during all in-water construction.

Construction observers may be able to monitor view the entirety of some of the smaller Level B zones, allowing for supplemental application of their observations to the overall compliance monitoring effort. However, the information they collect would be considered supplemental since they have a slightly different purpose and qualification from compliance monitors.

“Compliance Monitors” are qualified individuals that will view the calculated zones of influence (ZOIs) on certain days and document potential incidental takes during active pile driving / extraction only, for the purposes of verifying compliance with the LOA.

Construction observers and compliance monitors shall record observations on sighting forms provided by the Navy (Attachment 2).

## **3.0 MARINE MAMMAL MONITORING**

### **3.1 Procedures**

Specific details of pile driving activities are highly variable among the projects covered by the LOA application, but all activities would occur in or adjacent to the relatively small and isolated Waterfront Restricted Area of SUBASE Kings Bay. Therefore, survey and monitoring data collected as early as 2016 and through 2022 will be applicable to ensuring the number of incidental takes authorized is not exceeded. Each project will be executed under a separate contract, and it is anticipated that a number of different companies will be involved. Therefore, projects were reviewed both individually and in the aggregate to develop a monitoring plan that would make the best use of the Navy's financial and human resources while simultaneously ensuring all compliance requirements are met.

Monitoring for each project is detailed in Section 3.6. Cumulative monitoring and dedicated bottlenose abundance surveys would inform a robust density estimate, which would in turn be extrapolated to estimate the number of "real world" incidental takes.

The following definitions and assumptions apply to this monitoring plan:

- Impact and vibratory pile installation / extraction may occur interchangeably during any given day of active driving, but would not take place simultaneously.
- “Active pile driving” may refer to installation or extraction of piles using vibratory or impact methods.
- If newer acoustic data (applicable to the pile types / conditions originally modeled) become available during the 5-year LOA period, the Navy may repeat the acoustic propagation model with the new data and adjust the compliance monitoring zone(s) accordingly. Any changes of this nature would incorporate best available science, and be

submitted to the National Marine Fisheries Service (NMFS) for review prior to implementation.

Barge operators, construction observers, and compliance monitors will complete applicable portions of the Navy's *Marine Species Awareness Training*, and a general environmental awareness briefing conducted by Navy marine resources specialists. Specific characteristics and sample photos of the marine mammal species that would most likely be observed in the project area, as well as techniques to estimate distance and document behavior, would be included in the briefing. This training is tailored to the audience and designed to improve the effectiveness of visual observations for protected species and provides information on sighting cues, visual observation tools and techniques, and sighting notification procedures.

Construction observers and compliance monitors designated by the contractor will be placed at a vantage point (e.g., from a small boat, construction barges, on shore, elevated perch [e.g. scissor lift], or any other suitable location) to observe all waters encompassed by the calculated ZOI.

### **3.2 Methods**

It shall be the contractor's responsibility to ensure that appropriate safety measures are implemented to protect construction observers and compliance monitors. If a boat is used for shutdown or incidental take compliance monitoring, the boat will maintain minimum distances from all species (should they occur) as described in the *Viewing Guidelines*.

Construction observers and compliance monitors shall use binoculars and the naked eye to search continuously for marine mammals. If the calculated shutdown or monitoring zone is obscured by fog or poor lighting conditions, in-water construction shall not be initiated until the entire zone is visible.

The shutdown zone (reference Tables 1 through 12) shall be viewed for 15 minutes prior to in-water construction activities. If a marine mammal is observed in the shutdown zone, in-water activities shall be delayed until the animal(s) leaves the shutdown zone. Activity shall resume only after the construction observer has determined, through re-sighting or by waiting approximately 15 minutes that the animal(s) has moved outside the shutdown zone. The construction observer(s) shall notify the foreman/point of contact (POC) when construction activities can commence. Observation of the shutdown zone will continue for 30 minutes following the completion of pile driving.

### **3.3 Data Collection**

The following information shall be recorded on sighting forms (Attachment 1) used by construction observers and compliance monitors:

- Date and time that pile driving or removal begins or ends
- Construction activities occurring during each observation period
- Weather parameters identified in the acoustic monitoring (e.g., wind, temperature, percent cloud cover, and visibility)
- Tide and sea state

If a marine mammal approaches or enters the shutdown zone, the following information will be recorded once shutdown procedures have been implemented:

- Any shutdown procedures implemented
- Species, numbers, and if possible sex and age class of the species (to estimate number of potential incidental takes)
- Behavior patterns observed, including bearing and direction of travel
- Location of the construction observer / compliance monitor, and distance from the animal(s) to the observer

During compliance monitoring, the above data shall be collected for any marine mammals observed in the designated zone.

A final MMPA compliance report shall be submitted to NMFS at the conclusion of a given pile-driving project. The information for this report comes solely from the sighting forms. Therefore, construction observers and compliance monitors must be diligent in completing the forms accurately and add any notes that may be helpful to the report's author.

Data collection forms shall be furnished to the NAVFAC Southeast POC within a mutually agreeable timeframe.

### **3.4 Equipment**

Use of cameras is prohibited in the WRA. Construction observers and compliance monitors shall be equipped with the following:

- binoculars (7 x 50 power or greater) to ensure sufficient visual acuity while investigating sightings
- portable radios or cellular phone(s) to rapidly communicate with the appropriate construction personnel to initiate shutdown of pile driving activity if required
- data collection forms (Attachment 2)

### **3.5 Interagency Notification**

If the contractors encounter a marine mammal that is injured, sick, or dead, the installation natural resources manager shall be notified immediately. The Navy will in turn notify the appropriate regulatory agencies.

The Navy will provide the regulatory agencies with the species or description of the animal(s), the condition of the animal (including carcass condition if the animal is dead), location, the date and time of first discovery, observed behaviors (if alive), and photo or video (if available).

In preservation of biological materials from a dead animal, the construction observer / compliance monitor has the first responsibility to ensure that evidence associated with the specimen is not unnecessarily disturbed. Construction observers / compliance monitors shall not handle dead animals.

### 3.6 Project-specific Details

#### 1A: Tug Pier

Note: A project-specific guidance document, including map illustrations of the shutdown and compliance monitoring zone(s) will be prepared and presented to the contractors at the time of the environmental awareness briefing (Section 3.1).

For the Tug Pier, one hundred and fifty-nine (159) 16-inch timber piles will be removed with a vibratory driver over 31 days. After removal, one hundred and forty-eight (148) 18-inch concrete piles and eighteen (18) 24-inch concrete piles will be installed over a total maximum of 34 days.

The Level A (injury) ZOIs for all three pile types falls within the standard shutdown zone of 50 feet (15 meters). Therefore, this zone will be in effect during all pile driving activities associated with the Tug Pier project. One hundred and twenty-four (124) potential Level B exposures were calculated for the Tug Pier project, but all were associated with the 31 days of vibratory timber extraction. Because extraction and installation may occur interchangeably on any given day, a subset of the days on which incidental takes could occur – ten (10) days of thirty-one (31) - will be monitored to ensure compliance with the LOA.

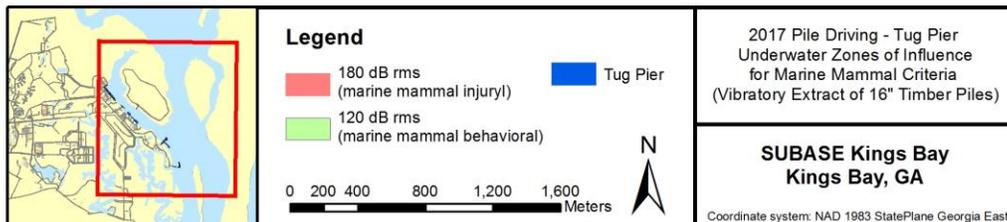
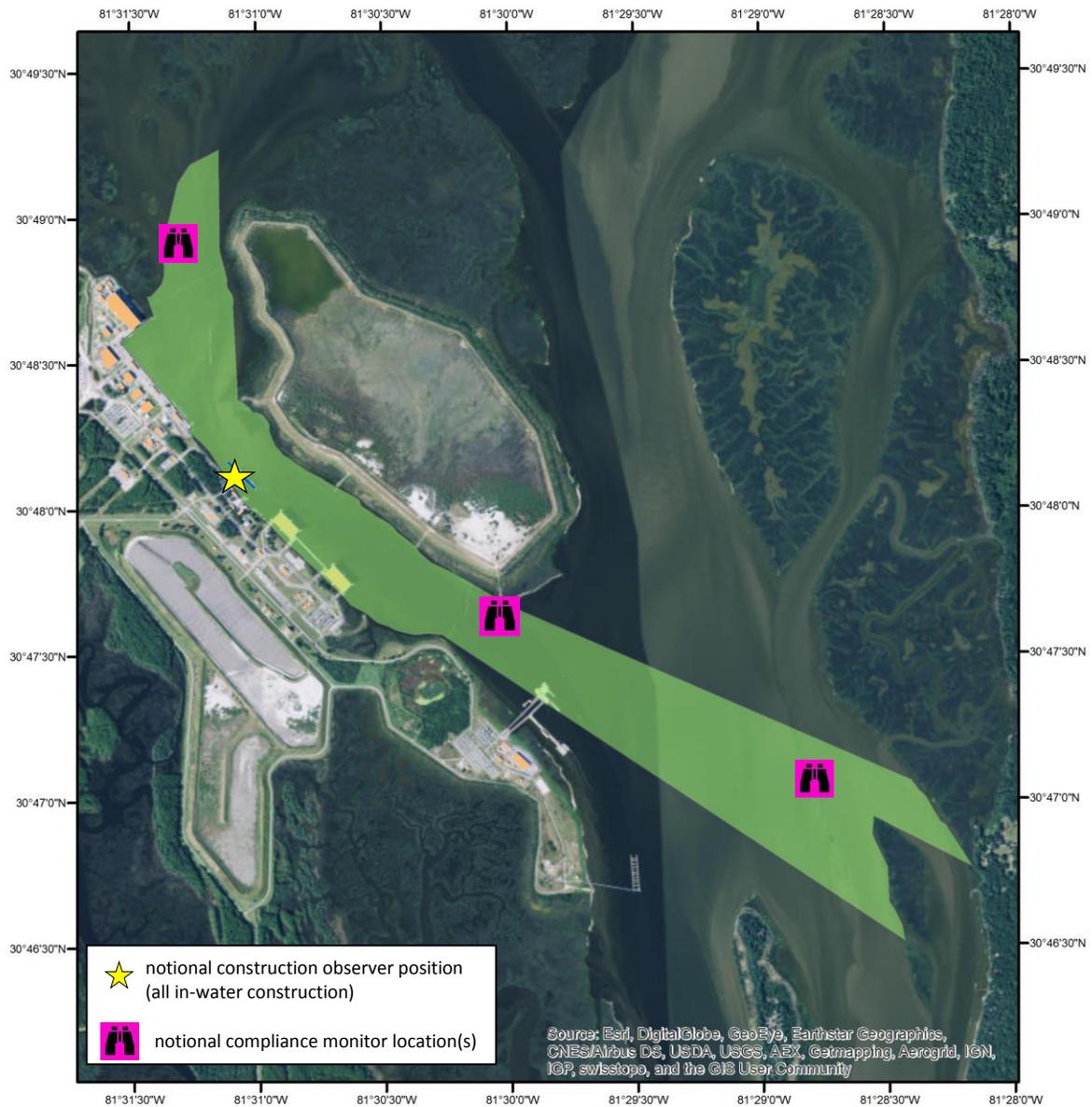
The contractor will deploy at least three (3) qualified compliance monitors to view the entirety of the 17,756 foot (5,412 meter) Level B ZOI for a minimum of ten (10) days as described in Sections 3.1-3.4. The results of the ten-day compliance monitoring effort will be extrapolated to the number of timber pile removal days to provide an estimate of the actual number of Level B exposures. Figure 4 illustrates the compliance monitoring zone and notional monitor locations; these locations are subject to change based on weather conditions and other variables.

Acoustic data will be collected during active pile driving associated with the Tug Pier project. Data will be incorporated into the Navy’s source level database to enhance accuracy of propagation modeling. This effort will also provide improved proxy levels for projects on the southeast coast of the U.S. through implementation in typical bathymetric / hydrological conditions. Attachment 3 contains a sample scope of work for acoustic data collection; specific requirements for the Tug Pier project will be developed and provided to NMFS for review.

**Table 1. Project 1A - Tug Pier (FY 2017)**

Project	Pile Details			Action	Max. Days	Construction Observer Zone	Compliance Monitoring Zone
	Number	Size	Material				
Tug Pier <sup>1</sup>	159	16-inch	timber	vibratory removal	31	50 ft (15 m) daily	3 or more qualified monitors will view all waters within the 17,156 (5,412 m) zone on a minimum of 10 days over the course of the project
	148	18-inch	concrete	impact installation	30		
	18	24-inch	concrete		4		

<sup>1</sup>Acoustic data collection will be performed during this project



**Figure 3. Project 1A – Tug Pier Compliance Monitoring Zone (FY 2017)**

## 1B: General Access Pier

Note: A project-specific guidance document, including a map illustration of the shutdown zone will be prepared and presented to the contractors at the time of the environmental awareness briefing (Section 3.1).

For the General Access Pier, two (2) 16-inch timber piles will be removed and two (2) 16-inch composite piles will be installed; both using a vibratory hammer. The Level A (injury) ZOIs for both pile types fall within the standard shutdown zone of 50 feet (15 meters) (Table 2). Therefore, this zone will be in effect during all pile driving activities associated with the General Access Pier project.

Six (6) potential Level B exposures were calculated for the General Access Pier project. Pile removal and installation will only occur for a brief period of time over the course of a maximum of two (2) days. To maximize the efficient allocation of resources, no compliance monitoring will occur. Results of separate monitoring efforts and dedicated surveys for bottlenose dolphin occurrence will be extrapolated to estimate the actual number of incidental takes for LOA compliance purposes.

**Table 2. Project 1B – General Access Pier (FY 2017)**

Project	Pile Details			Action	Max. Days	Construction Observer Zone
	Number	Size	Material			
General Access Pier	2	16-inch	timber	vibratory removal	1	50 ft (15 m) daily
	2	16-inch	composite	vibratory installation	1	

## 2: Unspecified Minor Construction (UMC) Layberth Fender Pile Modification (P-661)

Note: A project-specific guidance document, including a map illustration of the shutdown zone will be prepared and presented to the contractors at the time of the environmental awareness briefing (Section 3.1).

For this project, fifty-five (55) 14-inch steel piles will be installed using an impact hammer over a maximum of seven (7) days. The Level A (injury) ZOI falls within the standard shutdown zone of 50 feet (15 meters). Therefore, this zone will be in effect during all pile driving activities associated with the P-661 project (Table 3). There were no Level B exposures estimated for this project, therefore monitoring of the Level B ZOI for the purposes of verifying incidental take is not required.

Acoustic data will be collected during active pile driving associated with the P-661 project. Data will be incorporated into the Navy's source level database to enhance accuracy of propagation modeling. This effort will also provide improved proxy levels for projects on the southeast coast of the U.S. Attachment 3 contains a sample scope of work for acoustic data collection; specific requirements for the UMC Layberth will be developed and provided to NMFS for review.

**Table 3. Project 2 – UMC Layberth (P-661) (FY 2017)**

Project	Pile Details			Action	Max. Days	Construction Observer Zone
	Number	Size	Material			
UMC Layberth Fender Pile Modification P-661 Project <sup>1</sup>	55	14-inch	steel	impact installation	7	50 ft (15 m) daily

<sup>1</sup>Acoustic data collection will be performed during this project

3A: Explosive Handling Wharf (EHW) #2 & Capstans

Note: A project-specific guidance document, including a map illustration of the shutdown and compliance monitoring zones will be prepared and presented to the contractors at the time of the environmental awareness briefing (Section 3.1).

For the EHW-2 project, in-water pile driving is planned to occur in two phases. During the first phase (FY 2017), two (2) 24-inch steel piles will be removed using a vibratory hammer and replaced by two (2) piles of the same size and material using an impact hammer over a maximum of two (2) days. While the Level A (injury) ZOI falls within the standard shutdown zone of 50 feet (15 meters) for vibratory removal, the calculated ZOI extends out to 150 feet (50 meters) for impact installation (Table 4).

During the second phase (FY 2022), three (3) 24-inch concrete piles will be removed using a vibratory hammer and replaced in-kind using an impact hammer over a maximum of two (2) days; and ten (10) 24-inch steel piles will be removed and replaced using the same methodology over seven (7) days. While the Level A (injury) ZOI falls within the standard shutdown zone of 50 feet (15 meters) for vibratory removal and impact installation of concrete piles, it was estimated to extend out to 150 feet (50 meters) for impact installation of the steel piles. As stated for the first phase (FY 2017) above, the shutdown zone will be extended from the standard area to 150 feet (50 meters) during impact driving of steel piles (Table 4)

During the first phase (FY 2017) of the EHW-2 project, a total of five (5) potential Level B exposures were calculated for the (maximum) two days of removal and installation. To maximize the efficient allocation of resources, no compliance monitoring will occur. Results of separate monitoring efforts and dedicated surveys for bottlenose dolphin occurrence will be extrapolated to estimate the actual number of incidental takes for LOA compliance purposes.

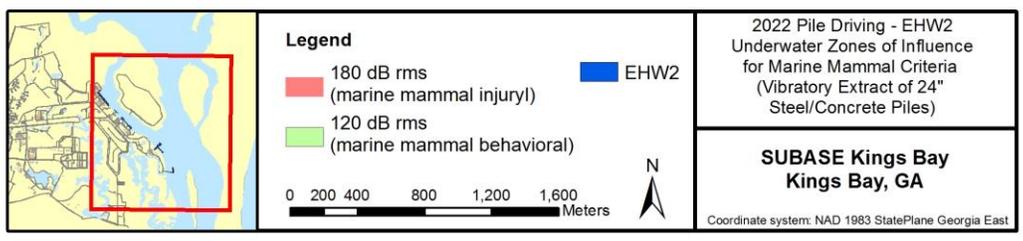
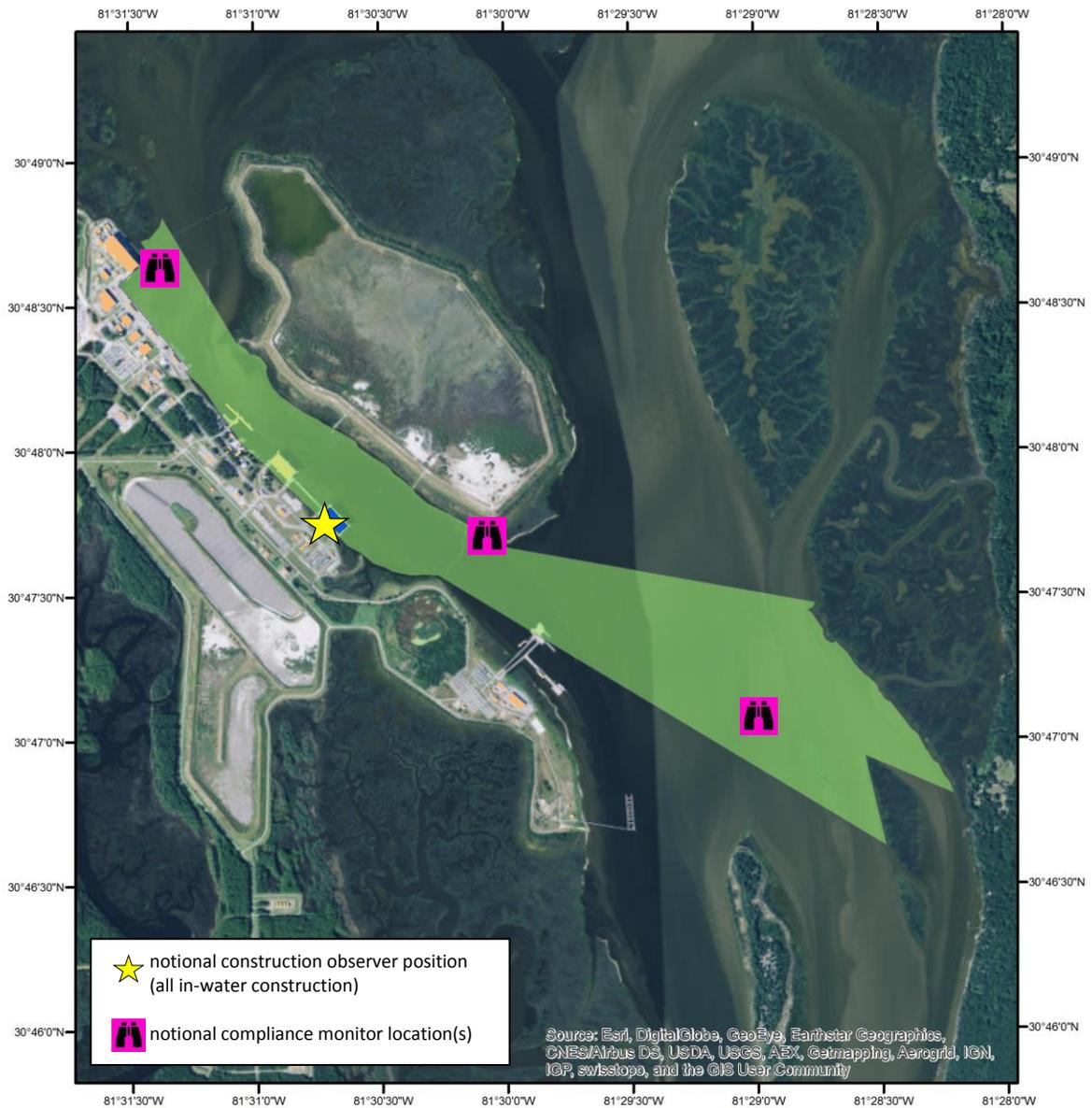
During the second (FY 2022) phase of the project, a total of sixteen (16) potential Level B exposures were calculated for vibratory removal of the piles (concrete and steel), and four (4) for impact installation. The Level B range for vibratory removal of concrete and steel piles was calculated to 38,351 feet (11,659 meters).

Because extraction and installation may occur interchangeably on any given day, a subset of the days on which incidental takes could occur – three (3) days of nine (9) - will be monitored to

ensure compliance with the LOA. The contractor will deploy at least three (3) qualified compliance monitors to view the entirety of the 38,351 foot (11,659 meters) Level B ZOI for a minimum of three (3) days as described in Sections 3.1-3.4. The results of the three-day compliance monitoring effort will be extrapolated to the total number of pile driving days to provide an estimate of the actual number of Level B exposures. Figure 5 illustrates the modeled ZOI and notional compliance monitor locations; these locations are subject to change based on weather conditions and other variables.

**Table 4. Project 3A – EHW-2 (FY 2017 / 2022)**

Project	Pile Details			Action	Max. Days	Construction Observer Zone	Compliance Monitoring Zone
	Number	Size	Material				
Explosive Handling Wharf #2 Pier w/Capstans	2	24-inch	steel	vibratory removal	2 (2017)	50 ft (15 m) daily	3 or more qualified monitors will view all waters within the 38,351 (11,659 m) zone on a minimum of 3 days during the second phase (FY 2022) of the project
	2	24-inch	steel	impact installation		150 ft (50 m) daily	
	3	24-inch	concrete	vibratory removal	2 (2022)	50 ft (15 m) daily	
	3	24-inch	concrete	impact installation			
	10	24-inch	steel	vibratory removal	7 (2022)	50 ft (15 m) daily	
	10	24-inch	steel	impact installation		150 ft (50 m) daily	



**Figure 4. Project 3A - EHW-2 Compliance Monitoring Zone (FY 2022)**

3B: (Dry Dock) Interface Wharf

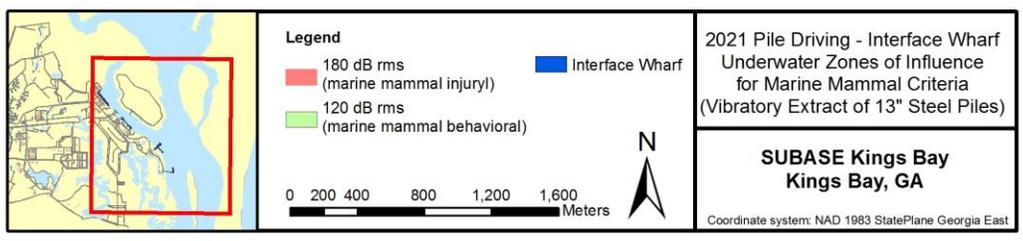
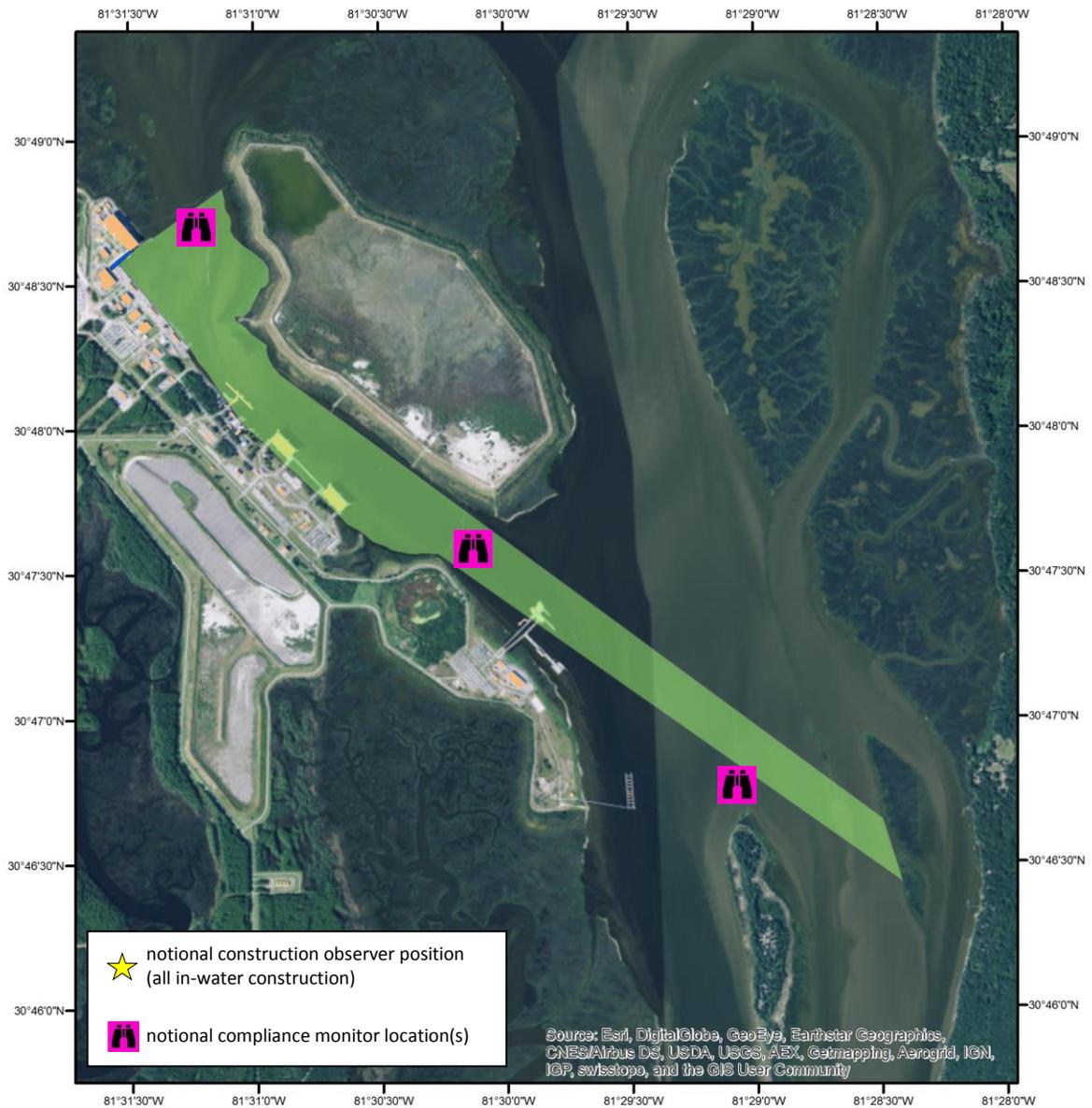
Note: A project-specific guidance document, including a map illustrating the shutdown and compliance monitoring zones will be prepared and presented to the contractors at the time of the environmental awareness briefing (Section 3.1).

For the Interface Wharf, ninety-nine (99) 14-inch steel H piles will be removed with a vibratory driver; and replaced with the same number of 14-inch steel H piles with an impact hammer over fifteen (15) days. The Level A (injury) ZOIs for both removal and installation fall within the standard shutdown zone of 50 feet (15 meters) (Table 5). Therefore, this zone will be in effect during all pile driving activities associated with the Interface Wharf project.

A total of twenty-one (21) potential Level B exposures were calculated for vibratory removal only. Because extraction and installation may occur interchangeably on any given day, a subset of the days on which incidental takes could occur – five (5) days of fifteen (15) - will be monitored to ensure compliance with the LOA. The contractor will deploy at least three (3) qualified compliance monitors to view the entirety of the 24,132 foot (7,356 meter) Level B ZOI for a minimum of five (5) days as described in Sections 3.1-3.4 (Table 5). The results of the five-day compliance monitoring effort will be extrapolated to the total number of pile driving days to provide an estimate of the actual number of Level B exposures. Figure 6 illustrates the modeled ZOI and notional compliance monitor locations; these locations are subject to change based on weather conditions and other variables.

**Table 5. Project 3B – (Dry Dock) Interface Wharf (FY 2021)**

Project	Pile Details			Action	Max. Days	Construction Observer Zone	Compliance Monitoring Zone
	Number	Size	Material				
(Dry Dock) Interface Wharf	99	14-inch	steel	vibratory removal	15	50 ft (15 m) daily	3 or more qualified monitors will view all waters within the 24,132 ft (7,356 m) zone on a minimum of 5 days
	99	14-inch	steel	impact installation			



**Figure 5. Project 3B - (Dry Dock) Interface Wharf Compliance Monitoring Zone (FY 2021)**

3C, 3D, and 3E: Refit Wharves #1, #2, and #3

Note: A project-specific guidance document, including a map illustrating the shutdown and compliance monitoring zones will be prepared and presented to the contractors at the time of the environmental awareness briefing (Section 3.1).

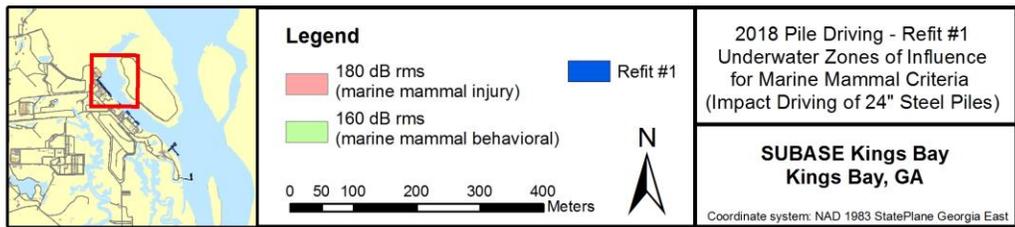
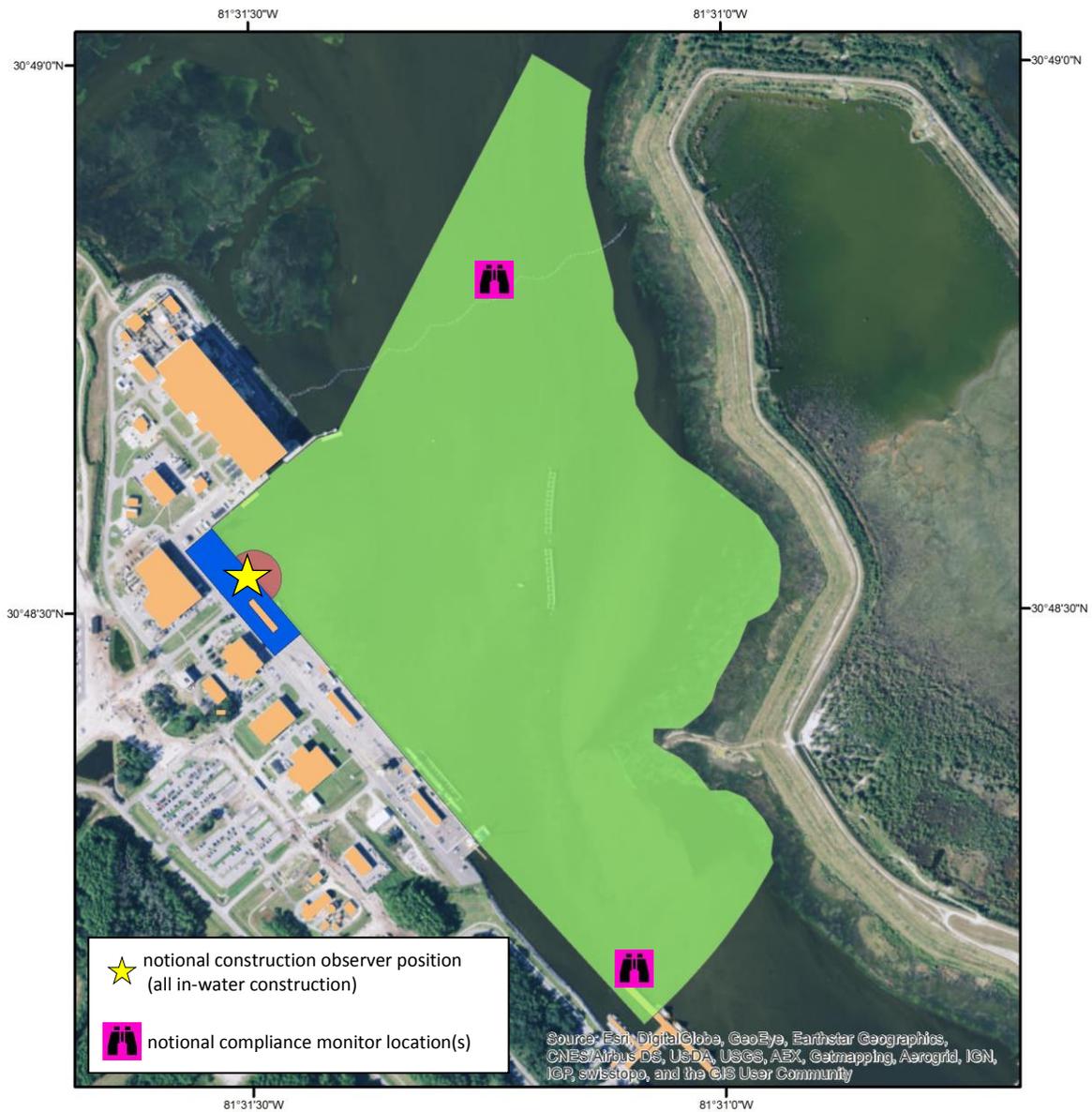
For each of the Refit Wharf #1, #2, and #3 projects, six (6) 30-inch steel piles will be removed with a vibratory driver, and replaced with six (6) 24-inch steel piles using an impact hammer, over the course of six (6) days. This represents a total of eighteen (18) 30-inch steel piles being removed and eighteen (18) 24-inch steel piles being installed over the course of eighteen (18) total days between FY 2017 – 2018. While the Level A (injury) ZOI falls within the standard shutdown zone of 50 feet (15 meters) for vibratory removal, the calculated ZOI extends out to 150 feet (50 meters) for impact installation (Table 6).

A total of nineteen (19) potential Level B incidental takes were calculated for all three Refit Wharf projects. Extraction and installation may occur interchangeably on any given day, and would involve only a small number of piles. Therefore, incidental take compliance monitoring would occur during all active pile extraction / installation, but within the smaller impact Level B ZOIs only. The number of marine mammals observed would be extrapolated to the larger vibratory Level B ZOIs (Figures 7, 8, and 9) to estimate the number of actual Level B exposures for all pile driving.

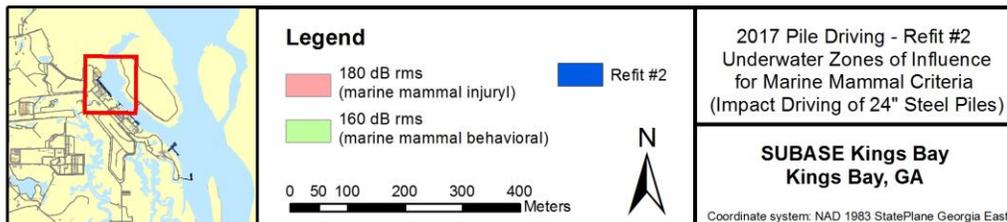
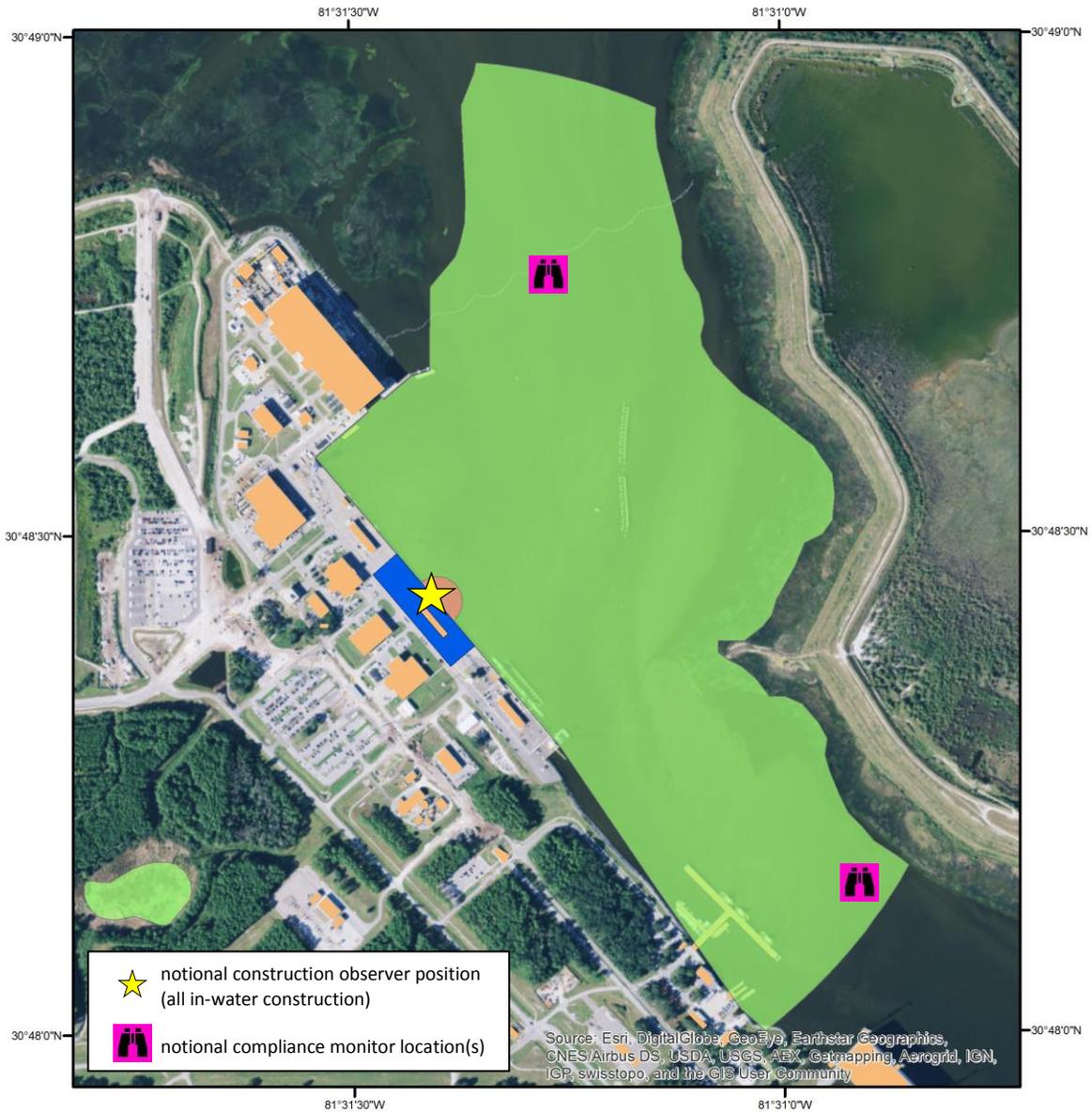
The contractor will deploy at least two (2) qualified compliance monitors to view the entirety of the 3,280 foot (1,000 meter) Level B ZOI on all pile driving days (max. 6 days for each wharf) as described in Sections 3.1-3.4 (Table 6). The results of the compliance monitoring effort will be extrapolated to the total number of pile driving days to provide an estimate of the actual number of Level B exposures. Figures 7, 8, and 9 illustrate the ZOIs and notional compliance monitor locations; these locations are subject to change based on weather conditions and other variables.

**Table 6. Projects 3C (FY 2018), 3D (FY 2017), and 3E (FY 2018)  
Refit Wharves #1, #2, and #3**

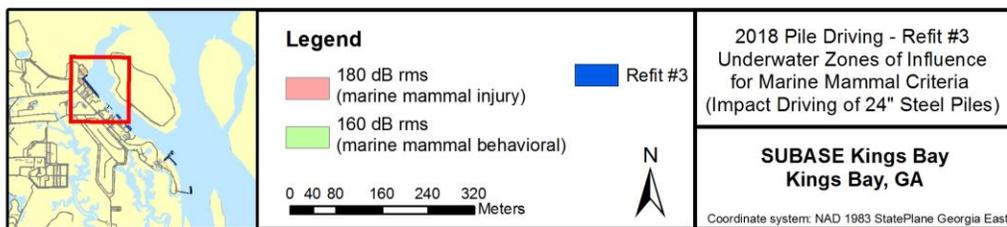
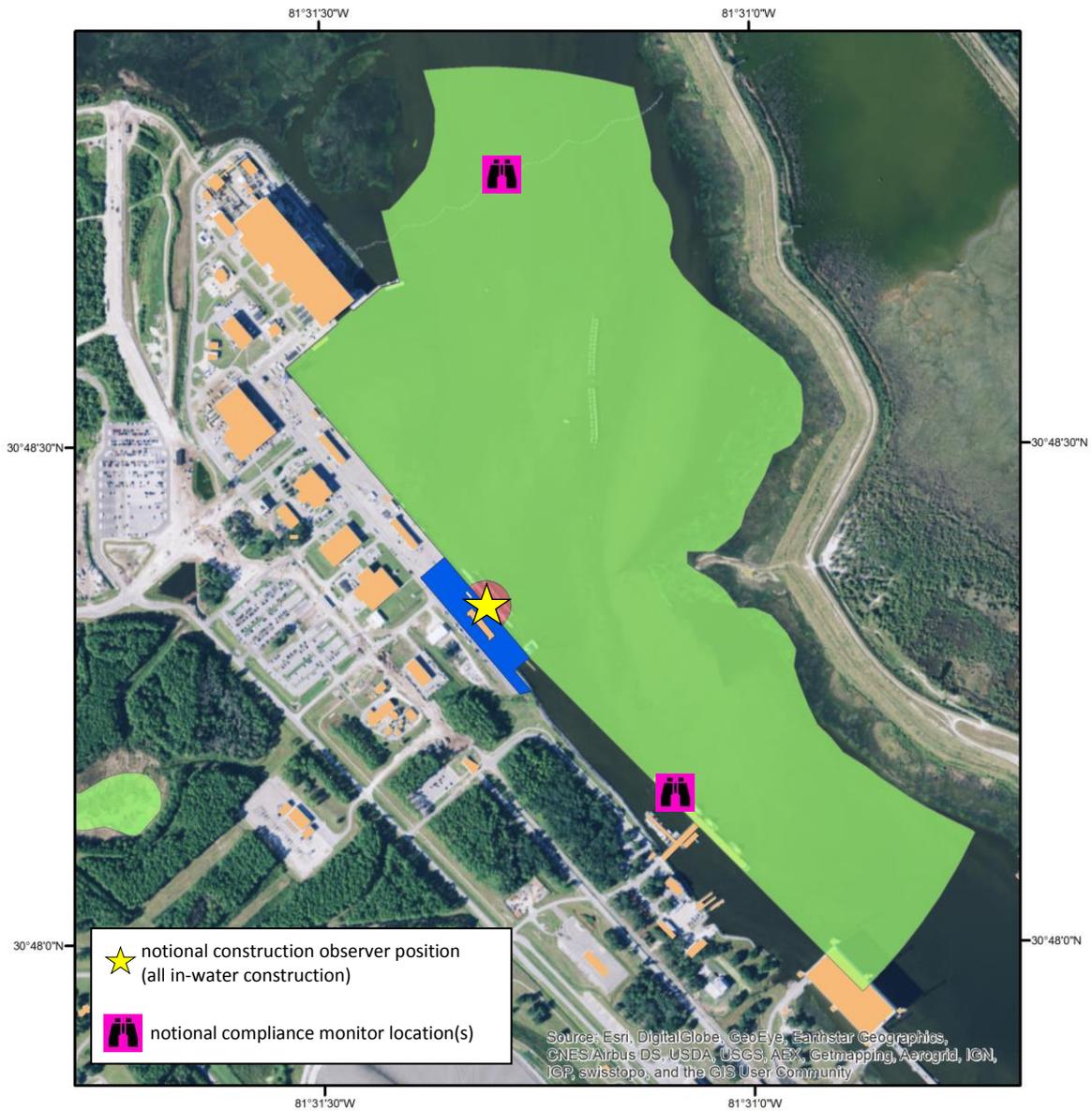
Project	Pile Details			Action	Max. Days	Construction Observer Zone	Compliance Monitoring Zone
	Number	Size	Material				
Refit Wharf #1	6	30-inch	steel	vibratory removal	6	50 ft (15 m) daily	2 or more qualified monitors will view all waters within the 3,280 ft (1,000 m) ZOI on all pile driving days (max. 6 days at each wharf)
	6	24-inch	steel	impact installation		150 ft (50 m) daily	
Refit Wharf #2	6	30-inch	steel	vibratory removal	6	50 ft (15 m) daily	
	6	24-inch	steel	impact installation		150 ft (50 m) daily	
Refit Wharf #3	6	30-inch	steel	vibratory removal	6	50 ft (15 m) daily	
	6	24-inch	steel	impact installation		150 ft (50 m) daily	



**Figure 6. Project 3C – Refit Wharf #1 Compliance Monitoring Zone (FY 2018)**



**Figure 7. Project 3D – Refit Wharf #2 Compliance Monitoring Zone (FY 2017)**



**Figure 8. Project 3E – Refit Wharf #3 Compliance Monitoring Zone (FY 2018)**

3F: Warping Wharf with Capstan

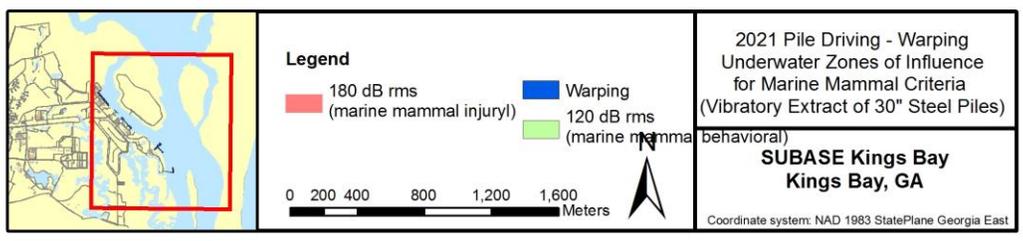
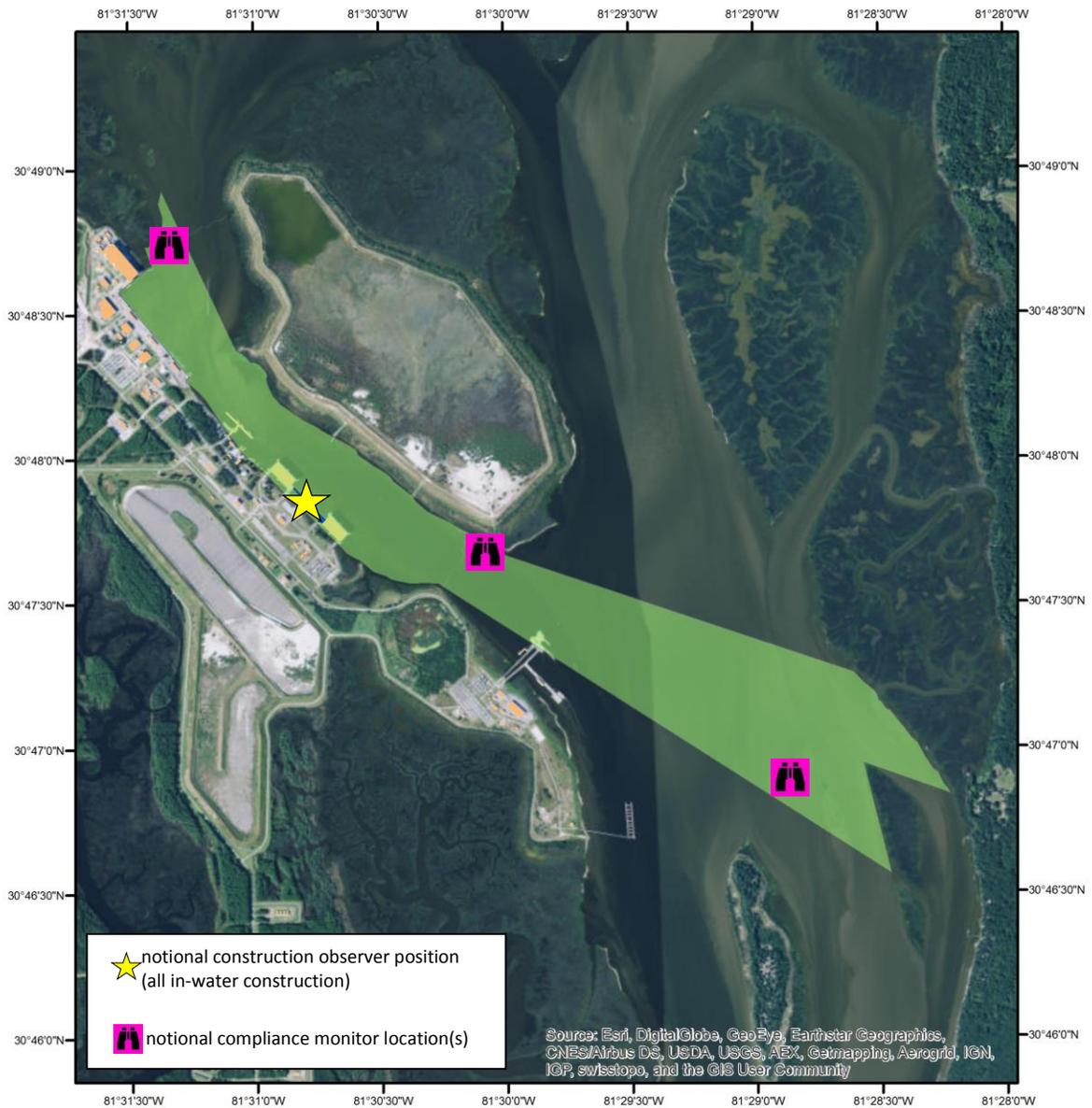
Note: A project-specific guidance document, including a map illustrating the shutdown and compliance monitoring zones will be prepared and presented to the contractors at the time of the environmental awareness briefing (Section 3.1).

For this project, eight (8) 30-inch steel piles will be removed using a vibratory driver, and replaced with eight (8) piles of the same size using an impact hammer over a total of four (4) days. While the Level A (injury) ZOI falls within the standard shutdown zone of 50 feet (15 meters) for vibratory removal, the calculated ZOI extends out to 250 feet (75 meters) for impact installation (Table 7).

A total of eight (8) potential incidental takes were calculated for vibratory removal, and four (4) for impact installation. Because extraction and installation may occur interchangeably on any given day, a subset of the days on which incidental takes could occur – two (2) days of four (4) - will be monitored to ensure compliance with the LOA. The contractor will deploy at least three (3) qualified compliance monitors to view the entirety of the 38,251 foot (11,659 meter) Level B ZOI for a minimum of two (2) days as described in Sections 3.1-3.4 (Table 7). The results of the two-day compliance monitoring effort will be extrapolated to the total number of pile driving days to provide an estimate of the actual number of Level B exposures. Figure 10 illustrates the modeled ZOI and notional compliance monitor locations; these locations are subject to change based on weather conditions and other variables.

**Table 7. Project 3F – Warping Wharf with Capstan (FY 2021)**

Project	Pile Details			Action	Max. Days	Construction Observer Zone	Compliance Monitoring Zone
	Number	Size	Material				
Warping Wharf with Capstan	8	30-inch	steel	vibratory removal	4	50 ft (15 m) daily	3 or more qualified monitors will view all waters within the 38,251 ft (11,659 m) zone on a minimum of 2 days
	8	30-inch	steel	impact installation		250 ft (75 m) daily	



**Figure 9. Project 3F – Warping Wharf with Capstans Compliance Monitoring Zone (FY 2021)**

**3G: Tug Pier**

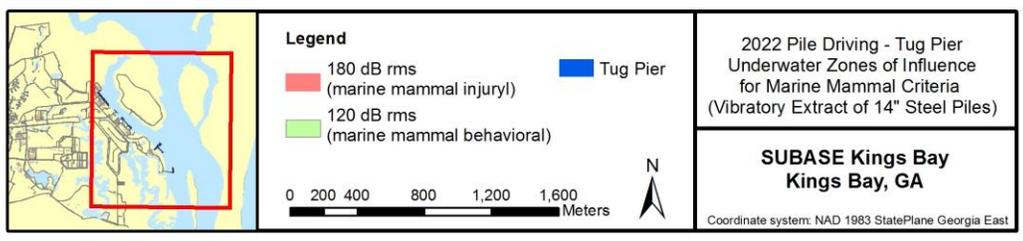
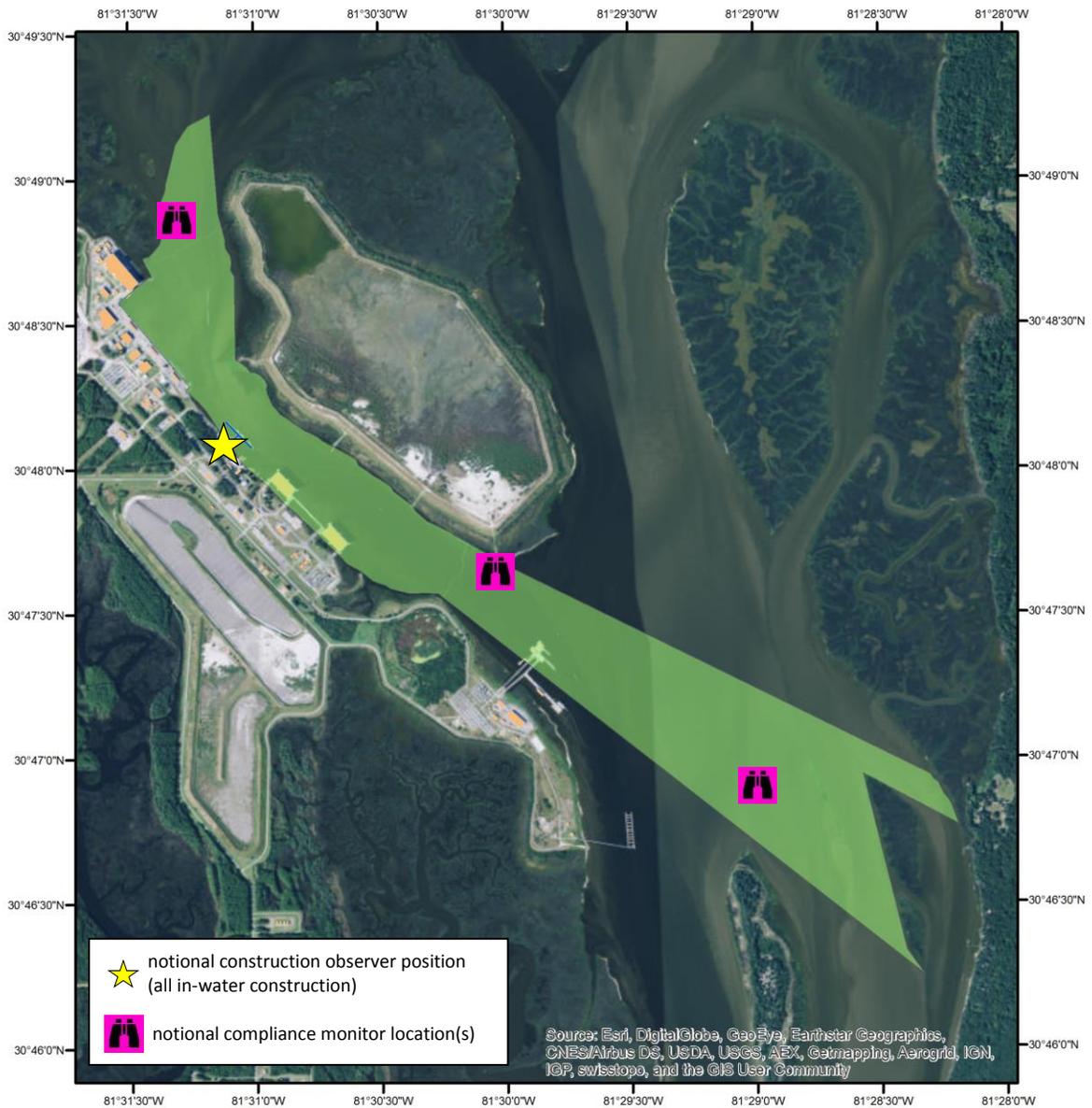
Note: A project-specific guidance document, including a map illustrating the shutdown and compliance monitoring zones will be prepared and presented to the contractors at the time of the environmental awareness briefing (Section 3.1).

For the FY 2022 Tug Pier project, seventy-seven (77) 14-inch steel piles will be removed with a vibratory driver and replaced with the same number / size of piles using an impact hammer over a total of sixteen (16) days. The Level A (injury) ZOI for removal and installation falls within the standard shutdown zone of 50 feet (15 meters) (Table 8). A total of thirty-two (32) potential incidental Level B exposures were calculated for this project, but all were associated with vibratory removal.

Because extraction and installation may occur interchangeably on any given day, a subset of the days on which incidental takes could occur – four (4) days of sixteen (16) - will be monitored to ensure compliance with the LOA. The contractor will deploy at least three (3) qualified compliance monitors to view the entirety of the 24,134 foot (7,356 meter) Level B ZOI for a minimum of four (4) days as described in Sections 3.1-3.4. The results of the four-day compliance monitoring effort will be extrapolated to the total number of pile removal days to provide an estimate of the actual number of Level B exposures. Figure 11 illustrates the compliance monitoring zone and notional monitor locations; these locations are subject to change based on weather conditions and other variables.

**Table 8. Project 3G – Tug Pier (FY 2022)**

Project	Pile Details			Action	Max. Days	Construction Observer Zone	Compliance Monitoring Zone
	Number	Size	Material				
Tug Pier	77	14-inch	steel	vibratory removal	16	50 ft (15 m) daily	3 or more qualified monitors will view all waters within the 24,134 ft (7,356 m) zone on a minimum of 4 days
	77	14-inch	steel	impact installation			



**Figure 10. Project 3G – Tug Pier Compliance Monitoring Zone (FY 2022)**

**4A: Transit Protection System (TPS) Pier**

Note: A project-specific guidance document, including a map illustrating the shutdown and compliance monitoring zones will be prepared and presented to the contractors at the time of the environmental awareness briefing (Section 3.1).

For the TPS Pier project, one hundred and twenty-one (121) 24-inch concrete piles will be removed with a vibratory driver over eight (8) days. This will be followed by impact installation of one hundred and sixty-five (165) 24-inch concrete piles and fifty (50) 18-inch concrete piles over a total of seventy-two (72) days. During both removal and installation, the Level A (injury) ZOI falls within the standard shutdown zone of 50 feet (15 meters) (Table 9).

A total of sixty-four (64) potential Level B exposures were calculated for this project. However, all were associated with vibratory removal, which is expected to require no more than eight days in total. Because extraction and installation may occur interchangeably on any given day, eight (8) days will be monitored to ensure compliance with the LOA. The contractor will deploy at least four (4) qualified compliance monitors to view the entirety of the 38,351 foot (11,659 meter) Level B ZOI for a minimum of eight (8) days as described in Sections 3.1-3.4. Figure 12 illustrates the compliance monitoring zone and notional monitor locations; these locations are subject to change based on weather conditions and other variables.

Acoustic data will be collected during active pile driving associated with the New Facility project. Data will be incorporated into the Navy’s source level database to enhance accuracy of propagation modeling. This effort will also provide improved proxy levels for projects on the southeast coast of the U.S. through implementation in typical bathymetric / hydrological conditions. Attachment 3 contains a sample scope of work for acoustic data collection; specific requirements for the TPS Pier project will be developed and provided to NMFS for review.

**Table 9. Project 4A – New Facility – TPS (FY 2020)**

Project	Pile Details			Action	Max. Days	Construction Observer Zone	Compliance Monitoring Zone
	Number	Size	Material				
New Pier – TPS Headquarters / Operational Support Facility <sup>1</sup>	165	24-inch	concrete	impact installation	55	50 ft (15 m) daily	4 or more qualified monitors will view all waters within the 38,351 ft (11,659 m) zone on a minimum of 8 days
	50	18-inch	concrete	impact installation	17		
	24	24-inch	concrete	vibratory removal	8		

<sup>1</sup>Acoustic data collection will be performed during this project

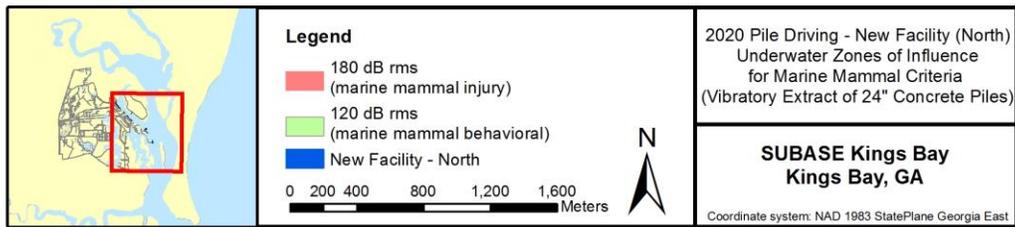
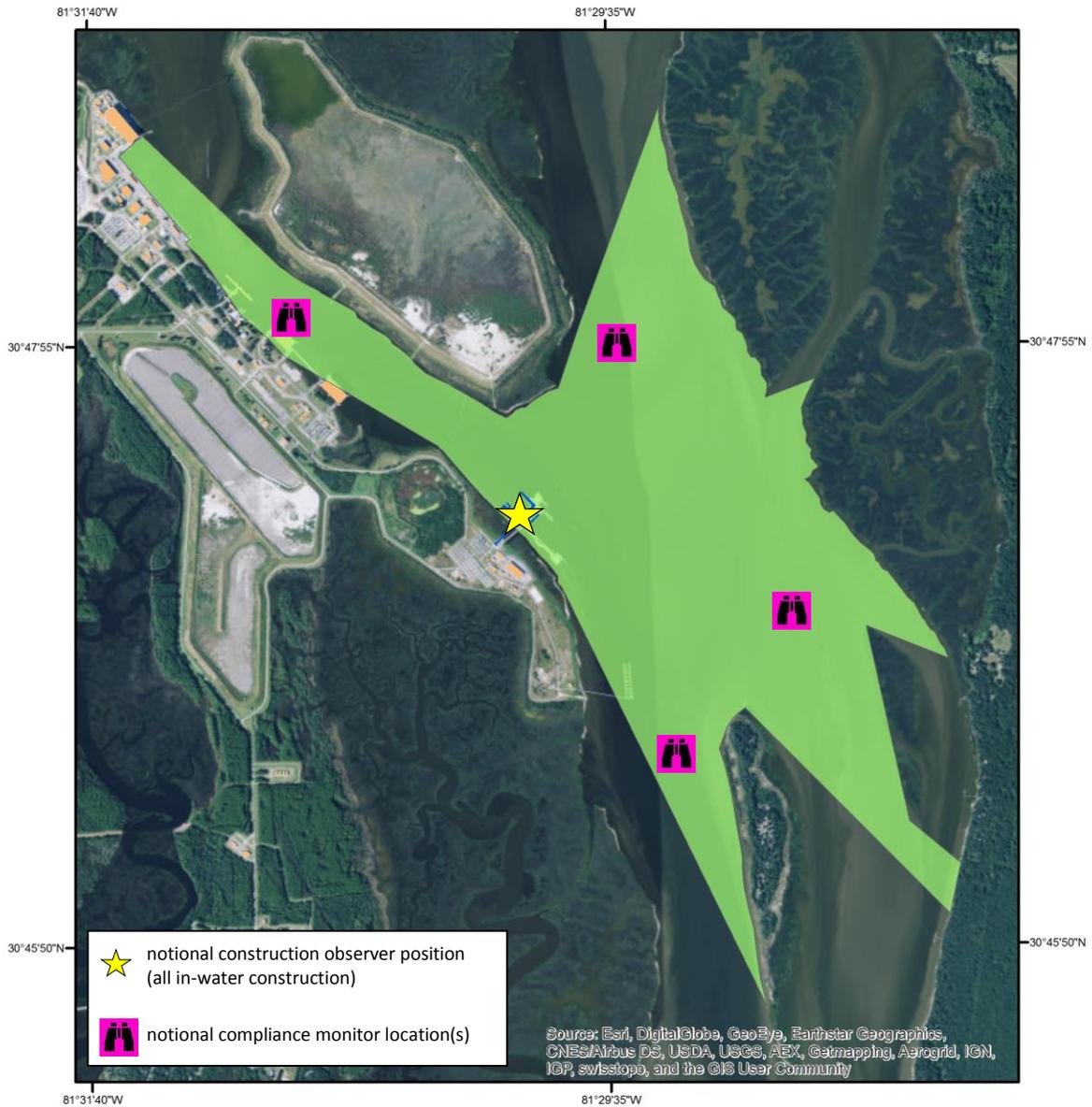


Figure 11. Project 4A – New Facility (TPS) Compliance Monitoring Zone (FY 2020)

**4B: Small Craft Berth Site VI**

Note: A project-specific guidance document, including a map illustrating the shutdown and compliance monitoring zones will be prepared and presented to the contractors at the time of the environmental awareness briefing (Section 3.1).

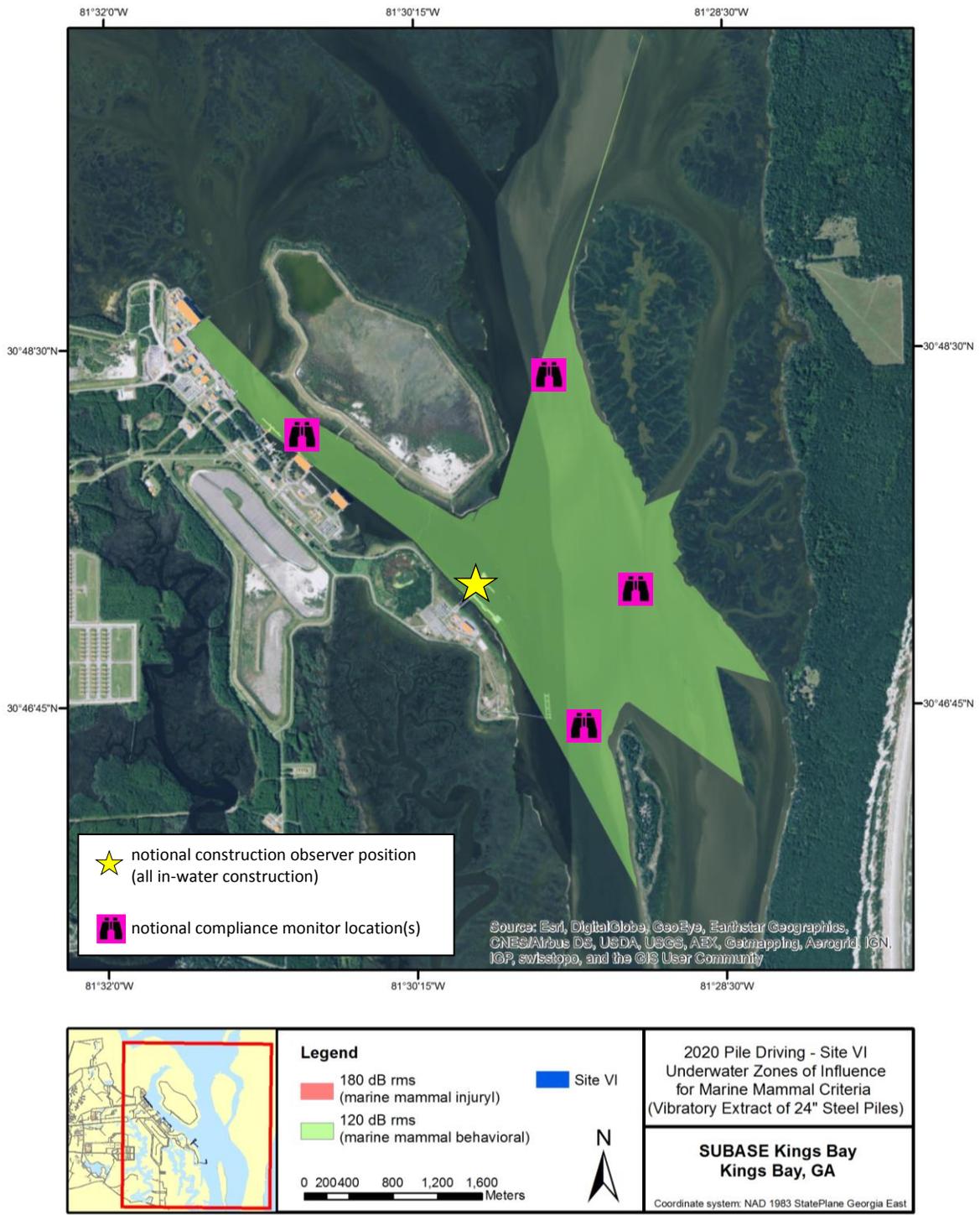
For this project, thirty (30) 24-inch steel piles will be removed with a vibratory driver followed by impact installation of the same number / size of steel piles over the course of eight (8) days. While the Level A (injury) ZOI falls within the standard shutdown zone of 50 feet (15 meters) for vibratory removal, the calculated ZOI extends out to 150 feet (50 meters) for impact installation (Table 10).

A total of forty (40) potential Level B exposures were calculated for this project, of which thirty-two (32) were associated with vibratory removal and eight (8) with impact installation. Because extraction and installation may occur interchangeably on any given day, a subset of the days on which incidental takes could occur – three (3) days of eight (8) - will be monitored to ensure compliance with the LOA. The contractor will be directed to deploy at least four (4) qualified monitors to observe all waters encompassed by the 38,251 foot (11,659 meter) Level B ZOI for a minimum of three (3) days as specified in Sections 3.1-3.4.

The results of the three-day compliance monitoring effort will be extrapolated to the total number of pile driving days to provide an estimate of the actual number of Level B exposures. Figure 13 illustrates the compliance monitoring zone and notional monitor locations; these locations are subject to change based on weather conditions and other variables.

**Table 10. Project 4B – Small Craft Berth Site VI (FY 2020)**

Project	Pile Details			Action	Max. Days	Construction Observer Zone	Compliance Monitoring Zone
	Number	Size	Material				
Small Craft Berth Site VI	30	24-inch	steel	impact installation	8	150 ft (50 m) daily	4 or more qualified monitors will view all waters within the 38,351 ft (11,659 m) zone on a minimum of 3 days
	30	24-inch	steel	vibratory removal		50 ft (15 m) daily	



**Figure 12. Project 4A – Small Craft Berth Site VI Compliance Monitoring Zone (FY 2020)**

**5: Magnetic Silencing Facility (MSF)**

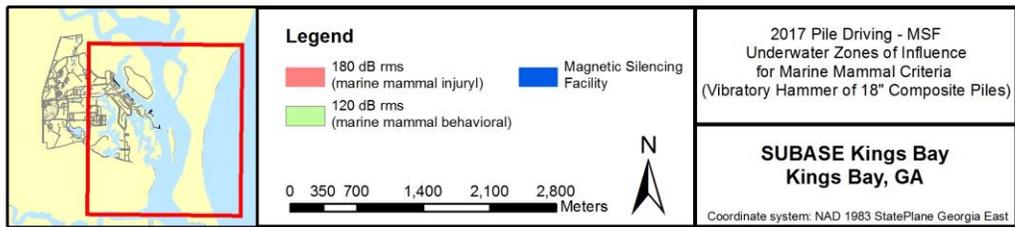
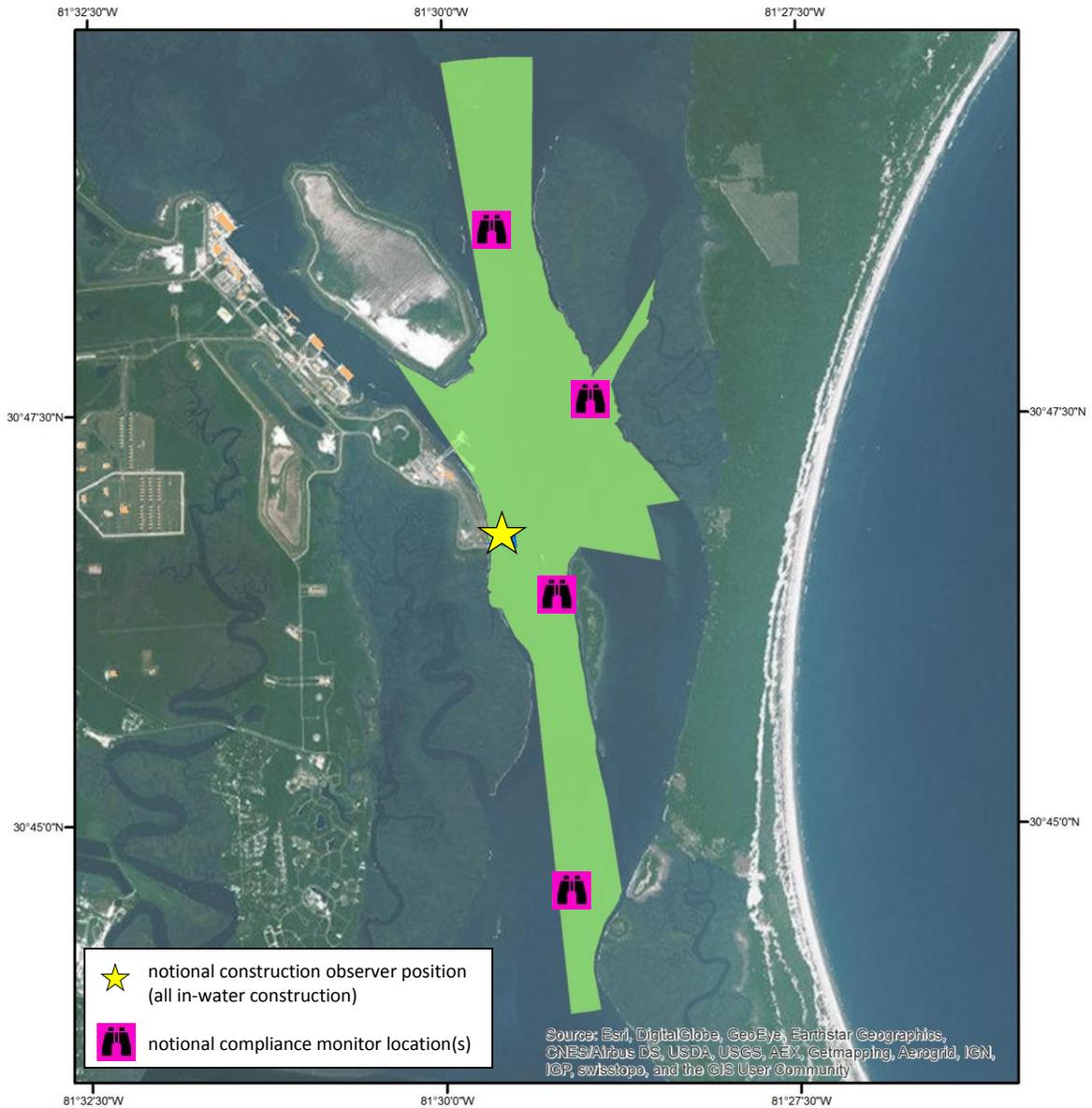
Note: A project-specific guidance document, including a map illustrating the shutdown and compliance monitoring zones will be prepared and presented to the contractors at the time of the environmental awareness briefing (Section 3.1).

For this project, eighteen (18) 16-inch timber piles will be removed with a vibratory driver followed by vibratory installation of eighteen (18) 18-inch composite piles over a total of six (6) days. The Level A (injury) ZOI falls within the standard shutdown zone of 50 feet (15 meters) for both removal and installation (Table 11). Therefore, this zone will be in effect during all pile driving activities associated with the Magnetic Silencing Facility project.

A total of thirty-six (36) potential Level B exposures were calculated for the project. In order to maximize the efficient allocation of resources, the contractor will be directed to deploy at least four (4) qualified compliance monitors to view the 17,756 foot (5,412 meter) Level B ZOI for three (3) of the six (6) projected days of active driving. The results of the three-day compliance monitoring effort will be extrapolated to the number of active driving days to provide an estimate of the actual number of Level B exposures. Figure 14 illustrates the modeled ZOI and notional compliance monitor locations; these locations are subject to change based on weather conditions and other variables.

**Table 11. Project 5 – MSF Repairs (FY 2017)**

Project	Pile Details			Action	Max. Days	Construction Observer Zone	Compliance Monitoring Zone
	Number	Size	Material				
Magnetic Silencing Facility (RF-14-1710 TRIREFAC Waterfront Facilities Repair)	18	18-inch	composite	vibratory installation	6	50 ft (15 m) daily	4 or more qualified monitors will view all waters within the 17,756 ft (5,412 m) zone on a minimum of 3 days
	18	18-inch	timber	vibratory removal			



**Figure 13. Project 5 – MSF Compliance Monitoring Zone (FY 2017)**

6A, 6B: Transit Protection Pier and North Trestle Pier Demolition

Note: A project-specific guidance documents, including maps illustrating the shutdown and compliance monitoring zones will be prepared and presented to the contractors at the time of the environmental awareness briefing (Section 3.1).

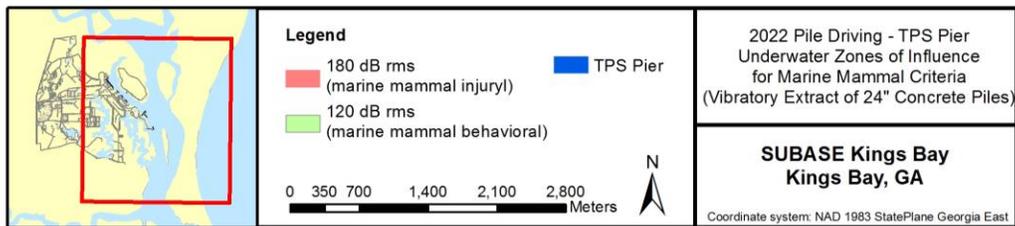
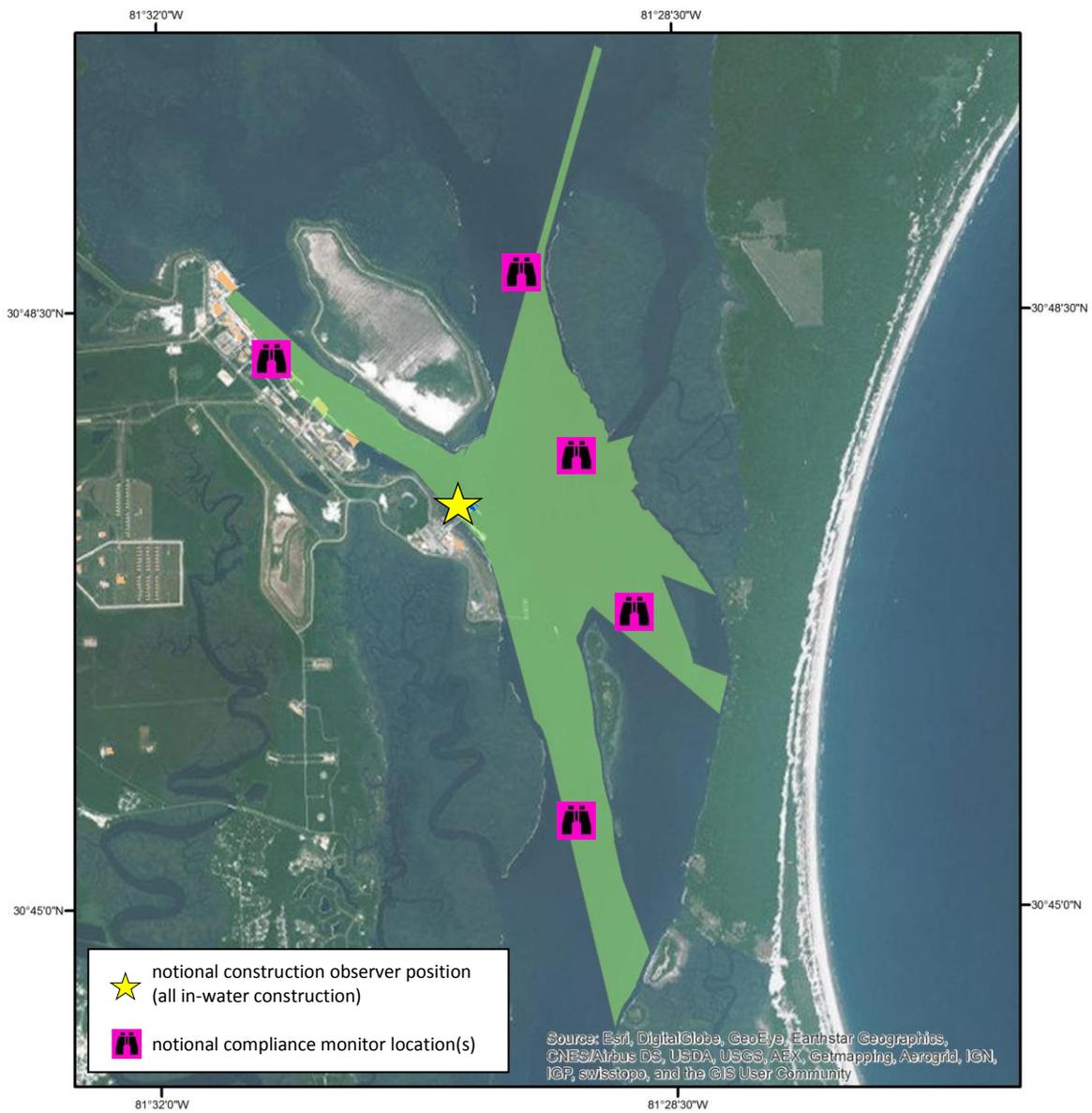
For the two demolition projects, a total of seven hundred and seventy (770) 24-inch concrete piles will be removed using a vibratory driver over the course of forty-seven (47) days. The Level A (injury) ZOI falls within the standard shutdown zone of 50 feet (15 meters) for both projects and will therefore be in effect during all pile driving activities (Table 12).

A total of four hundred and seventy (470) potential Level B exposures were calculated for both demolition projects. In order to maximize the efficient allocation of resources, the contractor will be directed to deploy at least five (5) qualified monitors to view the 38,251 foot (11,659 meter) Level B ZOI for twelve (12) of the forty-seven (47) projected days of active driving. The results of the twelve-day compliance monitoring effort will be extrapolated to the number of active driving days to provide an estimate of the actual number of Level B exposures. Figure 15 illustrates the modeled ZOI and notional compliance monitor locations; these locations are subject to change based on weather conditions and other variables.

**Table 12. Projects 6A and 6B – Demolition of TPS Pier and North Trestle (FY 2022)**

Project	Pile Details			Action	Max. Days	Construction Observer Zone	Compliance Monitoring Zone
	Number	Size	Material				
TPS Pier Demolition	649	24-inch	concrete	vibratory removal	41	50 ft (15 m) daily	5 or more qualified monitors will view all waters within the 38,251 ft (11,659 m) zone on a minimum of 12 days
North Trestle Demolition	121	24-inch	concrete	vibratory removal	6		

<sup>1</sup>Acoustic data collection will be performed during this project



**Figure 14. Projects 6A and 6B – TPS Pier and North Trestle Compliance Monitoring Zone (FY 2022)**

#### **4.0 REPORTING**

Monitoring reports will be provided to NMFS in accordance with permit requirements and timelines.

#### **5.0 BOTTLENOSE DOLPHIN SURVEYS**

Subject to the availability of federal funding appropriations by the U.S. Congress for this purpose, additional work will be performed to describe the spatial and temporal distributions of bottlenose dolphins and their densities in Kings Bay and areas of Cumberland Sound that may be affected by pile driving noise. Surveys will be performed as soon as practicable.

#### **6.0 ACOUSTIC DATA COLLECTION**

Acoustic data collection will be performed during pile driving associated with the Tug Pier, UMC Layberth, and TPS Pier projects. Data will be incorporated into the Navy's source level database to enhance accuracy of propagation modeling. This effort will also provide improved proxy source levels for projects on the southeast coast of the U.S. through implementation in typical bathymetric / hydrologic conditions.

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## **Attachment 1**

### **Construction Conditions for Protected Marine Species**

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## Southeast Region Marine Mammal & Sea Turtle Viewing Guidelines

### **Limit your viewing time.**

- Prolonged exposure to one or more vessels increases the likelihood that marine mammals will be disturbed.
- Viewing periods of greater than 1/2 hour should be undertaken only if you are absolutely sure that you are not causing disturbance or any changes in behavior.
- Since individual animals' reactions will vary, carefully observe all animals and leave the vicinity if you see signs of disturbance.
- Your vessel may not be the only vessel in the day that approaches the same animal(s); please be aware of cumulative impacts.

### **Travel in a predictable manner.**

- Marine mammals appear to be less disturbed by vessels that are traveling in a predictable manner.
- The departure from a viewing area has as much potential to disturb animals as the approach.
- If a marine mammal or sea turtle approaches, put your engine in neutral and allow the animal to pass.
- Never pursue or follow marine wildlife.
- Never attempt to herd, chase, or separate groups of marine mammals or females from their young.
- Avoid excessive speed or sudden changes in speed or direction in the vicinity of animals.

### **If you need to move around marine wildlife, do so from behind (i.e., never approach head-on).**

- Vessels that wish to position themselves so that the animals would pass them, should do so in a manner that stays fully clear of the animal's path.

### **Be aware that marine mammals may surface in unpredictable locations.**

- Breaching and flipper slapping whales may endanger people and/or vessels.

### **Be on the look-out for seals.**

- As their populations expand, seals are being found in southeastern states with increasing regularity, especially in North Carolina.
- Viewing or approaching seals hauled out on land should be done without the animal's awareness of your presence.
- Avoid detection by sight, smell, or sound (e.g., by staying hidden behind natural cover and approaching viewing areas quietly by avoiding conversation and noisy movements).
- Pups are often left alone when the mother is feeding. *They are not abandoned and should be left alone.*

### **Marine mammals are more likely to be disturbed when more than one boat is near them.**

- Avoid approaching the animals when another vessel is near.
- Always leave marine mammals an "escape route."
- When several vessels are in an area, communication between operators will help ensure that you do not cause disturbance.

### **Marine mammals have sensitive hearing and many species communicate by vocalizing underwater.**

- Underwater sound produced by a vessel's engines and propellers can disturb these animals.

**Cautiously move away from the animals if you observe any of the following behaviors:**

- Rapid changes in direction or swimming speed.
- Erratic swimming patterns.
- Escape tactics such as prolonged diving, underwater exhalation, underwater course changes, or rapid swimming at the surface.
- Tail slapping or lateral tail swishing at the surface.
- Female attempting to shield a calf with her body or by her movements.

**Even if approached by a marine mammal or sea turtle:**

- Do not touch or swim with the animals.

**Never feed or attempt to feed marine mammals or sea turtles.**

- It can alter their natural behavior, make them dependent on handouts, and can be harmful to their health.
- Marine mammals, like all wild animals, may bite and inflict injuries to people who try to feed them.

*Note: NMFS regulations at 50 CFR § 216.3 strictly prohibit feeding or attempting to feed a marine mammal in the wild.*

Close approaches by humans to marine mammals may cause them to lose their natural wariness and become aggressive towards people. They are also vulnerable to injury or death from entanglement in fishing gear or boat strikes. NMFS strongly encourages people to follow the guidelines presented here while spending time on or near the water.

Please review these guidelines and make the "[Code of Conduct](#)" personal practice. Bring binoculars along on a viewing excursion to assure a good view from the recommended viewing distances. Together we can assure marine mammal viewing will be as rewarding as it is today for many generations to come.

## **Special Provisions for Manatee**

The following conditions are intended as a minimum to protect this species and its habitat during any activities that are in close proximity to the known locations of this species on this project.

1. The permittee agrees that all personnel associated with the project will be advised that there are civil and criminal penalties for harming, harassing or killing manatees, which are protected under the Endangered Species Act of 1973 and the Marine Mammal Protection Act of 1972. The permittee and contractor will be held responsible for any manatee harmed, harassed, or killed as a result of construction activities.
2. All on-site project personnel are responsible for observing water-related activities for the presence of manatees. All construction and activities in open water will cease upon sighting of manatees within 100 feet of the project area. Construction activities will not resume until the manatees have left the project area for at least thirty minutes.
3. A trained spotter provided by the Contractor, shall be onsite for sightings of manatees during the construction of the project. Personnel designated by the Contractor shall receive training by the Georgia Department of Natural Resources, Coastal Resources Division, Brunswick, Georgia. The contact person for the Georgia Department of Natural Resources is Clay George at 912-262-3336.
4. Siltation barriers will be made of material in which manatees cannot become entangled, are properly secured, and are regularly monitored to avoid manatee entrapment. Barriers must not block manatee entry to or exit from essential habitat.
5. All vessels associated with the project will operate at “no wake/idle” speeds at all times while in the construction area. All vessels will follow routes of deep water whenever possible.
6. Propellers on all boats 21 feet or less in length shall be equipped with propeller guard systems, approved by the Project Manager, designed to prevent harm to manatees.
7. Extreme care will be taken in lowering equipment or materials, including, but not limited to piles, sheet piles, casings for drilled shaft construction, spuds, pile templates, anchors, etc., below the water surface and into the stream bed; taking any precaution not to harm any manatee(s) that may have entered the construction area undetected. All such equipment or materials will be lowered at the lowest possible speed.
8. Prior to initiation of construction, the permittee shall install at least two (2) temporary manatee awareness construction signs in locations clearly visible from the navigation channel (Attachment A). The signs shall be displayed and maintained throughout construction and shall be removed by the permittee upon completion of construction. Placement of all signs shall be as approved by the Georgia Department of Natural

Resources, Coastal Resources Division, Brunswick, Georgia. The contact person for the Georgia Department of Natural Resources is Clay George at 912-262-3336.

9. All temporary construction materials will be removed upon completion of the work, and salt marsh areas will be restored. No construction debris or trash will be discarded in the water.

10. Any dead manatee(s) found in the project area must be secured to a stable object to prevent the carcass from being moved by the current. The Contractor shall immediately notify the Government Project Manager who in turn will notify the Environmental Office at 912 573-4678. The Environmental Office will notify:

- a. the U. S. Fish and Wildlife Service, Coastal Sub-Office at 912-832-8739 and,
- b. the GDNR, Nongame Conservation Section at 912-262-3336.

11. The Contractor shall immediately report to the Government Project Manager any incident (e.g. collisions, injuries and mortalities) which occurs that causes harm or could be detrimental to the continued existence of the manatee along the project corridor. The Government Project Manager will in turn notify the Environmental Office at 912 573-4678. The Environmental Office will notify:

- a. the U. S. Fish and Wildlife Service, Coastal Sub-Office at 912-832-8739 and,
- b. the GDNR, Nongame Conservation Section at 912-262-3336 or, 800-2-SAVE-ME.

12. In the event of injury or mortality of a manatee, all aquatic activity in the project area must cease pending section 7 consultation under the Endangered Species Act with the U. S. Fish and Wildlife Service and the lead Federal agency.

13. The Contractor shall keep a log detailing sightings, collisions, or injury to manatees, which have occurred during the contract period. Following project completion, the log and a report summarizing the any incidents and / or sightings of manatees will be submitted to the Government Project Manager and Environmental Office.

14. The Environmental office will submit above mentioned log to:

- a. the U. S. Fish and Wildlife Service, 4980 Wildlife Drive, NE, Townsend, Georgia 31331 and,
- b. the GDNR, Nongame Conservation Section, One Conservation Way, Brunswick, Georgia 31520

Attachment A

**MARINE FACILITY  
MANATEE SIGNS  
PLACEMENT PROCEDURES**



The West Indian manatee (*Trichechus manatus*) is an endangered species throughout its range. Manatees are protected at the Federal level by the Endangered Species Act of 1973 and the Marine Mammal Protection Act of 1972, as amended. Protection measures such as these signs are necessary to increase boater awareness. The increased level of Georgia coastal development and associated marinas and boat traffic will increase the probability of negative impacts to the seasonal manatee population. Manatees inhabit Georgia waters from March through November. The main threat to manatee populations is human related boat/barge collisions. Raising boater awareness and educating the public is necessary for manatee conservation in Georgia waters and has been proven effective.

The informational/educational display sign, "Manatee Habitat", is intended to increase boater awareness of manatees that are present in Georgia waters. This sign informs boaters of the potential threat boats pose to the animals and how to help decrease negative impacts caused by those vessels. Although the placement of these signs is mandatory and required by permit, they are informative and non-regulatory in nature.

**Procedure for Approval of Sign Installation:**

1. The applicant should forward a project site plan, including the proposed location for the permanent signs to: Manatee Sign Approval, Nongame Conservation Section, Department of Natural Resources, One Conservation Way, Brunswick, Georgia 31520. The applicant should also include a chart indicating the location of the facility in relation to waterways, location within a

given county (specify county name), Contact person with phone number, and the Permit and/or Lease number associated with the project

2. The Nongame Conservation Section of the Georgia Department of Natural Resources (GDNR) will review the proposed sign placement site plan and will respond to the applicant within 30 days. If the proposed location is unacceptable, guidance on an alternate site will be provided. The contact person should notify the Nongame Conservation Section when sign placement has been completed (912-264-7218). A photograph(s) of the posted manatee signage at your facility must be submitted with the required permit compliance form to the Marsh and Shore Regulatory Program of the Coastal Resources Division/Georgia Department of Natural Resources.
3. If during a site visit, approved signs, and their locations are found not to be in compliance with the instructions given in this document, relocation or addition of signs will be required. Annual site visits will be conducted to document sign placement and condition. All signs locations will be recorded in the GDNR manatee database.

**Approved Sign Suppliers:**

The signs are available through the companies listed below and may also be available from other local suppliers throughout the state. Permit/lease holders, marinas, and boat docking/launching facilities should contact sign companies directly to obtain pricing information and arrange for shipping and billing.

**Approved Suppliers of Manatee Signs:**

Grafix, Inc.  
455 Montgomery Street  
Post Office Box 1028  
Savannah, Georgia 31402  
Voice: 912-691-1117  
Fax: 912-232-3845

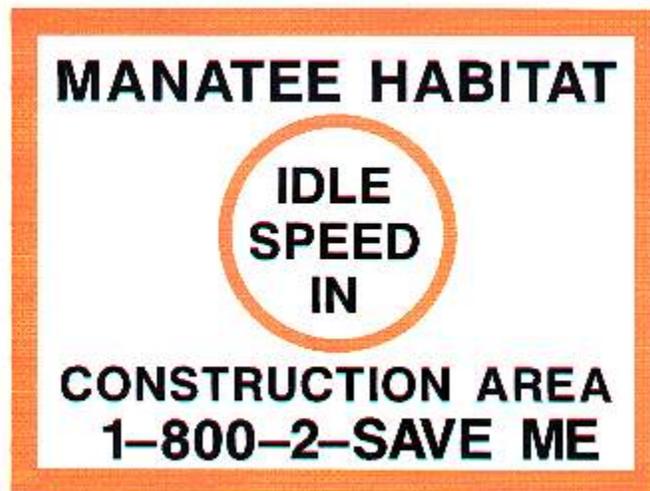
Image Sign Company  
785 King George Blvd., Bldg. 3  
Savannah, Georgia 31419  
Voice: 912-961-1444  
Fax: 912-961-1499

Doug Bean Signs, Inc.  
160 Dean Forest Rd  
Savannah, Georgia 31408  
Voice: 912-964-1900  
Fax: 912-964-2900

Fendig Signs  
411 Arnold Rd  
Saint Simons Island, Georgia 31522

Good & Associates  
Saint Simons Island, Georgia  
(912) 638-7664

### **Temporary Construction Signs**





**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**NATIONAL MARINE FISHERIES SERVICE**  
Southeast Regional Office  
263 13th Avenue South  
St. Petersburg, FL 33701

## **SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS**

The permittee shall comply with the following protected species construction conditions:

- a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.
- b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.
- c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.
- d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.
- e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.
- f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.
- g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

Revised: March 23, 2006

O:\forms\Sea Turtle and Smalltooth Sawfish Construction Conditions.doc



**Attachment 2**

**Marine Species Observation / Monitoring Form**

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Project name: \_\_\_\_\_

Lead observer: \_\_\_\_\_

Page \_\_\_\_\_ of \_\_\_\_\_

Project location : \_\_\_\_\_

Lead observer contact info: \_\_\_\_\_

Date: \_\_\_\_\_

Effort Info				Sighting Info*				
Event	Time of Event (start and end)	Observer*	Visibility Info (e.g. wind, glare, swell)	Species	Distance to Animal (from Observer)	# of Animals Group Size (min/max/best) # of Calves	Animal Movement Relative to Pile Driving Equipment/ Behavior Code	Behavior Change/ Response to Activity/ Other Comments
Start Monitoring – End Monitoring Soft Start – Vibratory – Impact Sighting – Delay – Shutdown	: :				yds	/ / ___ calves	toward or away parallel none Behavior Code: _____	
Start Monitoring – End Monitoring Soft Start – Vibratory – Impact Sighting – Delay – Shutdown	: :				yds	/ / ___ calves	toward or away parallel none Behavior Code: _____	
Start Monitoring – End Monitoring Soft Start – Vibratory – Impact Sighting – Delay – Shutdown	: :				yds	/ / ___ calves	toward or away parallel none Behavior Code: _____	
Start Monitoring – End Monitoring Soft Start – Vibratory – Impact Sighting – Delay – Shutdown	: :				yds	/ / ___ calves	toward or away parallel none Behavior Code: _____	
Start Monitoring – End Monitoring Soft Start – Vibratory – Impact Sighting – Delay – Shutdown	: :				yds	/ / ___ calves	toward or away parallel none Behavior Code: _____	
Start Monitoring – End Monitoring Soft Start – Vibratory – Impact Sighting – Delay – Shutdown	: :				yds	/ / ___ calves	toward or away parallel none Behavior Code: _____	
Start Monitoring – End Monitoring Soft Start – Vibratory – Impact Sighting – Delay – Shutdown	: :				yds	/ / ___ calves	toward or away parallel none Behavior Code: _____	

\*Note location of observer and any protected marine species sightings with date/time on project map

**Sighting Codes**  
**(Sighting cue & Behavior Codes)**

**Behavior codes**

Code	Behavior	Definition
BR	Breaching	Leaps clear of water
CD	Change Direction	Suddenly changes direction of travel
CH	Chuff	Makes loud, forceful exhalation of air at surface
DI	Dive	Forward dives below surface
DE	Dead	Shows decomposition or is confirmed as dead by investigation
DS	Disorientation	An individual displaying multiple behaviors that have no clear direction or purpose
FI	Fight	Agonistic interactions between two or more individuals
FO	Foraging	Confirmed by food seen in mouth
MI	Milling	Moving slowly at surface, changing direction often, not moving in any particular direction
PL	Play	Behavior that does not seem to be directed towards a particular goal; may involve one, two or more individuals
PO	Porpoising	Moving rapidly with body breaking surface of water
SL	Slap	Vigorously slaps surface of water with body, flippers, tail etc.
SP	Spyhopping	Rises vertically in the water to "look" above the water
SW	Swimming	General progress in a direction. Note general direction of travel when last seen [Example: "SW (N)" for swimming north]
TR	Traveling	Traveling in an obvious direction. Note direction of travel when last seen [Example: "TR (N)" for traveling north]
UN	Unknown	Behavior of animal undetermined, does not fit into another behavior

Sighting Form revised October 22, 2015

NAVFAC SOUTHEAST POCs: Jered Jackson, Email at [jered.jackson@navy.mil](mailto:jered.jackson@navy.mil) or Phone at 904-542-6308; and Taura Huxley-Nelson, Email at [taura.a.huxley1@navy.mil](mailto:taura.a.huxley1@navy.mil) or Phone at 904-542-6307

## **Attachment 3**

### **Sample Acoustic Data Collection Scope of Work**

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## SCOPE OF WORK

### Pile Driving Noise Measurement at Atlantic Fleet Naval Ports

#### I. STATEMENT OF WORK

The purpose of this Task Order is to initiate a data collection effort to measure underwater and airborne noise associated with pile driving activities to be used as future inputs to acoustic propagation models and marine species take calculations. The goal of the project is to have representative source level estimates for east coast marine environment and naval ports, expand our dataset to include pile types and methods commonly used out east, and collect the data in manner similar to recommendations set forth in the Caltrans Guidance Manual.

#### A. Services Required:

##### Task 1. Pile Driving Noise Measurement, Analysis, and Reporting –

- a.) Kickoff meeting via phone conference to discuss specifics about project location and logistics. This meeting will occur at least 45 days prior to the expected data collection start date. Equipment and supplies for acoustic measurements will be procured, assembled, calibrated, and verified before shipping to the project location.
- b.) The contractor will send one Senior Acoustic Consultant and one Staff Consultant to travel to the project location and collect pile driving noise data to estimate airborne and underwater source levels at a specified Navy port or pier side location along the U.S. East coast. Monitoring would include two underwater positions and one airborne monitoring position. These exact positions would be determined in the field during consultation with Navy personnel. Each monitoring event is envisioned to include two days of travel and up to 3 days of onsite monitoring.
- c.) The Contractor would provide all measurement and recording equipment to conduct this task. It is assumed that a work platform (existing structure, work barge or boat and driver) will be provided by the Navy or their Contractor so that these measurements can be made. In addition, it is assumed that line and weights for hydrophones, as well as special safety gear such as lifejackets would be provided. In addition, security issues regarding access to the measurement locations would be arranged by the Navy.
- d.) The intention is to gather data on sound levels representative of Navy pile driving activities in Atlantic Fleet naval port and Pier side locations. Underwater sound monitoring would include the measurement of peak sound pressures, root-mean-square sound pressure levels (RMS) and sound exposure levels (SEL) of impact pile driving pulses. Typical ambient levels would be measured during lulls in the pile installation and reported in terms of RMS sound pressure levels. Frequency spectra in narrow-band or 1/3<sup>rd</sup> octave bands would be provided for pile driving sounds.
- e.) The methods and equipment used in the hydro-acoustic monitoring would follow recommendations set forth in the Caltrans Guidance Manual. The underwater acoustic recordings or measured data would be analyzed to provide peak, RMS and SEL sound pressure levels along with narrow or 1/3<sup>rd</sup> octave band frequency spectra. The airborne acoustic data would be provided in both unweighted and A-weighted RMS sound pressures and also include 1/3<sup>rd</sup> octave band sound pressure levels. The Leq for each measured pile driving event (in unweighted and A-weighted format) would also be provided.
- f.) The contractor will analyze results and provide a draft and final site specific technical report with a summary of the average source level values to use in the Navy's future acoustic modeling efforts within 75 days of completion of the monitoring.

The contractor should assume a project location in Norfolk, VA for cost estimation purposes. Assume travel from Petaluma, CA to Norfolk, VA for two persons, leaving on Monday and return on Friday, with three days in the field with one rental car.

**Option Tasks 2 - 6.** The contractor will complete the work specified in Task 1 at a new specified Atlantic Fleet Navy port or pier side location, for each exercised option.

**Option Task 7.** The contractor will provide a Comprehensive Report including all site specific reports and summaries into one easy to reference report. The contractor will provide a TOC for review by the NTR prior to a Draft and Final report submission.

#### **B. Completion Schedule:**

The Contractors shall adhere to the following schedule, unless otherwise approved by the NTR.

##### **Event**

Kickoff meeting	30 days prior to field data collection
Draft Site Specific Technical Report	45 days after field data collection
Final Site Specific Technical Report	75 days after field data collection
TOC for Comprehensive Report	TBD
Draft Comprehensive Report	TBD
Final Comprehensive Report	TBD

Period of performance would be till Sept 30<sup>th</sup> 2014

#### **C. Deliverables:**

Deliverables will be made by express mail and/or by electronic delivery. Check with the NTR prior to shipping for specific delivery instructions.

The Navy and Marine Corps standard desktop computing software is Microsoft Office. Final Reports and other text documents shall be provided in Microsoft Word 2007 format and Portable Document Format (PDF) readable with Adobe Acrobat 9 unless other mutually agreeable formats are determined. Adobe PDF files should include a complete linked table of contents and all mention of tables or figures within the text of the report should be linked directly to the referenced table or figure. Spreadsheet files shall be provided in Microsoft Excel format. Database files shall be provided in Microsoft Access format, unless specified otherwise, as approved by the NTR. All text, spreadsheet, and database files shall be delivered on CD-ROM in Joliet File System format, DVD or other electronic media as approved by the NTR. All GIS files and associated data shall be delivered in electronic format. All vector (point, line, or polygon) spatial (GIS) data must be delivered in ESRI shapefile format (.shp). Raster spatial data, including aerial photography, satellite imagery, and digital raster graphics, shall be submitted in Tagged Image Format (TIF) or in file format approved by the NTR. Grid or cell-based digital raster spatial data shall be submitted in either ArcInfo Grid format or ASCII Grid format. All spatial data shall be unprojected. The vertical reference elevation is Mean Sea Level (MLLW for bathymetry) with the relevant control data provided. Spatial data and metadata shall be submitted together on CD ROM.

### **III. GENERAL INFORMATION**

#### **A. Meetings:**

A Kick-off meeting may be held via teleconference. Additional progress updates will be conducted as necessary via teleconference. Additional meetings are not anticipated to be frequent, but may be required between major milestones or when challenges arise. The Contractor will be

responsible for sending meeting minutes to the NTR and USFF POCs after all scheduled meetings summarizing what was discussed/decided in said meetings.

**B. Navy Technical Representative:**

**TBD**

**C. Contract Administration:**

The Contractor shall receive direction on all elements of this contract from Ms. Kimberly Pryor, Contract Specialist (CS). Correspondence should be addressed as follows:

**TBD**

**D. Contractor's Evaluation:**

Upon completion of this contract, the NTR will prepare an evaluation of the Contractor's performance under this contract. The completed evaluation will be retained in the Contractor's file at NAVFAC Atlantic for review and consideration by future selection boards.

**E. Payment:**

Upon approval by the NTR, payment will be authorized on a monthly basis (as requested) to the Contractor. Payment authorization by the NTR shall be based solely on the percentage of the entire project completed within the period for which the Government is billed. An up-to-date status report that clearly indicates the actual work performed during the specific billing period must accompany each billing statement before payment is authorized by the NTR.

**Additional details pending**

**G. Release of Information:**

US Navy shall retain rights to access all digital files, hard-copy products, and related materials and information (including all data collected during the contracted field work and associated analysis products) for the purposes of environmental planning and regulatory compliance requirements. The primary researchers shall retain rights to unrestricted analysis and publication of data and results without requirement of authorization from the NTR.

**H. Quality of Work:**

The Contractor will be responsible for the professional and technical accuracy in addition to the coordination of all work or services rendered. The products submitted by the Contractor will represent the best solutions possible and will be reviewed by the Navy for compliance with government requirements and criteria. The contractor, at no additional cost to the government, will correct errors and/or deficiencies in the final product resulting from the Contractor's performance that are designated within three months of final product delivery and that can be corrected by the Contractor within 24 man-hours.

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