

# Southeast Coast Network

National Park Service  
Inventory and Monitoring Division



## Standard Operating Procedure 1.2.19

### *Parkwide Assessment Preparation for Fieldwork—Version 1.0*

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## Summary

This standard operating procedure (SOP) outlines the necessary procedures to prepare for fieldwork associated with the parkwide assessment of estuarine water and sediment quality. The purpose of this SOP is to ensure that the field team uses a standardized approach from year to year and from park to park. The techniques and procedures outlined in this SOP are based on five years of SECN protocol implementation.

## Revision Log

| Revision Date | Author | Changes Made | Reason for Change | New Version # |
|---------------|--------|--------------|-------------------|---------------|
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## Parkwide Assessment Activities and Workflow Summary

An overview of parkwide assessment activities and workflow are presented in Figure 1. SOPs are presented left to right in the general order of operations for each activity. This SOP (1.2.19) pertains to the Pre-Departure activity.

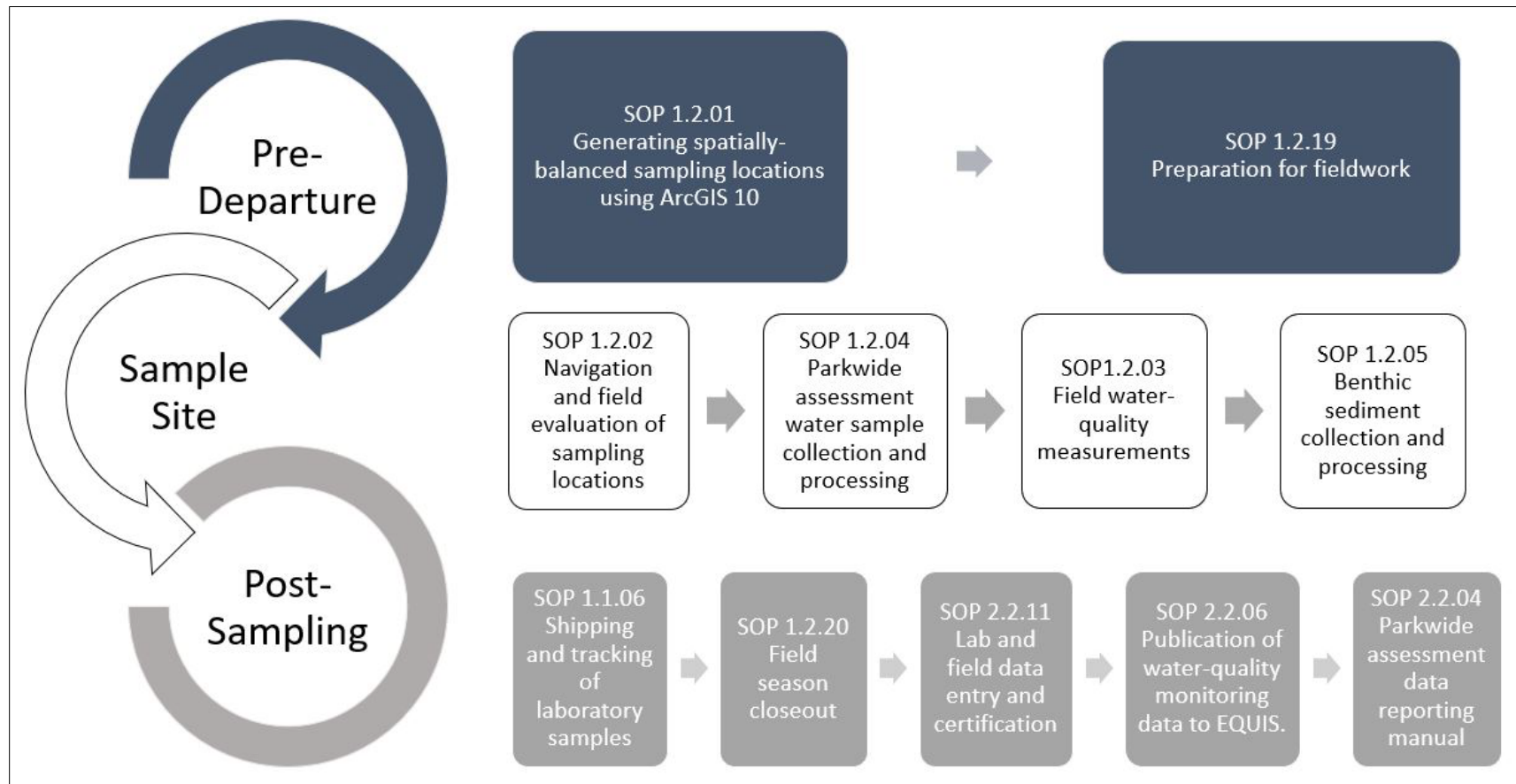


**Figure 1.** Parkwide assessment activities and workflow. SOPs are presented left to right in the general order of operations for each activity.

## Equipment/Materials List

- Hardware
  - Computer with access to internet
  - Printer (color)
  - Marine chart plotter
  - Handheld Global Positioning System (GPS)
- Software
  - ArcGIS
  - Google Earth
  - Garmin Home Port
  - DNR Garmin
  - Microsoft Excel
  - Microsoft Word

## Overview

Successful assessment of water and sediment quality throughout a park hinges to a large extent on pre-fieldwork planning and preparation. Proper planning can increase navigational efficiency in the field, foster clear communication with the park, and reduce in-the-field selection of alternate sample locations. The following procedures serve as a general guide for what must be completed prior to departure for fieldwork and sample site activities shown in Figure 1. The order in which each topic is presented is the general order in which they should occur.

## Procedures

### Identify Sample Dates

The sample window for parkwide assessment of water and sediment quality is July through September and is based on the time frame in which biota experience the greatest stress due to prevalent hypoxia (low dissolved oxygen) and elevated water temperatures (Gregory et al. 2013). While the sample window is July through September, it is advisable to select sample dates in mid to late July to avoid increased tropical storm and hurricane activity in late August and September. Sample dates will be identified no later than the February preceding the field season. Four full days per park will be allotted for fieldwork, with an additional day allotted for potential weather delays.

## **Confirm Contracts are in Place**

The contracting process will not be covered here, but the Aquatic Ecologist will work with the Program Manager to ensure that all analytical contracts are in place well before the field season. The following contracts are necessary depending on the year (for the sample rotation see Gregory et al. [2013]).

1. Laboratory analyses of water samples for nutrients and chlorophyll *a* (applicable each year).
2. Laboratory analyses of sediment samples for organic contaminants/metals, grain size and total organic carbon (only applicable for years with assessment of sediment quality).

## **Make Travel Arrangements**

After sample dates have been identified, travel arrangements will be made. Travel arrangements include submission of a travel authorization and reservation of lodging. These arrangements are made early in the year since peak visitation to coastal parks typically occurs in summer.

## **Lodging Considerations**

- **Parking and Access:** Before making a reservation, ensure adequate parking and access for both the truck and boat. Many lodging options have very tight parking and/or no turn around available.
- **Sample Preservation:** Water and sediment samples must be maintained frozen or chilled respectively until they can be submitted to the lab. For this reason, it is best to seek out lodging with a full-sized refrigerator and freezer. In years where sediment is not being collected it may be possible to keep water samples in a cooler on dry ice rather than in a freezer. When possible, seek lodging that will facilitate easy access with heavy coolers filled with samples (i.e., avoid stairs).
- **Proximity to boat ramp:** Staying in lodging near the most frequently used boat ramp during the assessment will substantially reduce travel time each day.
- **Availability of wet ice and fuel:** Before making lodging reservations, consider that ice and boat fuel will likely need to be purchased daily (wet ice in years with sediment samples). Ideally the route between the boat ramp and lodging will include a gas station.
- **Charging and Washdown:** When possible, it is convenient to find lodging where an extension cord can be run to the boat so that batteries can be charged on board each night. In addition, lodging options with a hose and freshwater expedite rinsing of the boat each evening.

## **Draft Field Maps**

Following the generation of sample locations as outlined in SOP 1.2.01 *Park-wide Assessment Spatially-Balanced Sampling Location Generation Using ArcGIS—Version 2.0* (Cooper and Starkey 2022), maps are drafted that display all primary and alternate sample locations. There is a single “overview” map and multiple detailed “area of interest” (AOI) maps, all of which use high resolution imagery as the base (see examples in Appendix A, Figures A-1 through A-3). Detailed maps need to

be of high enough resolution to allow the field crew to see features that might prevent access to sample locations or present navigational hazards (e.g., sand bars, oyster beds, inlets). These maps will be used for preliminary site selection and to aid navigation between sites in the field. At minimum, maps include the following:

- Primary and alternate sample sites
- Location of boat ramps
- Recent high-resolution imagery
- Park boundary
- Scale bar
- North Arrow

### **Review Sample Sites and Select Alternates if Required**

The sample frame from which random sites are drawn will limit the number of sites that are inaccessible. However, given that estuaries are dynamic landscapes with shifting channels and substrate, field conditions may have changed since the random sites were generated. For this reason, it is best practice to review all sites for accessibility before finalizing maps and attempting to access sites in the field.

- Use the detailed field maps with recent high-resolution imagery to view each primary sample site and ask the following questions:
  - Is the site accessible (i.e., not on land, an obvious oyster bed, or sand bar)?
  - Is the site likely to be accessible at low tide?
  - Is the site in a restricted zone (naval, shipping, or habitat) or area with hazards that would prevent sampling?

In some cases, reviewing the sample locations on Google Earth alongside aerial imagery in a GIS may provide additional insight into field conditions. Based on this initial evaluation, determine if the proposed “primary” site needs to be replaced by the lowest-numbered unused “alternate” site from the list generated by procedures outlined in SOP 1.2.01 (Cooper and Starkey 2022).

Note that if an alternate site is selected, it is named for the intended sample site for which it is replacing. For example, station CUIS27\_2020 was determined to be inaccessible based on aerial photos and is to be replaced by CUIS-Alt02\_2020. On the final map and list of “primary” sites to be sampled, CUIS-Alt02\_2020 will be referred to as CUIS27\_2020. This is consistent with how alternate sites are named in the field (see SOP 1.2.02 *Park-wide Assessment Navigation and Field Evaluation of Sampling Locations*—Version 2.0 [Starkey and McCay 2022]). Discard (i.e., cross-off the list) the sample point that is inaccessible.

After evaluating every sample location, generate a final list of “primary” sites. This list will be used to create the final field maps and coordinates uploaded to the GPS/marine chart plotter.

### **Produce Final Field Maps, Coordinates and Upload to GPS**

1. After final selection of the sample sites, all field and overview maps need to be updated to reflect the selection of “alternate” sites. Save maps in PDF format.
2. Print all maps in color on water-resistant paper (e.g., Rite in the Rain).
3. Upload coordinates for all primary and alternate sites to the marine chart plotter and handheld GPS unit. Exact directions for completing this process depend on the make and model of the chart plotter and GPS unit. Follow manufacturer instructions. Use of Garmin Homeport and DNR Garmin may be required.

### **Generate Tide Predictions for Sample Dates/Locations**

After the intended sample dates (see above) and the sample locations (SOP 1.2.01 [Cooper and Starkey 2022]) have been determined, generate the tide predictions. Knowing the tidal schedule and range for the intended sampling window and locations is crucial for determining access to the sample sites and is referenced during both planning and water sample collection. The most pertinent tide gages for each park are listed in Appendix B. Print paper copies of all predictions for each station and sample date.

### **Identify QA/QC Water and Sediment Sample Sites**

For parkwide assessment of water quality, 10% of sites are randomly selected to receive a QA/QC water sample (blank or duplicate). For parkwide assessment of sediment quality, 10% of sites are randomly selected to receive a QA/QC duplicate. These sites are identified before field work occurs. Both water and sediment QA/QC samples are generated in the same way.

1. Use Microsoft Excel to generate three random numbers between 1 and 30 using the formula =RANDBETWEEN(0,30). These numbers indicate which site will be picked for a QA/QC sample (Figure 2).
2. For each site, generate a random integer between 1 and 0 using the formula =RANDBETWEEN(0,1). A 1 indicates that the site will include a duplicate sample and a 0 indicates that a site will include a blank sample (Figure 2).
3. Identify the selected sites and QA/QC type on the planning spreadsheet.

|   | A                                                           | B                    | C                        |
|---|-------------------------------------------------------------|----------------------|--------------------------|
| 1 | <b>Random QA/QC Sample Generator for Coastal Assessment</b> |                      |                          |
| 2 |                                                             |                      |                          |
| 3 |                                                             | Site Number          | Duplicate = 1 Blank = 0  |
| 4 |                                                             | 4                    | 0                        |
| 5 |                                                             | 28                   | 0                        |
| 6 |                                                             | 8                    | 0                        |
| 7 |                                                             |                      |                          |
| 8 |                                                             | Site Number Function | Duplicate/Blank Function |
| 9 |                                                             | RANDBETWEEN(0,30)    | RANDBETWEEN(0,1)         |

**Figure 2.** Screenshot of the MS Excel spreadsheet to generate random QA/QC samples.

### Identify Boat Ramps

Locate boat ramps that will facilitate easy access to sampling sites. Cement boat ramps with designated parking areas are preferred. Always check on the condition and availability of ramps with park staff. A list of suitable ramps for each park are found in Appendix C.

### Produce Planning Spreadsheet

Given the broad spatial distribution of sample sites and potential low tide access issues at some sites, it is important to have a “game plan” for the four to five days over which sampling will occur. The sample plan informs the trip float plan, facilitates communication with park staff, and increases efficiency in the field. Screen shots of example plans are shown in Appendix D (Figures D-1 and D-2). The planning spreadsheet should be developed in Microsoft Excel and include:

1. Site ID
2. Waterbody name for each site.
3. Intended sample day (day one through five or Monday through Friday).
4. Best tidal window for sampling the site (any, rising, rising to high, high).
5. Denote potential access issues (e.g., nearby oyster beds, shallow entrances).
6. Name and station ID for the closest tide gage. This will match the tide gages used for tidal predictions. Including these on the planning sheet allows for quick cross reference in the field.
7. Best boat ramp to access the site.
8. Coordinates for the site. These are the same as those loaded in the chart plotter and GPS.
9. The field map number. Including the field map number on the planning sheet allows for quick cross reference in the field.

## Print Datasheets, Sample Tracking Forms, and Labels

1. Print the datasheets (forms) listed below on water-resistant paper (e.g., Rite in the Rain) and paperclip all datasheets for each site together to form a “packet” for each site. Forms are saved on the SECN server at  
\\INPSECNS01\SECNshare\Monitoring\EstuarineWaterQuality\Parkwide\_Assessment\Operations\Forms and Labels
2. Datasheets required for each SECN parkwide assessment site include:
  - a. Location and Event Form (see SOP 1.2.02 *Park-wide Assessment Navigation and Field Evaluation of Sampling Locations*—Version 2.0 [Starkey and McCay 2022a])
  - b. Water Sample Collection Form (see SOP 1.2.04 *Park-wide Assessment Water Sample Collection Processing*—Version 2.0 [Starkey and Gregory 2022a])
  - c. Hydrographic Profile Form (see SOP 1.2.03 *Park-wide Assessment Field Water-Quality Measurements*—Version 2.0 [Starkey and Gregory 2022b])
  - d. Sediment Sample Collection Form (if needed for the current sample rotation; see SOP 1.2.05 *Park-wide Assessment Benthic Sediment Collection and Processing*—Version 2.0 [Starkey and McCay 2022b])
3. Print the nutrient and sediment sample tracking forms referenced in SOP 1.1.06 *Estuarine Water and Sediment Shipping and Tracking of Laboratory Samples*—Version 2.0 (Starkey and McCay 2022c).
4. Print nutrient sample bottle labels referenced in SOP 1.2.04
5. Sediment sample jar labels are generally affixed to the jars by the lab. If this is not the case, print labels for sediment samples.

## Prepare, Share and Print Field Itinerary and Float Plan

Several weeks prior to fieldwork, park natural resource staff must be notified of the anticipated sample schedule and be provided with a float plan. These documents ensure that contact information for both parties are shared and that the whereabouts of SECN employees are easily identified in case of an emergency. Examples of a field itinerary and float plan for a parkwide assessment are provided in Appendix E (Figures E-1 through E-7). Field itineraries for all sample events are saved on the SECN share drive

S:\Monitoring\EstuarineWaterQuality\Parkwide\_Assessment\Operations\Field\_Itinerary\_FloatPlans

General information about pre-departure communication with parks can be found in SOP 3.1.07 *Communicating Field Operations with SECN Parks*—Version 3.1 (SECN 2021a).

1. Prepare documents
  - a. At minimum, the **field itinerary** will include:

- i. Contact information for SECN field crew.
  - ii. Contact information for primary and alternate park contacts.
  - iii. Contact information for the SECN program manager.
  - iv. Anticipated daily schedule (sample sites) and place of lodging.
  - v. Boat ramps to be used each day.
  - vi. Anticipated on and off the water times.
  - vii. Sample points plotted on a map. These are generally the same as the overview and field maps mentioned above. Park staff also appreciate a list of coordinates for all sample points. Waypoints in .kmz or .kml format are easy for parks to load into Google Earth/Maps.
- b. At minimum, the **float plan** will include:
- i. Names and emergency contact information for crew.
  - ii. Locations and times of departure and return to boat ramps.
  - iii. Information about the boat (vessel) being used to access sample sites.
2. Send draft itinerary and float plan to park contacts and SECN program manager for approval.
  3. Revise (if necessary) and send final copies to park contacts and SECN program manager.
  4. Print paper copies of the field itinerary and float plan.

### **Test Satellite Locator Beacon**

The network requires that field crews carry at least two forms of communication. The primary form of communication is a cellular phone and the secondary a satellite locator beacon (i.e., inReach, SPOT).

1. Prior to departure from the office, follow manufacturer directions to load or update names and contact information on the satellite locator beacon.
2. Add “on-the-water” and “off-the-water” messages to the device so that these messages can be sent at the touch of a button.
3. Test the device.
  - a. Notify the park and SECN emergency contact of the date and time that you will conduct a test of the device.
  - b. Send test message.

- c. Request confirmation from all parties that the test message has been received.
- d. If the test message failed to send or be received, troubleshoot and resend a second test message.

### **Load File Box and Clipboards**

Organization is key to a successful and efficient park-wide assessment of water and sediment quality. For this reason, all paperwork is stored in an easily accessible water-resistant file box. Ideally this box will also have space for pencils, permanent markers, paperclips, and a stapler. This file box will be on board the boat each day during sampling.

File box contents:

- 30 blank datasheet “packets” per park (see above)
- One folder for completed datasheet “packets” for each site
- 10 extra datasheet “packets”
- Three copies of the overview and field maps
- 60 nutrient sample labels
- Three copies of tide predictions
- One copy of the planning spreadsheet (see above)
- One list of sites to receive nutrient QA/QC samples (may be included on the planning spreadsheet)
- Two copies of parkwide assessment field-related SOPs
- One copy of the Job Hazard Analysis (JHA) for park-wide water quality
- One copy of the Job Hazard Analysis (JHA) for boating
- Shipping labels for nutrient and sediment samples (optional)
- One stapler with extra staples
- Approximately 30 paperclips
- Two large binder clips
- Two fine tip permanent markers
- Four sharpened pencils

Each crew member (2) will have designated tasks onboard the boat and will be given a clipboard in which to organize pertinent paperwork.

Two clipboards each containing:

- One list of sites to receive nutrient QA/QC samples
- One copy of the planning spreadsheet
- One copy of tidal predictions
- One field itinerary
- One pencil
- One fine tip permanent marker

### **Boat Preparation**

This section outlines boat specific preparations for parkwide assessment of water and sediment quality. Boat operation and safety is covered in SOP 3.1.02 *Safe Operation of Southeast Coast Network Watercraft*—Version 2.1 (SECN 2021b).

Ensure that the following is loaded/installed on the boat:

- Sediment crane and rope winch (see SOP 1.2.05 [Starkey and McCay 2022b])<sup>1</sup>
- Sediment sample processing table (see SOP 1.2.05)<sup>1</sup>
- Sediment Ponar sampler with line (see SOP 1.2.05)<sup>1</sup>
- One battery for cranking the boat and operating wash station<sup>1</sup>
- One battery for sediment rope winch<sup>1</sup>
- Crane (arm) to lower and raise sonde (see SOP 1.2.03 [Starkey and Gregory 2022b])
- Cradle for the marine chart plotter
- Basic socket and wrench set
- Jack plate
- Two push poles
- Two Danforth anchors with line
- One mushroom anchor with line
- Two mooring lines

<sup>1</sup> *Items needed during years in which sediment samples are to be collected.*

## **Review and sign Job Hazard Analysis (JHA)**

The entire field crew must review, update if necessary, and sign the JHA for parkwide assessment of water quality and JHA for boating. Both JHAs can be found on the SECN server at \\INPSECNS01\SECNshare\Safety\SECN SafetyPlan-JHAs\JHAs

## **Conduct a Practice Session**

One week prior to the parkwide assessment, a full practice session is completed in a freshwater lake. This practice session is treated as a real sample event in which three sample sites are assessed. The session is a complete run through of all data collection SOPs and serves to:

- Train staff
- Review methods
- Test equipment
- Document missing or broken equipment

Upon completion of the practice session samples are discarded, and all equipment issues are fixed. If the crew leader deems it necessary, a second practice session may be completed to ensure readiness for actual sample collection in SECN parks.

## **Literature Cited**

- Cooper, C. S., and E. N. Starkey. 2022. Park-wide assessment spatially-balanced sampling location generation using ArcGIS 10—Version 2.0. Southeast Coast Network Standard Operating Procedure NPS/SECN/SOP—1.2.01. Southeast Coast Network, Athens, Georgia. Available at: <https://irma.nps.gov/DataStore/Reference/Profile/2284576> (last accessed June 2022).
- Gregory, M. Brian, J. C. DeVivo, E. M. DiDonato, C. J. Wright, and E. Thompson. 2013. Protocol for monitoring estuarine water and sediment quality in selected Southeast Coast Network parks. Natural Resource Report NPS/SECN/NRR—2013/644. National Park Service, Fort Collins Colorado. Available at: <https://irma.nps.gov/DataStore/Reference/Profile/2194106> (last accessed June 2022).
- Southeast Coast Network (SECN). 2021a. Communicating field operations with SECN parks—Version 3.1. Southeast Coast Network Standard Operating Procedure NPS/SECN/SOP—3.1.07. Southeast Coast Network, Athens, Georgia. Available at: [DataStore - Standard Operating Procedure - \(Code: 2284677\) \(nps.gov\)](#) (last accessed June 2022).
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- Starkey, E. N., and D. McCay. 2022b. Park-wide assessment benthic sediment collection and processing—Version 2.0. Southeast Coast Network Standard Operating Procedure NPS/SECN/SOP—1.2.05. Southeast Coast Network, Athens, Georgia. Available at: <https://irma.nps.gov/DataStore/Reference/Profile/22284597> (last accessed June 2022).
- Starkey, E. N., and D. L. McCay. 2022c. Estuarine water and sediment shipping and tracking of laboratory samples—Version 2.0. Southeast Coast Network Standard Operating Procedure NPS/SECN/SOP—1.1.06. Southeast Coast Network, Athens, Georgia. Available at: <https://irma.nps.gov/DataStore/Reference/Profile/2284582> (last accessed June 2022).
- USEPA (EPA). 2009. National Coastal Condition Assessment: Field Operations Manual. EPA-841-R-09-003. U.S. Environmental Protection Agency, Washington, DC. 133 p.
- USEPA (EPA). 2014. National Coastal Condition Assessment: Field Operations Manual. EPA-841-R-14-007. U.S. Environmental Protection Agency, Washington, DC. 165 p.

## Appendix A. Example Field Maps

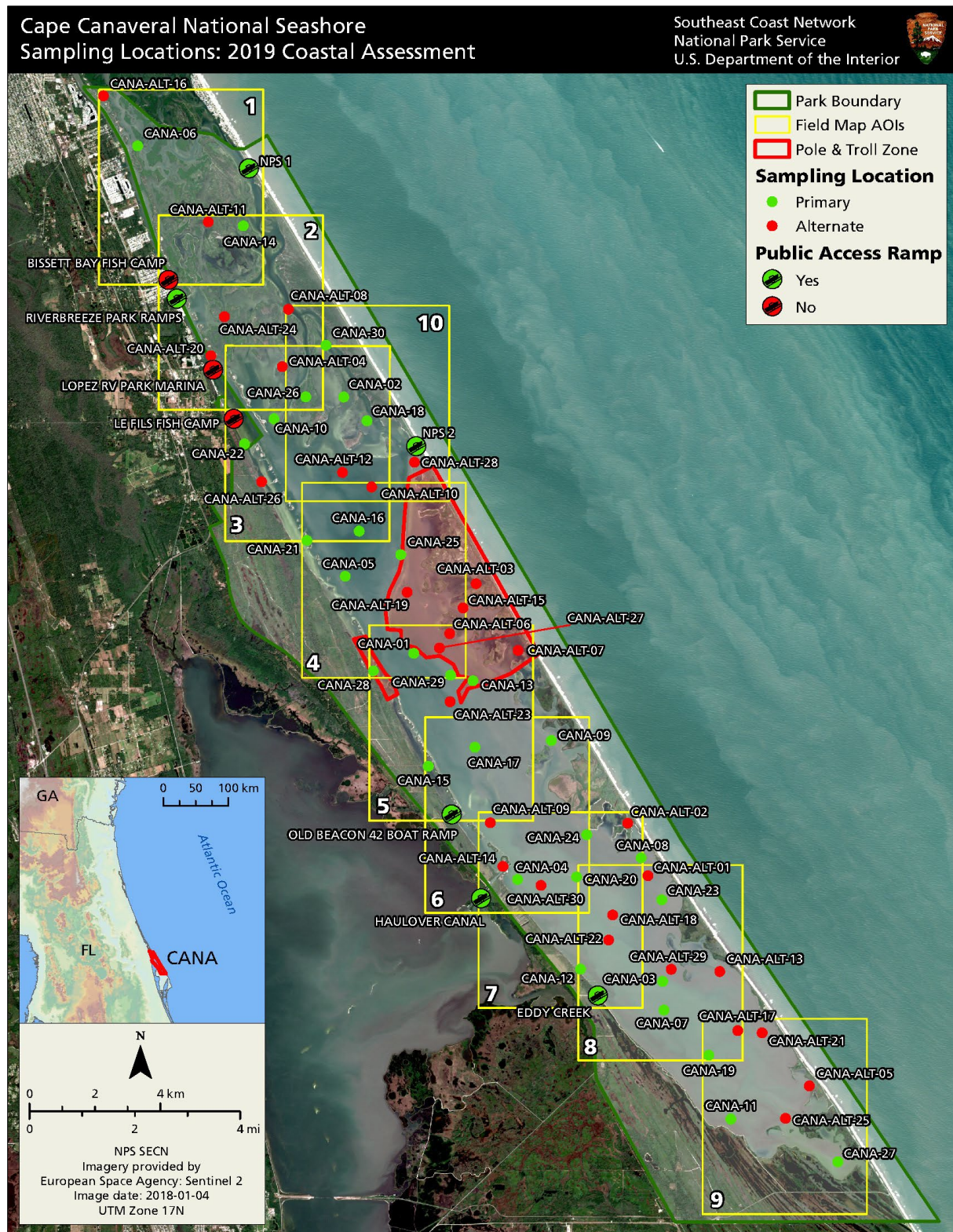


Figure A-1. Example parkwide assessment overview field map for Canaveral National Seashore (CANA).



**Figure A-2.** Example parkwide assessment field map for Canaveral National Seashore (CANA).

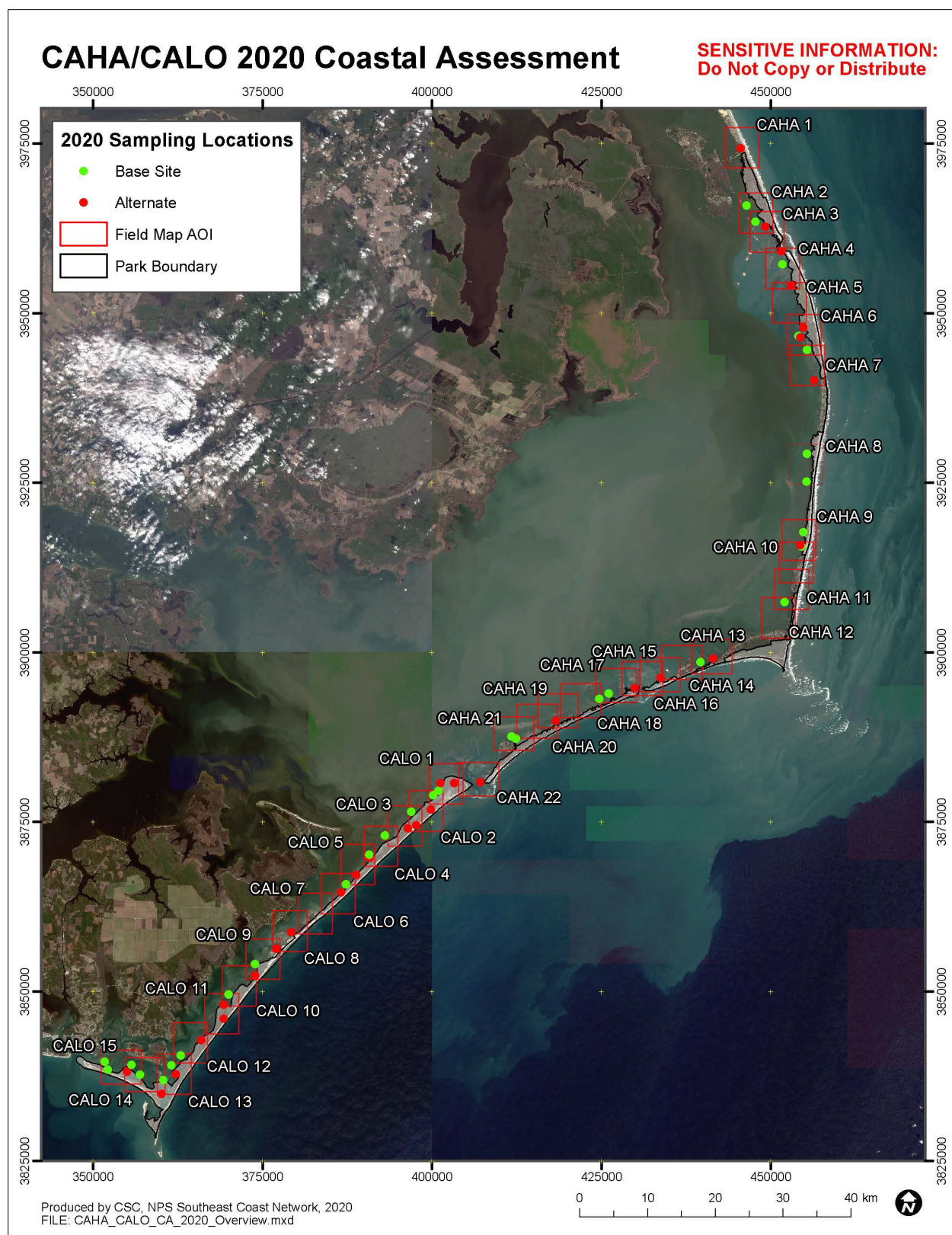


**Figure A-3.** Example parkwide assessment overview map for Cape Hatteras National Seashore (CAHA) and Cape Lookout National Seashore (CALO).

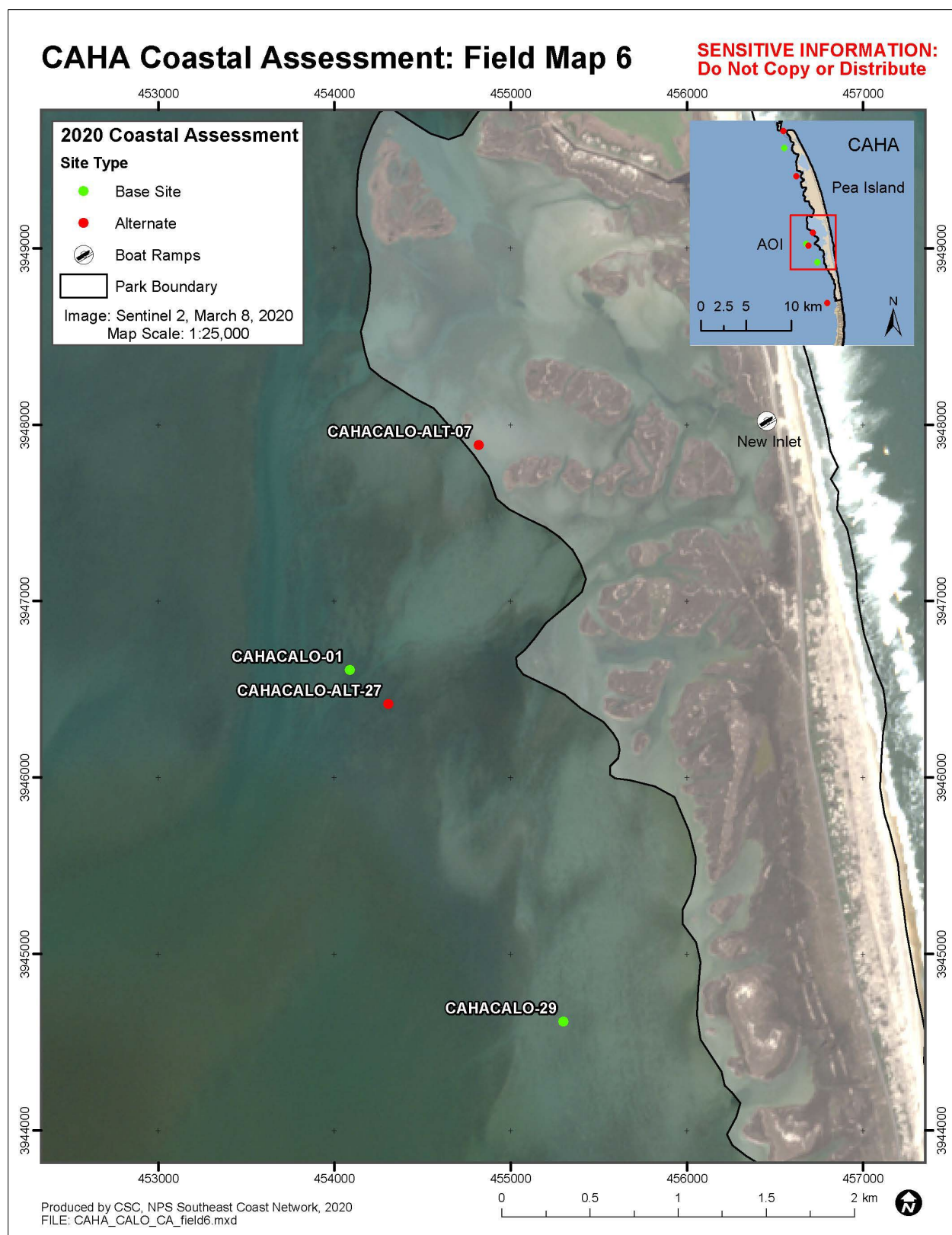


**Figure A-4.** Example parkwide assessment field map for Cape Hatteras National Seashore (CAHA) and Cape Lookout National Seashore (CALO).

## Appendix B. Useful Tide Websites and Stations

### Websites

- [Tide Predictions - NOAA Tides & Currents](#)
- [www.saltwatertides.com](http://www.saltwatertides.com)

### Stations

#### ***Cape Hatteras National Seashore (CAHA)***

Roanoke Sound Channel, NC - Station ID: 8652591

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8652591>

Oregon Inlet Bridge, NC - Station ID: 8652659

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8652659>

Rodanthe, Pamlico Sound, NC - Station ID: 8653215

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8653215>

Peters Ditch, NC - Station ID: 8653951

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8653951>

USCG Station Hatteras, NC - Station ID: 8654467

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8654467>

Hatteras Inlet, - Station ID: TEC2791

<https://tidesandcurrents.noaa.gov/stationhome.html?id=TEC2791>

Ocracoke Island, NC - Station ID: 8654792

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8654792>

#### ***Cape Lookout National Seashore (CALO)***

Ocracoke Inlet, - Station ID: TEC2793

<https://tidesandcurrents.noaa.gov/stationhome.html?id=TEC2793>

Sea Level, NC - Station ID: 8655875

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8655875>

Core Sound, NC - Station ID: 8656201

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8656201>

Shell Point, Harkers Island, - Station ID: TEC2801

<https://tidesandcurrents.noaa.gov/stationhome.html?id=TEC2801>

Beaufort Inlet Channel Range, NC - Station ID: 8656569

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8656569>

Cape Lookout, Lookout Bight, NC - Station ID: 8656841

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8656841>

**Canaveral National Seashore (CANA)**

Packwood Place, FL - Station ID: 8721222

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8721222>

Turtle Mound, FL - Station ID: 8721223

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8721223>

**Cumberland Island National Seashore (CUIS)**

Cumberland Wharf, Cumberland River, GA - Station ID: 8678688

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8678688>

St. Marys Entrance, North Jetty, GA - Station ID: 8679997

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8679997>

Kings Bay, GA - Station ID: 8679511

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8679511>

Beach Creek, GA - Station ID: 8679945

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8679945>

Dungeness, Seacamp Dock, GA - Station ID: 8679758

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8679758>

Crooked River, Cumberland Dividings, GA - Station ID: 8679242

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8679242>

Harrietts Bluff, Crooked River, GA - Station ID: 8679083

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8679083>

St. Marys, St. Marys River, GA - Station ID: 8679964

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8679964>

Fernandina Beach, FL - Station ID: 8720030

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720030>

**Fort Matanzas National Monument (FOMA)**

State Road 312, Matanzas River, FL - Station ID: 8720582

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720582>

Crescent Beach, Matanzas River, FL - Station ID: 8720651

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720651>

Fort Matanzas, FL - Station ID: 8720686

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720686>

Matanzas Inlet State Road A1A Bridge, FL - Station ID: 8720692

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720692>

Bings Landing, Matanzas River, FL - Station ID: 8720757

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720757>

**Fort Pulaski National Monument (FOPU)**

Fort Jackson, GA - Station ID: 8670678

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8670678>

North entrance, - Station ID: TEC3409

<https://tidesandcurrents.noaa.gov/stationhome.html?id=TEC3409>

Beach Hammock, - Station ID: TEC3401

<https://tidesandcurrents.noaa.gov/stationhome.html?id=TEC3401>

Fort Pulaski, GA - Station ID: 8670870

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8670870>

**Timucuan Ecological and Historic Preserve (TIMU)**

Nassau River Entrance, FL - Station ID: 8720135

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720135>

Nassauville, Nassau River East, FL - Station ID: 8720098

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720098>

Sawpit Creek, FL - Station ID: 8720143

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720143>

Tiger Point, Pumpkin Hills Creek, FL - Station ID: 8720148

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720148>

Mink Creek Ent., Nassau River, FL - Station ID: 8720119

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720119>

Halfmoon Island, FL - Station ID: 8720093

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720093>

***Timucuan Ecological and Historic Preserve (continued)***

Boggy Creek, Upper Nassau River, FL - Station ID: 8720084

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720084>

Fort George Island, FL - Station ID: 8720186

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720186>

Mayport Naval Sta., St Johns River, FL - Station ID: 8720211

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720211>

Mayport (Ferry Depot), FL - Station ID: 8720220

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720220>

Sisters Creek, FL - Station ID: 8720196

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720196>

Fulton, St. Johns River, FL - Station ID: 8720221

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720221>

Clapboard Creek, FL - Station ID: 8720198

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720198>

Simpson Creek, FL - Station ID: 8720168

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720168>

Edwards Creek, FL - Station ID: 8720145

<https://tidesandcurrents.noaa.gov/stationhome.html?id=8720145>

## Appendix C. Suitable Boat Ramps by Park

\* Indicates best option(s) in some parks.

### **Cape Hatteras National Seashore (CAHA)**

Albemarle Sound Ramp (W side of Hwy 64 bridge)

Oregon Inlet Ramp, Coast Guard St, Nags Head, NC 27959

Emergency ferry dock near 23186 Myrna Peters Rd, Rodanth, NC (PERMISSION NEEDED)

Sand Ramp- Pull off from Hwy 12 ( 35°40'30.52"N, 75°28'51.44"W) Between Alt-07 and 01.

Peters Ditch Ramp, 40075 Harbor Rd, Avon, NC (PERMISSION NEEDED)

Teach's Lair Marina, 58646 NC-12, Hatteras, NC 27943. (FEE \$10)

Ocracoke NPS Ramp, near 49 Water Plant Rd, Ocracoke, NC 27960

### **Cape Lookout National Seashore (CALO)**

Cedar Island Ramp near 115 Drift Wood Drive, Cedar Island, NC 28520

Cedar Island NW Refuge Ramp 1098 Lola Rd, Cedar Island, NC 28520

Oyster Creek Ramp, North of 1168 US Hwy 70, Davis, NC 28524

Harkers Island NPS Ramp, 1800 Island Rd, Harkers Island, NC 28531

### **Canaveral National Seashore (CANA)**

\*North NPS paved ramp (Apollo Beach) near 7150-7172 Turtlemound Rd, New Smyrna Beach, FL 32169

\*Haulover Canal ramp near Bairs Cove Rd, Mims, FL 32754

Beacon 42 Boat Ramp near 83rd Street Northwest, Brevard County, FL

### **Cumberland Island National Seashore (CUIS)**

Meeting Street Boat Ramp, Meeting St E, St Marys, GA 31558

\*Crooked River State Park Boat Launch, 6222 Charlie Smith Sr Hwy, St Marys, GA 31558

### **Fort Matanzas National Monument (FOMA)**

Green Road Boat Ramp, 199 Green Rd, St. Augustine, FL 32080 (Fee, parking may be limited)

\*Devil's Elbow Fishing Resort, 7507 A1A S, St. Augustine, FL 32080(Fee)

Bings Landing, 5862 N Ocean Shore Blvd, Palm Coast, FL 32137

**Fort Pulaski National Monument (FOPU)**

\*Lazaretto Creek Boat Ramp, 1000 US-80, Tybee Island, GA 31328

**Timucuan Ecological and Historic Preserve (TIMU)**

\*Jim King Boat Ramp, 8203 Heckscher Dr, Jacksonville, FL 32226

Timucuan Boat Ramp, 8650 Cedar Point Rd, Jacksonville, FL 32226

\*Sawpit Creek Boat Ramp near Residence Ct, Jacksonville, FL 32226

\*Goffinsville Boat Ramp, 95001 Goffinsville Rd, Fernandina Beach, FL 32034

## Appendix D. Example Fieldwork Planning Spreadsheet

**Table D-1.** Example of fieldwork planning sheet for Canaveral National Seashore.

| Site ID | Sample Day | Sample Order | Waterbody Name  | Best Tide Window                         | Best Available Tide Gage    | LONG DD      | LAT DD      |
|---------|------------|--------------|-----------------|------------------------------------------|-----------------------------|--------------|-------------|
| CANA-06 | Mon        | 1            | Mosquito Lagoon | Any                                      | Packwood Place, ID: 8721222 | -80.86416659 | 28.94056073 |
| CANA-14 | Mon        | 2            | Mosquito Lagoon | Any                                      | Turtle Mound, ID: 8721223   | -80.83114906 | 28.91846292 |
| CANA-30 | Mon        | 3            | Mosquito Lagoon | Any                                      | Turtle Mound, ID: 8721223   | -80.80525787 | 28.88554667 |
| CANA-26 | Mon        | 4            | Mosquito Lagoon | High, might be inaccessible              | Turtle Mound, ID: 8721223   | -80.81154444 | 28.87131618 |
| CANA-02 | Mon        | 5            | Mosquito Lagoon | Rising-high                              | Turtle Mound, ID: 8721223   | -80.79971177 | 28.87123990 |
| CANA-18 | Mon        | 6            | Mosquito Lagoon | Any                                      | Turtle Mound, ID: 8721223   | -80.79245356 | 28.86467495 |
| CANA-10 | Mon        | 7            | Mosquito Lagoon | Any                                      | Turtle Mound, ID: 8721223   | -80.82156794 | 28.86529937 |
| CANA-22 | Mon        | 8            | Mosquito Lagoon | Any-offset might be necessary            | Turtle Mound, ID: 8721223   | -80.83078902 | 28.85837897 |
| CANA-16 | Tue        | 1            | Mosquito Lagoon | Any                                      | Turtle Mound, ID: 8721223   | -80.79492555 | 28.83425158 |
| CANA-21 | Tue        | 2            | Mosquito Lagoon | Any                                      | Turtle Mound, ID: 8721223   | -80.81128256 | 28.83174525 |
| CANA-05 | Tue        | 3            | Mosquito Lagoon | Any                                      | Turtle Mound, ID: 8721223   | -80.79934255 | 28.82187986 |
| CANA-25 | Tue        | 4            | Mosquito Lagoon | Any                                      | Turtle Mound, ID: 8721223   | -80.78197495 | 28.82780737 |
| CANA-01 | Tue        | 5            | Mosquito Lagoon | Any                                      | Turtle Mound, ID: 8721223   | -80.77792042 | 28.80055505 |
| CANA-28 | Tue        | 6            | Mosquito Lagoon | Any-offset might be necessary (P/T Zone) | Turtle Mound, ID: 8721223   | -80.79058095 | 28.79575314 |
| CANA-29 | Tue        | 7            | Mosquito Lagoon | Any                                      | Turtle Mound, ID: 8721223   | -80.76641426 | 28.79456748 |
| CANA-13 | Tue        | 8            | Mosquito Lagoon | Rising-high (P/T Zone)                   | Turtle Mound, ID: 8721223   | -80.75941056 | 28.79297410 |
| CANA-15 | Wed        | 1            | Mosquito Lagoon | High, might be inaccessible              | Turtle Mound, ID: 8721223   | -80.77346865 | 28.76944693 |

| Site ID | Sample Day | Sample Order | Waterbody Name  | Best Tide Window              | Best Available Tide Gage  | LONG DD      | LAT DD      |
|---------|------------|--------------|-----------------|-------------------------------|---------------------------|--------------|-------------|
| CANA-17 | Wed        | 2            | Mosquito Lagoon | Any                           | Turtle Mound, ID: 8721223 | -80.75879586 | 28.77464514 |
| CANA-09 | Wed        | 3            | Mosquito Lagoon | High, might be inaccessible   | Turtle Mound, ID: 8721223 | -80.73491739 | 28.77648315 |
| CANA-24 | Wed        | 4            | Mosquito Lagoon | Rising-high                   | Turtle Mound, ID: 8721223 | -80.72395916 | 28.75050694 |
| CANA-08 | Wed        | 5            | Mosquito Lagoon | Rising-high                   | Turtle Mound, ID: 8721223 | -80.70688798 | 28.74413097 |
| CANA-04 | Wed        | 6            | Mosquito Lagoon | Any-offset might be necessary | Turtle Mound, ID: 8721223 | -80.74559100 | 28.73823059 |

**Table D-2.** Example of fieldwork planning spreadsheet for CAHA/CALO. <sup>1</sup>Note that the bold SiteID (CAHACALO-17) indicates that the site has been picked to receive a QA/QC sample (blank or duplicate).

| Site ID         | Field Map ID      | Sample Day | Waterbody Name | Best Tide Window                           | Best Available Tide Gage                          | Best Ramp                                              | LONG DD      | LAT DD      |
|-----------------|-------------------|------------|----------------|--------------------------------------------|---------------------------------------------------|--------------------------------------------------------|--------------|-------------|
| CAHA<br>CALO-06 | CAHA<br>Map 02    | 2          | Roanoke Sound  | Rising-high                                | Roanoke Sound Channel, NC – Station ID: 8652591   | Oregon Inlet Ramp, Nags Head or Albemarle Sound Ramp   | -75.59300548 | 35.83538752 |
| CAHA<br>CALO-13 | CAHA<br>Map 02,03 | 2          | Roanoke Sound  | Any                                        | Roanoke Sound Channel, NC – Station ID: 8652591   | Oregon Inlet Ramp, Nags Head                           | -75.57865553 | 35.81429138 |
| CAHA<br>CALO-22 | CAHA<br>Map 04    | 2          | Oregon Inlet   | High, might be inaccessible or need offset | Oregon Inlet Bridge, NC – Station ID: 8652659     | Oregon Inlet Ramp, Nags Head                           | -75.53459599 | 35.7578611  |
| CAHA<br>CALO-01 | CAHA<br>Map 06    | 2          | Pamlico Sound  | Rising-high                                | RODANTHE, PAMLICO SOUND, NC – Station ID: 8653215 | Emergency ferry dock, Rodanth or Sand Ramp from Hwy 12 | -75.50725928 | 35.66227321 |

| Site ID                             | Field Map ID      | Sample Day | Waterbody Name | Best Tide Window                                                                                       | Best Available Tide Gage                          | Best Ramp                                                                          | LONG DD      | LAT DD      |
|-------------------------------------|-------------------|------------|----------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------------------------------------------------------------|--------------|-------------|
| CAHA<br>CALO-29                     | CAHA<br>Map 06,07 | 2          | Pamlico Sound  | Rising-high, offset might be necessary                                                                 | RODANTHE, PAMLICO SOUND, NC – Station ID: 8653215 | Emergency ferry dock, Rodanth or Sand Ramp from Hwy 12                             | -75.49377011 | 35.64436480 |
| CAHA<br>CALO-16                     | CAHA<br>Map 08    | 1          | Pamlico Sound  | Any                                                                                                    | RODANTHE, PAMLICO SOUND, NC – Station ID: 8653215 | Emergency ferry dock, Rodanth, may be possible from Peters Ditch                   | -75.49337767 | 35.46900260 |
| <b>CAHA<br/>CALO-17<sup>1</sup></b> | CAHA<br>Map 08    | 1          | Pamlico Sound  | Any                                                                                                    | RODANTHE, PAMLICO SOUND, NC – Station ID: 8653215 | Emergency ferry dock, Rodanth, may be possible from Peters Ditch                   | -75.49779889 | 35.50595165 |
| CAHA<br>CALO-18                     | CAHA<br>Map 09    | 1          | Pamlico Sound  | Rising-high                                                                                            | Peters Ditch, NC – Station ID: 8653951            | Peters Ditch Ramp? Avon See also <a href="https://www.outer">https://www.outer</a> | -75.49788293 | 35.40189863 |
| CAHA<br>CALO-02                     | CAHA<br>Map 09,10 | 1          | Pamlico Sound  | Rising-high, offset might be necessary                                                                 | Peters Ditch, NC – Station ID: 8653951            | Peters Ditch Ramp? See also <a href="https://www.outer">https://www.outer</a>      | -75.50068642 | 35.38288229 |
| CAHA<br>CALO-14                     | CAHA<br>Map 11,14 | 1          | Pamlico Sound  | Any                                                                                                    | Peters Ditch, NC – Station ID: 8653951            | Peters Ditch Ramp? See also <a href="https://www.outer">https://www.outer</a>      | -75.52759161 | 35.30866276 |
| CAHA<br>CALO-30                     | CAHA<br>Map 13,14 | 1          | Pamlico Sound  | Rising-high, offset might be necessary                                                                 | USGS Station Hatteras, NC – Station ID: 8654467   | Teach's Lair Marina, Hatteras                                                      | -75.66352290 | 35.22864559 |
| CAHA<br>CALO-26                     | CAHA<br>Map 17    | 4          | Pamlico Sound  | Any, but access may require rising-high. Consider switching with CAHA ALT-24 due to distance from ramp | Hatteras Inlet, NC – Station ID: TEC2791          | Teach's Lair Marina                                                                | -75.81165018 | 35.18539923 |

| Site ID         | Field Map ID      | Sample Day | Waterbody Name | Best Tide Window                                                                                       | Best Available Tide Gage                   | Best Ramp           | LONG DD      | LAT DD      |
|-----------------|-------------------|------------|----------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------|--------------|-------------|
| CAHA<br>CALO-10 | CAHA<br>Map 17,18 | 4          | Pamlico Sound  | Any, but access may require rising-high. Consider switching with CAHA ALT-24 due to distance from ramp | Hatteras Inlet, NC – Station ID: TEC2791   | Teach's Lair Marina | -75.82715639 | 35.17860965 |
| CAHA<br>CALO-09 | CAHA<br>Map 21    | 3          | Pamlico Sound  | Any-offset might be necessary                                                                          | OCRACOCKE ISLAND, NC – Station ID: 8654792 | Ocracoke NPS ramp   | -75.96144047 | 35.12434116 |

## Appendix E. Example Field Itinerary and Float Plan

| SECN AQUATIC DIVISION FIELD ITINERARY FORM                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                           |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <i>To be submitted to Program Manager and Park Contact at least one week prior to planned trip.</i>                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                           |
| <i>This form may contain confidential information and must be kept secure</i>                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                           |
| Field Crew Supervisor                                                                                                                    | Eric Starkey-SECN Aquatic Ecologist                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                           |
| Field Crew Leader                                                                                                                        | Eric Starkey                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                           |
| Monitoring Project etc                                                                                                                   | Coastal Water/Sediment Quality Assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                           |
| Field work description                                                                                                                   | Estuarine water and sediment quality monitoring protocol implementation. Sample collection at 30 randomly selected locations in/around CANA (see map on last page).                                                                                                                                                                                                                                                                                                                                                      |                                           |
| Dates of field work                                                                                                                      | 07/14/2019 to 07/20/2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |
| Transportation arrangements                                                                                                              | <p>Eric Starkey and Daniel McCay will drive from Athens GA to CANA (near Eldora, FL) in the SECN's GSA rig (White Chevy Silverado).</p> <p>Access to the sample sites will be via boat departing from and returning to the North NPS paved ramp (Apollo Beach) and the Haulover Canal ramp near Allenhurst, FL.</p>                                                                                                                                                                                                      |                                           |
| What will be the contact arrangement with the Park contact?                                                                              | <p><b>Primary contact person:</b> Kristen Kneifl<br/> <b>Phone number:</b> Office: [REDACTED]<br/>           Cell: [REDACTED]<br/> <b>Frequency of contacts:</b> Pre-trip, when on / off the water each day, and when field work has been completed.<br/> <b>Instructions:</b> Check in should occur with Kristen, via phone call, inReach text, or standard text messages.<br/>           If Kristen and alternate contact cannot be reached, check in/out should occur in person with other park staff [REDACTED].</p> |                                           |
| What shall SECN staff do if no contact is made with primary contact?                                                                     | <p><b>Alternate contact persons:</b> Wayne Rybeck<br/> <b>Phone numbers:</b> Cell: [REDACTED]<br/> <b>Instructions:</b> Wayne will be the alternate contact. If Wayne and primary contact cannot be reached, check in/out should occur with other park staff [REDACTED].</p>                                                                                                                                                                                                                                             |                                           |
| What shall park staff do if no contact is made with SECN field crew?                                                                     | <p>If SECN field crew has not made contact by 7:00 pm, the park contact should try to call field crew using cell phone ([REDACTED]), respond to previous InReach locator beacon messages and/or radio transmission. If still no contact with field crew is made, park contact should call SECN Program Manager (Brian Gregory (office/cell) [REDACTED]). Begin initiating search if no contact is made with field crew.</p>                                                                                              |                                           |
| <b>DETAILS OF PARTICIPANTS</b>                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                           |
| NAME                                                                                                                                     | STATUS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | JOB HAZARD ANALYSIS ATTACHED? (Mandatory) |
| Eric Starkey                                                                                                                             | SECN Staff                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Yes                                       |
| Daniel McCay                                                                                                                             | SECN Staff                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Yes                                       |
| <div style="display: flex; justify-content: space-between;"> <span>Southeast Coast Network (SECN)</span> <span>Page 1 of 6</span> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                           |

**Figure E-1.** Example field itinerary for Canaveral National Seashore (CANA), page 1 of 6.

| ITINERARY DETAILS                                                                                    |                                                                                                                                                                                                                                                                                                                                            |                   |                                                                                                                                      |
|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| DATE/TIMES                                                                                           | LOCATION                                                                                                                                                                                                                                                                                                                                   | ACCOMMODATION     | CONTACT DETAILS                                                                                                                      |
| <b>Sunday July 14<sup>th</sup></b><br>Departure: 07:00 AM (EDT)<br><br>Arrival: 2:00 PM (EDT)        | Travel from Athens GA to CANA.<br><br>Check into housing and prep gear for sampling the following day.                                                                                                                                                                                                                                     | CANA Park Housing | SECN cell phone: [REDACTED]<br><br>Crew will check in via text message with park contact (Kristen Kneifl) upon arrival.              |
| <b>Monday July 15<sup>th</sup></b><br>6:30 AM<br><br><br><br><br><br><br>5:00 PM                     | Launch the boat from the North NPS paved ramp (Apollo Beach) and travel to northern most point (CANA-06). Sampling will proceed North to South (see map). Anticipated sample order is 06, 14, 30, 26, 02, 18, 10, 22 (see map). Tides and weather will dictate the exact sample order.<br><br>Return to boat ramp.                         | CANA Park Housing | SECN cell phone: [REDACTED]<br><br>Crew will check in via text with park contact (Kristen Kneifl) when the boat is on/off the water. |
| <b>Tuesday July 16<sup>th</sup></b><br>6:30 AM<br><br><br><br><br><br><br>5:00 PM                    | Launch the boat from Haulover Canal ramp and travel via Intracoastal waterway to sample point CANA-21. Sample ~North to South 21, 16, 05, 25, 01, 28, 29, 13. Additional points may be sampled if time/tides permit.<br><br>Return to boat ramp.                                                                                           | CANA Park Housing | SECN cell phone: [REDACTED]<br><br>Crew will check in via text with park contact (Kristen Kneifl) when the boat is on/off the water. |
| <b>Wednesday July 17<sup>th</sup></b><br>6:30 AM<br><br><br><br><br><br><br>5:00 PM                  | Launch the boat from Haulover Canal ramp and travel to sample point CANA-15. Sample ~North to South 15, 17, 09, 24, 08, 04, 20, 23. Additional points may be sampled if time/tides permit.<br><br>Return to boat ramp.                                                                                                                     | CANA Park Housing | SECN cell phone: [REDACTED]<br><br>Crew will check in via text with park contact (Kristen Kneifl) when the boat is on/off the water. |
| <b>Thursday July 18<sup>th</sup></b><br>6:30 AM<br><br><br>2:00 PM<br><br>3:00 PM<br><br><br>5:30 PM | Launch the boat from Haulover Canal ramp and travel to sample point CANA-12. Sample ~North to South 12, 03, 07, 19, 11, 27.<br><br>Return to boat ramp. Potential to meet up with park staff at ramp?<br><br>Return to park housing and prep gear for return to Athens and samples for drop off at the lab.<br><br>Dinner with park staff? | CANA Park Housing | SECN cell phone: [REDACTED]<br><br>Crew will check in via text with park contact (Kristen Kneifl) when the boat is on/off the water. |
| Southeast Coast Network (SECN) <span style="float: right;">Page 2 of 6</span>                        |                                                                                                                                                                                                                                                                                                                                            |                   |                                                                                                                                      |

**Figure E-2.** Example field itinerary for Canaveral National Seashore (CANA), page 2 of 6.

|                                         |                                          |                        |                                                                          |
|-----------------------------------------|------------------------------------------|------------------------|--------------------------------------------------------------------------|
| Friday July 19 <sup>th</sup><br>8:00 AM | Check out of housing.                    | Duty Station Athens GA | SECN cell phone:<br>[REDACTED]                                           |
| 9:30 AM                                 | Drop Samples off in Jacksonville at AEL. |                        | Crew will check out with park contact (Kristen Kneiff) before departing. |
| 4:30 PM                                 | Arrive in Athens, GA                     |                        |                                                                          |

| RISK ASSESSMENT                             |                                          |                                             |                                                                                                                                                                                                                          |                                     |
|---------------------------------------------|------------------------------------------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| FIELD WORK ACTIVITY                         | POTENTIAL HAZARD<br>What might harm you? | RISK RATING<br>(Extreme, High, Medium, Low) | CONTROLS<br>What are you going to do to make this activity as safe as possible?                                                                                                                                          | PERSON WHO WILL ENSURE THIS HAPPENS |
| Coastal Assessment-Synoptic Water Quality   | See JHA                                  | Low                                         | Daily communication with park contact, proper preparation of safety gear and equipment prior to fieldwork. Changes to field itinerary will be communicated with park contact. Park cell contact for serious emergencies. | Eric Starkey                        |
| See attached JHA for activities and hazards |                                          |                                             |                                                                                                                                                                                                                          |                                     |

| ITEMS THAT WILL BE COMPLETED PRIOR TO THE FIELD WORK                                                                                                                                      |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
|                                                                                                                                                                                           | Tick as appropriate |
| Participants briefed on details of proposed field work; relevant safety policies, procedures and expected conduct while in the field                                                      | X                   |
| Job Hazard Analysis signed by all participants                                                                                                                                            | X                   |
| All equipment, vehicles and tools will be checked for safety compliance prior to field work commencing                                                                                    | X                   |
| I have made the necessary provisions for emergency situations such as the appropriate level of first aid, emergency contact telephone numbers; e.g., helicopter rescue, police, fire, etc | X                   |
| I have checked with participants whether they have any medical conditions that should be disclosed                                                                                        | X                   |
| I have checked that appropriate licenses, permits and agreements with have been obtained and are up to date for the use of specialized equipment such as boats.                           | X                   |

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| PEOPLE RESPONSIBLE FOR SUBMISSION AND APPROVAL                                                                                                                                                                                                             |                 |                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------|
| NAME                                                                                                                                                                                                                                                       | SIGNATURE       | DATE                                                                        |
| Field Work Supervisor                                                                                                                                                                                                                                      | ERIC            | Digitally signed by ERIC<br>STARKEY                                         |
| Field Crew Leader                                                                                                                                                                                                                                          | STARKEY         | Date: 2019.06.27 12:06:16<br>-04'00'                                        |
| Program Manager<br>Based upon the information<br>in the above Field Itinerary<br>Plan:<br><input checked="" type="checkbox"/> Approve<br><input type="checkbox"/> Do not approve<br><input type="checkbox"/> Grant conditional approval                    | MARK<br>GREGORY | Digitally signed by<br>MARK GREGORY<br>Date: 2019.07.01<br>13:48:01 -04'00' |
| Primary Park Contact<br>Based upon the information<br>in the above Field Itinerary<br>Plan:<br><input type="checkbox"/> Approve<br><input type="checkbox"/> Do not approve<br><input type="checkbox"/> Grant conditional approval                          |                 |                                                                             |
| Conditions of approval, if relevant                                                                                                                                                                                                                        |                 |                                                                             |
| NOTE:- <ul style="list-style-type: none"> <li>• A copy of this Field Itinerary Plan and associated Job Hazard Analysis forms are filed in the SECN Athens office.</li> <li>• Copies of all volunteer forms are filed in the SECN Athens office.</li> </ul> |                 |                                                                             |

Southeast Coast Network (SECN)
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**Figure E-4.** Example field itinerary for Canaveral National Seashore (CANA), page 4 of 6.

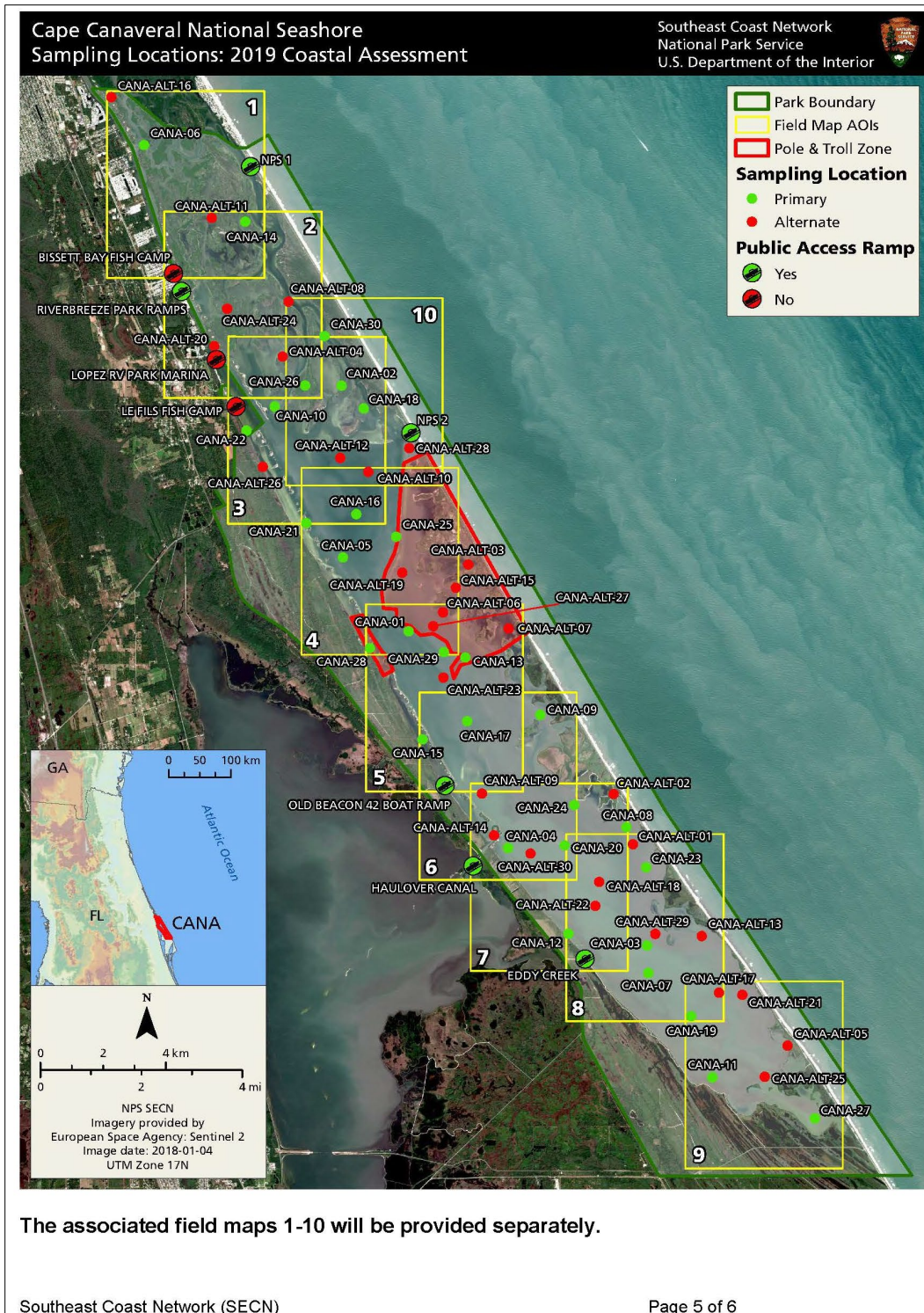


**Figure E-5.** Example field itinerary for Canaveral National Seashore (CANA), page 5 of 6.

| SITEID  | LON DD       | LAT DD      | SITEID      | LON DD       | LAT DD      |
|---------|--------------|-------------|-------------|--------------|-------------|
| CANA-01 | -80.77792042 | 28.80055505 | CANA-ALT-01 | -80.70477054 | 28.73916448 |
| CANA-02 | -80.79971177 | 28.87123990 | CANA-ALT-02 | -80.71107681 | 28.75368762 |
| CANA-03 | -80.70032179 | 28.71002390 | CANA-ALT-03 | -80.75834998 | 28.81973534 |
| CANA-04 | -80.74559100 | 28.73823059 | CANA-ALT-04 | -80.81896723 | 28.87964616 |
| CANA-05 | -80.79934255 | 28.82187986 | CANA-ALT-05 | -80.65448747 | 28.68110308 |
| CANA-06 | -80.86416659 | 28.94056073 | CANA-ALT-06 | -80.76665955 | 28.80601125 |
| CANA-07 | -80.69990914 | 28.70208849 | CANA-ALT-07 | -80.74529853 | 28.80134598 |
| CANA-08 | -80.70688798 | 28.74413097 | CANA-ALT-08 | -80.81697381 | 28.89545968 |
| CANA-09 | -80.73491739 | 28.77648315 | CANA-ALT-09 | -80.75404771 | 28.75386262 |
| CANA-10 | -80.82156794 | 28.86529937 | CANA-ALT-10 | -80.79099197 | 28.84643464 |
| CANA-11 | -80.67903403 | 28.67202282 | CANA-ALT-11 | -80.84204237 | 28.91958695 |
| CANA-12 | -80.72600359 | 28.71344929 | CANA-ALT-12 | -80.80012361 | 28.85043986 |
| CANA-13 | -80.75941056 | 28.79297410 | CANA-ALT-13 | -80.68240662 | 28.71271019 |
| CANA-14 | -80.83114906 | 28.91846292 | CANA-ALT-14 | -80.75021965 | 28.74182687 |
| CANA-15 | -80.77346865 | 28.76944693 | CANA-ALT-15 | -80.76246260 | 28.81307460 |
| CANA-16 | -80.79492555 | 28.83425158 | CANA-ALT-16 | -80.87487063 | 28.95433972 |
| CANA-17 | -80.75879586 | 28.77464514 | CANA-ALT-17 | -80.67685115 | 28.69641577 |
| CANA-18 | -80.79245356 | 28.86467495 | CANA-ALT-18 | -80.71585264 | 28.72838719 |
| CANA-19 | -80.68590869 | 28.68961880 | CANA-ALT-19 | -80.78000344 | 28.81740787 |
| CANA-20 | -80.72714291 | 28.73891121 | CANA-ALT-20 | -80.84128203 | 28.88266719 |
| CANA-21 | -80.81128256 | 28.83174525 | CANA-ALT-21 | -80.66923963 | 28.69578469 |
| CANA-22 | -80.83078902 | 28.85837897 | CANA-ALT-22 | -80.71716673 | 28.72149735 |
| CANA-23 | -80.70051970 | 28.73252032 | CANA-ALT-23 | -80.76656864 | 28.78722764 |
| CANA-24 | -80.72395916 | 28.75050694 | CANA-ALT-24 | -80.83707426 | 28.89346232 |
| CANA-25 | -80.78197495 | 28.82780737 | CANA-ALT-25 | -80.66201940 | 28.67218300 |
| CANA-26 | -80.81154444 | 28.87131618 | CANA-ALT-26 | -80.82549348 | 28.84792237 |
| CANA-27 | -80.64567740 | 28.66017460 | CANA-ALT-27 | -80.76988190 | 28.80206364 |
| CANA-28 | -80.79058095 | 28.79575314 | CANA-ALT-28 | -80.77759759 | 28.85324097 |
| CANA-29 | -80.76641426 | 28.79456748 | CANA-ALT-29 | -80.69762471 | 28.71333299 |
| CANA-30 | -80.80525787 | 28.88554667 | CANA-ALT-30 | -80.73825736 | 28.73656285 |

**Figure E-6.** Example field itinerary for Canaveral National Seashore (CANA), page 6 of 6.



# FLOAT PLAN

INSTRUCTIONS: Complete this plan before you go boating and leave it with a reliable person who can be depended upon to notify the Coast Guard, or other rescue organization, should you not return or check-in as planned. If you have a change of plans after leaving, be sure to notify the person holding your Float Plan. For additional copies of this plan, visit: [www.floatplancentral.org](http://www.floatplancentral.org)



[www.cgaux.org](http://www.cgaux.org)

**Do NOT file this plan with the U.S. Coast Guard**

[www.uscgboating.org](http://www.uscgboating.org)

VESSEL

**IDENTIFICATION:**

Name & Hailing Port Athens

Document / Registration No. \_\_\_\_\_ HIN \_\_\_\_\_

Year & Make Custom

Length 18 ft Type Jon boat Draft \_\_\_\_\_ Hull Mat. Aluminium

Color Silver

Prominent Features Enclosed center cab, NPS Logo

**PROPULSION:**

Primary-- Type Gas OB No. Eng. 1 Fuel Capacity 15 gal

Auxiliary--Type Paddle No. Eng. \_\_\_\_\_ Fuel Capacity \_\_\_\_\_

**COMMUNICATION:**

Radio Call Sign \_\_\_\_\_

DSC MMSI No. \_\_\_\_\_

Radio-1: Type none Ch./ Freq. Monitored \_\_\_\_\_

Radio-2: Type \_\_\_\_\_ Ch./ Freq. Monitored \_\_\_\_\_

Cell / Satellite No. ###-###-###

E-mail xxxx\_xxxxxxx@nps.gov

**NAVIGATION: (Check all on board)**

☒ Maps ☒ Charts ☒ Compass ☒ GPS / DGPS

☐ Radar ☐ Sounder ☐ \_\_\_\_\_

SAFETY & SURVIVAL

**VISUAL DISTRESS SIGNALS:**

☐ Electric S-O-S Light

☐ Orange Flag

☐ Orange Smoke

☒ Red Flares

**PFDs: (Do not count Type IV devices)**

2 Quantity On Board

**AUDIBLE DISTRESS SIGNALS:**

☐ Bell

☒ Horn / Siren

☒ Whistle

**GROUND TACKLE:**

☒ Anchor: Line Length 50 ft

**OTHER GEAR:**

☐ Drogue / Sea Anchor

☐ EPIRB \_\_\_\_\_

☒ Fire Extinguisher

☒ Flashlight / Searchlight

☒ Food & Water for 1.0 days

☒ Foul Weather Gear

☐ Life raft / Dinghy

☒ Personal Locator Beacon

☐ Signal Mirror

☐ \_\_\_\_\_

☐ \_\_\_\_\_

PERSONS ONBOARD

**OPERATOR:**

Name John Doe

Address 123 Water Quality Drive

City Athens State GA Zip Code 30606

Vehicle (Year, Make & Model) Chevy Silverado 2500 HD

Trailer will be parked at: North NPS ramp (Apollo Beach), Haulover Canal

**PASSENGERS / CREW:**

1. Bill Smith - 321 Sediment Quality Lane, Athens, GA 30605

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

Attach "Supplemental Passenger List" if additional passengers or crew on board.

| Age                                                                                                                | Gender | Notes (Special medical condition, can't swim, etc.) |
|--------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------|
| 37                                                                                                                 | M      | Cell ###-###-###                                    |
| Has experience: <input checked="" type="checkbox"/> with this Vessel <input checked="" type="checkbox"/> with Area |        |                                                     |
| Home phone ###-###-###                                                                                             |        |                                                     |
| Vehicle License No. <u>X#####X</u>                                                                                 |        |                                                     |
| Trailer License No. <u>X#####X</u>                                                                                 |        |                                                     |

| Age | Gender | Notes (Special medical condition, can't swim, etc.) |
|-----|--------|-----------------------------------------------------|
| 30  | M      | Cell ###-###-###                                    |
|     |        |                                                     |
|     |        |                                                     |
|     |        |                                                     |
|     |        |                                                     |

ITINERARY

|        | DATE    | TIME    | LOCATION / WAYPOINT                            | MODE OF TRAVEL | REASON FOR STOP    | CHECK-IN TIME |
|--------|---------|---------|------------------------------------------------|----------------|--------------------|---------------|
| Depart | 7/15/19 | 6:30 am | North paved NPS boat ramp near visitor center. | Boat           |                    |               |
| Arrive | 7/15/19 | 6:30 am | NPS Ramp to CANA-8, 14, 30, 26, 2, 18, 10, 22  |                | Water qual. sample | 7:00 pm       |
| Depart | 7/15/19 | 5:00 pm |                                                | Boat           |                    |               |
| Arrive | 7/16/19 | 6:30 am | Haulover Canal to CANA-16,21,05,25,01,28,29,13 |                | Water qual. sample | 7:00 pm       |
| Depart | 7/16/19 | 6:00 pm |                                                | Boat           |                    |               |
| Arrive | 7/17/19 | 6:30 am | Haulover Canal to CANA-15,17,9,24,8,4,20,23    |                | Water qual. sample | 7:00 pm       |
| Depart | 7/17/19 | 6:00 pm |                                                | Boat           |                    |               |
| Arrive | 7/18/19 | 6:30 am | Haulover Canal to CANA-12, 3, 7,19,11,27       |                | Water qual. sample | 7:00 pm       |
| Depart | 7/18/19 | 6:00 pm |                                                | Boat           |                    |               |
| Arrive | 7/19/19 |         | Athens, GA                                     |                |                    |               |

Attach "Supplemental Itinerary" if there are additional locations or waypoints.

Contact 1: Jane Doe

Contact 2: Bob Smith

Phone Number (###) ###-#### (cell)

Phone Number (###) ###-#### (cell)

If you have a genuine concern for the safety or welfare of any persons on board the Vessel described above, who have not returned or checked-in in a reasonable amount of time, then follow the step-by-step instructions on the *Boating Emergency Guide*™ included with this float plan, or on the Internet at:

[www.floatplancentral.org/help/BoatingEmergencyGuide.htm](http://www.floatplancentral.org/help/BoatingEmergencyGuide.htm)

Rev 2011.01.17

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**Figure E-7.** Example float plan for Canaveral National Seashore (CANA).