

Task SEGP313 Marsh Salinity Field Data Collection

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TASK SEGP313

Marsh Salinity Field Data Collection

The following outline for Task SEGP313, Marsh Salinity Field Data Collection, is being presented to the Stakeholder Evaluation Group (SEG) as a draft task statement for review, modification, and approval. The particular components of this task are based on the input received for the Tier I Environmental Impact Statement (EIS).

1.0 TASK GOAL

The goal of this task is to provide sufficient data to allow for determination of the relationship between interstitial salinity in the marshes and salinity within the adjacent river channels. For this task, the primary study area will be within the marshes of the Savannah National Wildlife Refuge. The predominant marsh of the refuge are of two types: floating-mat marsh and grass-stand marsh. The term interstitial in this context will refer to the area of the marsh where the roots of the vegetation exist. Therefore, for a grass-stand marsh, the interstitial area will be the void space in the soil. For a floating-mat marsh, the interstitial area will be the floating root zone.

2.0 PROJECT NEED

Under the Tier I EIS, a salinity model was developed that provided projections of the temporal and spatial changes to salinity within the surface waters adjacent to and flooding into the freshwater marshes of the Savannah National Wildlife Refuge. During the public comment period, concerns were raised that insufficient site-specific data were collected to correlate the response of the interstitial salinity to the salinity changes in the adjacent channels. Previous studies identified that marsh succession is related directly to the interstitial salinity concentrations. Once this relationship is determined (i.e., the temporal response period and the required duration of exposure to achieve a specific change), the surface model output can be utilized to identify the potential contribution to marsh succession due to salinity changes.

3.0 PROPOSED SCOPE

Under the Tier II EIS, three specific data collection efforts will occur concurrently. These are as follows:

- Task SEGP311: Chloride Study Field Data Collection
- Task SEGP312: Dissolved Oxygen Field Data Collection
- Task SEGP313: Marsh Salinity Field Data Collection

The purpose of performing these three tasks concurrently is to optimize the use of field equipment and personnel by allowing overlap in the data needs of each and the use of single stations to cover multiple tasks. Subsequently, although the scopes are presented separately herein, they have been designed with significant overlap to reduce duplication of effort.

Under this proposed scope of work, the types of data, the locations, and sampling intervals are presented. The methodologies, mounting methods, protocols, and QA/QC procedures to be utilized during the monitoring program will be outlined in a Detailed

Monitoring Plan once the general scopes of work are agreed upon under the SEG process.

3.1 INTERSTITIAL SALINITY MONITORING PROGRAM

In order to correlate the interstitial salinity response, coincident data must be collected within the river channels and the adjacent marshes. Under Task SEGP312, continuous monitoring stations sampling at 15-minute intervals will be established along the Front River and some within the Back and Little Back Rivers. In addition, the USGS maintains two stations along the Little Back River and one within the Front River at the Houlihan Bridge. Figure SEGP313-1 presents the locations where temperature and conductivity (and subsequently salinity through calculations) is being measured within the main channels of the Savannah River below I-95. Figure SEGP313-2 presents the stations where water surface elevation is being measured.

In addition to the supplemental main channel stations, five monitoring stations will be established within the marsh areas of the Savannah National Wildlife Refuge to monitor the interstitial salinity response. The locations of the marsh monitoring stations are presented in Figure SEGP313-3. Locations were chosen to represent the two types of marshes within the refuge (i.e., the floating-mat marsh versus the grass-stand marsh). In addition, these stations were located to measure conditions upstream and downstream of the 0.5 ppt salinity contour line defined in the Tier I EIS for marsh impact analysis. There are four floating-mat marshes being monitored compared to one grass-stand marsh as shown in Figure SEGP313-3. The logic for choosing an unequal number of marsh types to monitor is that the predominant marsh type in the vicinity of the 0.5 ppt contour line is the floating-mat marsh. This contour line was determined under a flow of 8200 cfs, the flow agreed upon by agency representatives for evaluating the impact of the proposed deepening upon freshwater marsh acreage.

As in the Tier I EIS, the focus of the marsh impact analysis will remain within the refuge boundaries due to the following reasons: (1) the refuge comprises the vast majority of the acreage expected to be impacted, (2) the refuge includes all types of marshes impacted potentially by the project, and (3) refuge marshes are more environmentally important because of their inclusion with a national wildlife refuge. It appears from previous investigations that the lands east of the Back and Little Back Rivers are diked and, therefore, will not be suitable for this investigation.

At each station, a pair of instruments will be installed as approximately shown in Figure SEGP313-3. For each pair of instruments, one will be installed within the primary feeder tributary for the marsh area being studied. The second instrument will be installed within the substrate of the marsh area in such a manner that the readings will be of the interstitial pore waters rather than the surface water flooding and drying above the marshes. This will be accomplished by installing the meters within monitoring wells where the substrate is solid (grass-stand marshes) and in the root zone on the floating mats where that substrate is present.

Under the full data collection program, a contingency plan has been identified that will provide for a meeting of the MTRG near the end of the data collection effort to present the measured data collected to date. At that meeting, it will be determined if the data set is sufficient for the designed purposes. If the data set is deemed insufficient, the MTRG will propose a time period for extending the data collection effort.

4.0 EVALUATIONS REQUIRED

Under SEG review of this task, criteria need to be defined for the following:

- The range of conditions that need to be captured in order to assure a sufficient data set for determination of the relationship between interstitial salinity and adjacent channel salinity.
- Review of QA/QC protocols and methodologies to assure quality data for all sub-tasks.

5.0 DELIVERABLES

The deliverable for this task will be a data report that presents the methodologies, QA/QC protocols, description of the data collection effort, and all of the raw data collected.

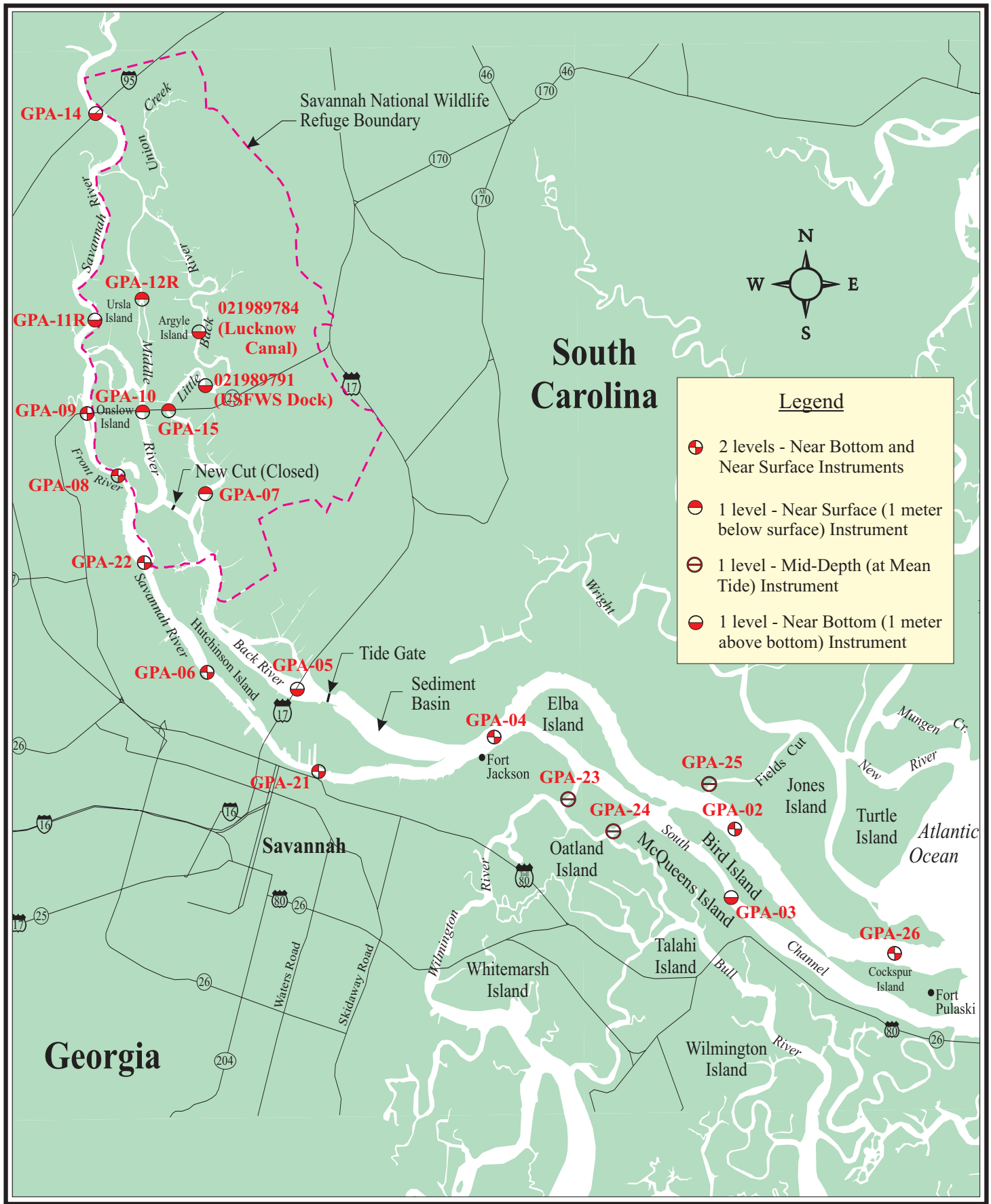
6.0 SCHEDULE

The field effort is scheduled for a total of 11 weeks on-site. Two weeks will be needed for instrument installation, 8 weeks for data collection, and 1 week for instrument retrieval. The goal is to provide 8 weeks of data starting on August 1, 1999 and running through September 25, 1999. The completion date to be contingent upon the MTRG data assessment meeting to be held on September 15, 1999. Upon completion of the data collection effort, the report listed under Section 5 will be prepared within four weeks. In order to achieve this schedule the following milestones must be met:

- Detailed Monitoring Plan will be available on April 1, 1999
- Initial Field Reconnaissance: April 12 to 16, 1999
- Begin ordering field equipment, submit permit applications, and prepare for field deployment: April 12, 1999
- Begin set up of field office: July 1, 1999
- Install instruments: July 15 to August 1, 1999
- Collect Data: August 1, 1999 to September 25, 1999 (contingent upon MTRG meeting to be held on September 15, 1999)
- MTRG Data Review Meeting: September 15, 1999
- Retrieve Instruments: September 25 to October 1, 1999 (contingent upon MTRG meeting to be held on September 15, 1999)
- Submit Marsh Salinity Data Report: November 1, 1999 (contingent upon MTRG meeting to be held on September 15, 1999)

7.0 RELATED ISSUES

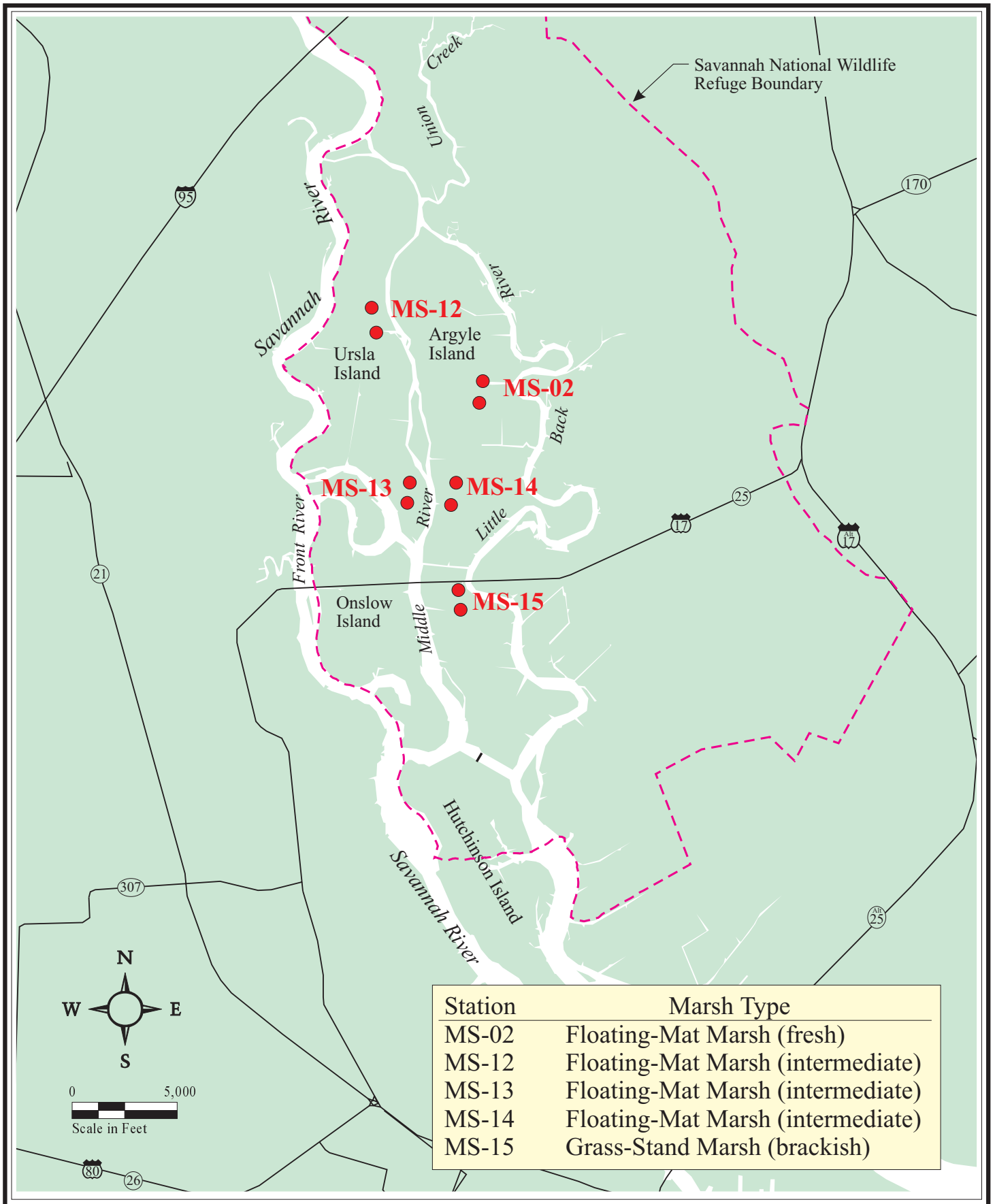
This task will be implemented under a Detailed Monitoring Plan for tasks SEGP311, SEGP312, and SEGP313.



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Figure SEGP313-1
 Temperature and Conductivity Measurements
 Below the I-95 Bridge





991313-3.CDR 03/02/99

Figure SEGP313-3
Locations of Interstitial Marsh Salinity Measurements

