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**Evaluating Physical, Chemical, and Biological Impacts from  
the Savannah Harbor Expansion Project**

Cooperative Agreement Number W912HZ-13-2-0013

**Second Quarterly Report - 2016**

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Dear Ms Richards –

The following paragraphs summarize the progress on the project for the period April 1, 2016 through June 30, 2016, according to the five objectives outlined in the Statement of Work and summarized below.

**Progress by Objective**

1. **Research and develop data analysis tools and standardized maps; Analyze and integrate multiple, complex datasets to provide detailed map**
  - a. **Bathymetric Data** – We did not receive any additional bathymetry data during this quarter.
  - b. **Sturgeon Data** – We did not receive any additional data for the sturgeon monitoring study in the Savannah River during this quarter. We have received reports on sturgeon distribution for March and April 2016 and posted the reports to the SHEP monitoring website.
  - c. **Water Quality** – We proceeded with the development of solutions to query, access and display water quality data, including the retrieval of near-real time and historical data. Scripts using the Python language were written and tested to be used with REST services from USGS (<http://waterservices.usgs.gov/rest/IV-Test-Tool.html>) for data retrieval. This implementation allows access to data from gages of interest and will facilitate user interaction with the map portal, including querying, retrieving and displaying of current and historical data for water quality.
  - d. **Vegetation/Marsh Monitoring Data** – We have received monthly reports for February, March, April and May 2016. In addition, we received the Vegetation



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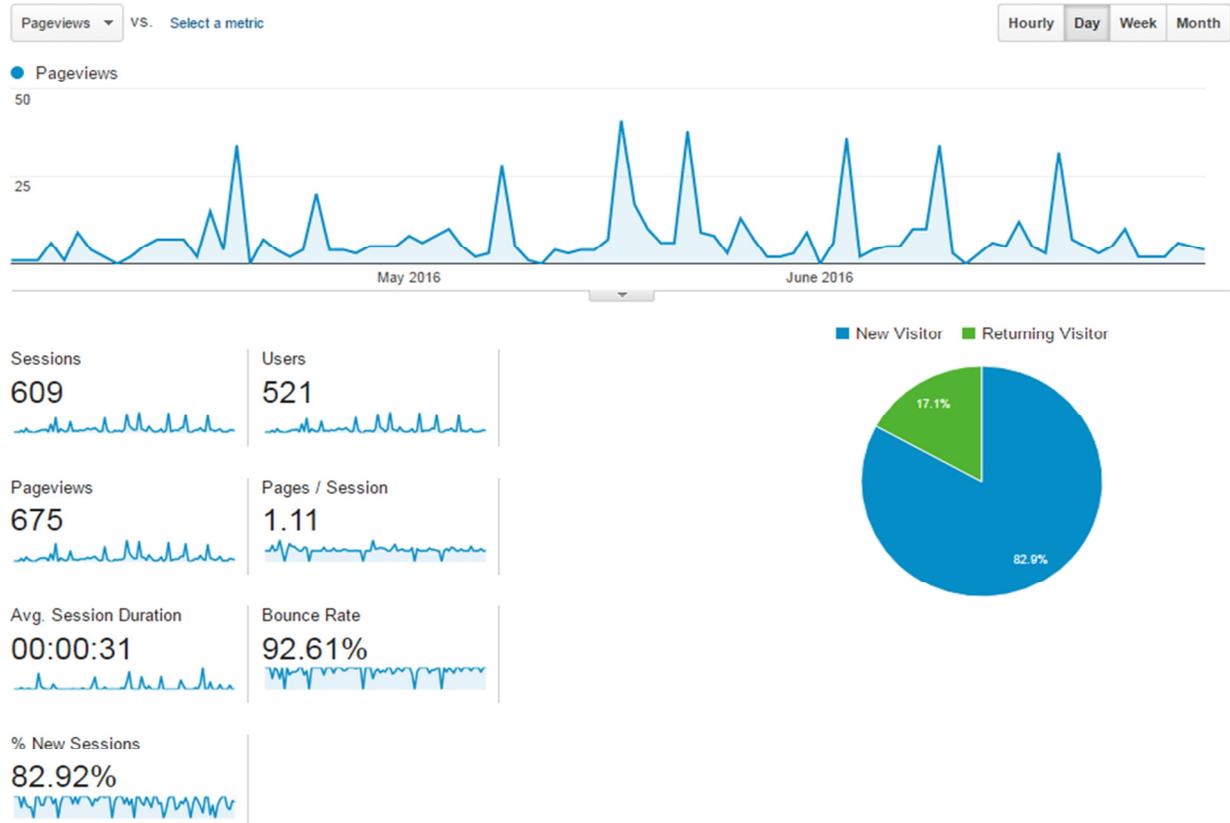
First Quarterly Report for 2016. Received reports have all been posted to the SHEP monitoring website.

- e. **Avian Tissue Monitoring** – We have not received any data for the avian tissue monitoring study during this quarter. We have received the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> Quarter Avian Tissue Monitoring reports for 2015. We have received also the 1<sup>st</sup> Quarter Avian Tissue Monitoring Report for 2016. Received reports have all been posted to the SHEP monitoring website.
  - f. **Marsh Edge Fishes** – Pre-construction monitoring was completed in May 2014. Additional monitoring is scheduled to occur during years 1, 3, 5, and 9 of the post-construction monitoring period but not during the construction timeframe.
  - g. **Intensive Water Quality/Hydrologic Monitoring Events** – Sampling for this monitoring element was completed for the pre-construction phase. Sampling efforts are not planned for the construction phase of the project however two additional intensive sampling events are scheduled to occur during the first and fifth years of the post-construction period.
2. **Research, identify, and catalogue existing study documents for the major resource areas**
    - a. All existing study documents that we are aware of have been gathered and catalogued.
3. **GIS Data and Web Portal**
    - a. **Determine appropriate attributes for the GIS**
      - i. This is an on-going effort and depends on the data we receive from other researchers as described above in Objective 1. All mapping coordinates are being standardized on the Georgia State Plane Coordinate System, East Zone, NAD83. Vertical coordinates are referenced to NAVD88, except for raw bathymetric data, which are referenced to local MLLW. Data sets with coordinates in other systems are converted to State Plane for compatibility. The original coordinates are preserved in the data sets as attributes. Considering the incorporation of data from sources other than USACE (e.g., water quality data from USGS), a similar effort is being conducted for attribute determination and the definition of the database schema in support of data ingestion by the GIS.



**b. Develop a web portal to facilitate public access to the pertinent data**

- i. During this quarter we initiated the augmentation of functionalities provided by the map portal, in order to facilitate information extraction by users. A series of enhancements have been identified (e.g., display of coordinates, improved map scale, measurements of length and area, control over basemaps, better access to values stored in the database, incorporation of analysis capabilities). Software solutions to incorporate those enhancements into the map portal are currently being explored and implemented. We are also working with the Army Corps to identify specific functionalities that would benefit data providers and final users.
- ii. In order to further understand how the website is accessed by the public, Google analytics were implemented on the SHEP website. These analytics currently can track the number of page views and information regarding the users accessing the site (Figure 1). The analytics information provided tells us if the user is a new or returning visitor, the operating system used by the visitor, and the country of origin of the user.



**Figure 1:** Website statistics of second quarter of 2016.



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During the second quarter of 2016 there were 609 sessions (groups of interactions that may include one or more web page), through which a total of 521 users actively engaged with the website. Statistics include new and returning users. In total, there were 675 page views during the period, including repeated views of a single page.

- c. **Develop Standard Operating Procedures (SOP)**
    - i. Standard Operating Procedures (SOP) for data reporting and handling have been established, yet since it is still early in the monitoring program, much of the monitoring data are not yet available therefore only SOP for the sturgeon, water quality, and bathymetry data have been established. We have been developing visualization and display methods for the preliminary sturgeon monitoring data, water quality, and the bathymetric surveys.
- 4. Update and maintain the GIS**
- a. These efforts are on-going. We continue to collect available GIS data for Chatham and Effingham counties (Georgia) and Jasper County (South Carolina), including LiDAR, base GIS data layers (roads, hydrology, boundaries, etc.), multi-date aerial photography and satellite images in order to build a comprehensive geodatabase for the region. We are collecting data from the Georgia GIS Data Clearinghouse, the USGS National Map, NOAA Coastal Services Center, and Savannah SAGIS.
  - b. Additional data will be incorporated into the base GIS as they become available.
- 5. Prepare quarterly progress reports and annual reports**
- a. This document represents the Second Quarter Report of the 2016 calendar year for this project.
  - b. A budget summary is being provided as a separate document.



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Please feel free to contact either Sergio Bernardes or Marguerite Madden if you have questions or concerns regarding this report.

Respectfully submitted,

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