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

Cooperative Agreement Number W912HZ-13-2-0013

First Quarterly Report - 2016

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Dear Ms Richards –
The following paragraphs summarize the progress on the project for the period January 1, 2016 through March 31, 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 –** Available bathymetry datasets were matched, including historical data from NOAA Coastal Service and data collected by the Army Corps of Engineers. Matching procedures included the conversion of data points to a single vertical datum, which involved National Geodetic Vertical Datum 1929 (NGVD29) and Mean Lower Low Water (MLLW). Conversion included the selection, retrieval and matching of bathymetric values over the area by using linear relationships between NGVD29 and MLLW. Different concepts for bathymetric data representation using the GIS map portal were explored and a tilling system for the bathymetry data has been defined.

    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 November 2015, December 2015, January 2016, and February 2016 and posted them to the SHEP monitoring website.

    c. **Water Quality –** We concentrated on the development of solutions for water quality data query, access and display, which involved the retrieval of near-real time and historical data. Data access included the use of REST services from

USGS (http://waterservices.usgs.gov/rest/IV-Test-Tool.html) to generate URLs identifying gages of interest. A scheduler system was configured to periodically access the gages and retrieve water quality data. A series of scripts automate data collection and preparation process, including the parsing and conversion of the output data files into a format readable by a Geographic Information System. This functionality will allow users to use the SHEP map portal to access recent data for gages of interest by interacting with the graphical user interface. The solution also provides the basic functionalities for querying, retrieving and displaying historical data for water quality, allowing users to display changes in gage variables over time.

d. **Vegetation/Marsh Monitoring Data** – We have not received any additional data for the Vegetation Monitoring project during this quarter. We have received reports from December 2015, January 2016 and February 2016. Received reports have all been posted to the SHEP monitoring website.

e. **Avian Tissue Monitoring** – We have not received any data or reports for this quarter.

f. **Marsh Edge Fishes –** We have not received any data or reports for the Marsh Edge Fishes project during this quarter.

g. **Intensive Water Quality/Hydrologic Monitoring Events –** We have received the 2015 Hydrodynamic and Water Quality Modeling Report, including: the Uncertainty Report, Longitudinal Plots, Project Model and Modeling Guide, and Appendices A-F. They were all posted to the website.

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. *(no change from the previous reports)*

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

i. 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. 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.

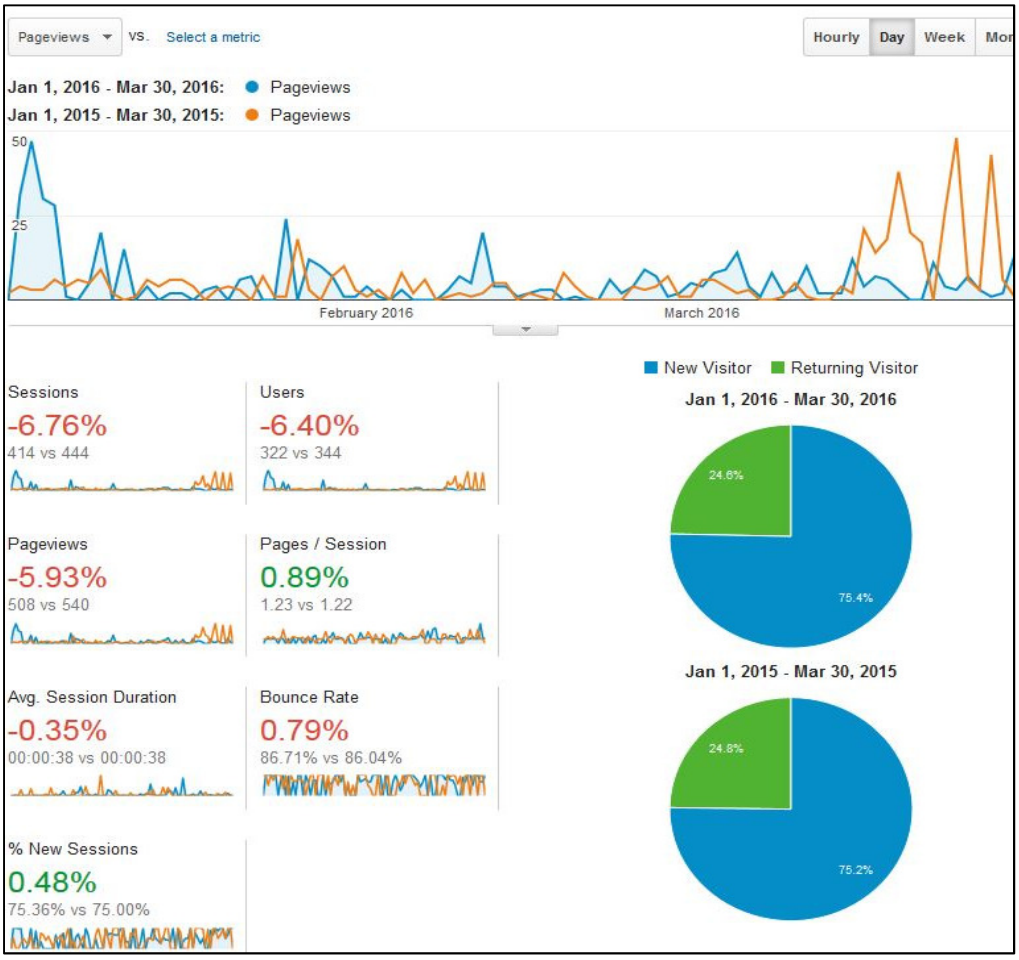

Figure 1: Website statistics of first quarter of 2016 and 2015

During the first quarter of 2016 there were 414 page views on the website (322 unique users). This number of page views corresponds to a small decrease (-6.76%) in views in relation to the first quarter of 2015.

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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 First Quarter Report of 2016 for this project.
    b. A budget summary is being provided as a separate document.

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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