

## **Appendix D**

# **Planning Level Waters of the U.S. Analysis**



**APPENDIX D**  
**PLANNING LEVEL**  
**WATERS OF THE U.S. ANALYSIS**

In the absence of information regarding Waters of the U.S. (WoUS) for areas outside of the Alternative 1 (Proposed Project), a planning-level estimate Waters of the U.S. was developed by Atkins. The purpose of this estimation was to facilitate discussion and comparison of impacts to WoUS within the overall WoUS Resource study area boundary as well as provide a comparison between impacts of the alternatives. WoUS features associated with the Proposed Project were provided by Palmetto Railways and were combined with the estimated features outside of the Proposed Project area to create the base layer for the entire WoUS Resource study area. The planning-level data used for the alternatives were first modeled using Geographic Information Systems (GIS). This dataset was then field verified and refined with data collected in the field.

The planning-level WoUS streams were modeled in ArcGIS using the ArcHydro tool on a 10-foot by 10-foot digital elevation model (DEM), which was derived from high-resolution Light Detection and Ranging (LiDAR) data collected for Charleston County and obtained from the South Carolina Department of Natural Resources (SCDNR 2014). Tributary flow paths were estimated using National Hydrography Dataset (NHD) data from the U.S. Geological Survey (USGS 2014), and were then evaluated and revised based on aerial photography and high-resolution LiDAR data.

Predicted wetlands were estimated by identifying areas on the DEM within the mean tidal amplitude of Charleston Harbor, at an elevation of 5.5 feet. These areas were identified using elevations from the high-resolution LiDAR and tidal information from National Oceanic and Atmospheric Administration buoy data (NOAA 2014) for Charleston Harbor (Station CHTS1 – 8665530).

Field verification to determine the accuracy of GIS predicted streams and wetlands was conducted by Atkins staff in June 2014 and January 2016 for features within the WoUS Resource study area. Any changes to the predicted model were mapped using Trimble Geo XT or Geo XH Differential Global Positioning Systems (GPS) technology with a Global Navigation Satellite System (GNSS), which reports sub-meter accuracy. The GPS data were corrected using GPS Pathfinder office software and exported to shapefile format. The field data were used to verify the presence of the predicted stream and wetland features, add additional features not predicted, and adjust boundaries of wetlands, open water, or streams. However, a delineation to U.S. Army Corps of Engineers standards was not performed for the predicted wetlands.

In several locations, field verification of features in close proximity to active rail lines required a certified escort, provided by Transportation Systems, Inc., for safety reasons. The escort was certified to supervise access to areas near, but not closer than 25 feet, active CSX rail lines. Within the CSX-related activity portion of the WoUS Resource study area, there are several active NS rail lines within close proximity to the CSX lines. As a result, the escort was not authorized to provide access, and field verification of stream features in this area could not be completed. In these areas,

most notably in the CSX-related activities corridor, the presence/absence of predicted stream features was refined using aerial photo interpretation.

A similar effort was made for the Noise Analysis to predict water depths at Shipyard Creek where pilings were to be constructed in open water. LiDAR data from the WoUS analysis were used to create cross-sections at the piling locations to estimate the mean tidal amplitude. The nearest NOAA tidal gauge located at Shipyard Creek, 0.8 mile above Cooper River entrance (Station TEC3061) was referenced as collateral evidence along with field observations of the estimated tidal fluctuation of up to 6 feet.

### **References Cited**

National Oceanic and Atmospheric Administration (NOAA). 2014. National Data Buoy Center. Website: <http://www.ndbc.noaa.gov/data/Forecasts/FZUS52.KCHS.html>. Accessed on June 9, 2014.

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