South Carolina Surface Water Quantity Models
Monthly Summary

Invoice Date:	August 28, 2015
For Services Between:	July 25, 2015 and August 28, 2015
Invoice No.:	12

Summary of Work Completed During Invoice Period

Project Management and Related Tasks

- Continued internal project coordination and management tasks, including:
  - Weekly project team meetings
  - Monthly project meeting by teleconference

Data Collection

- CDM Smith continued contacting water users in the Catawba, Santee, and Salkehatchie River basins to confirm reported withdrawal amounts, sources, and discharge amounts; collect pre-reporting withdrawal amounts (or estimates); and confirm other operational parameters.
- Data collection in the Saluda, Broad, and Pee Dee basins is substantially complete; however, additional follow-up calls are being made as the data is analyzed and incorporated and used for unimpaired flow (UIF) development and model development.

Data Analysis and Modeling

Saluda

- CDM Smith continued revising the draft UIF dataset, based on the revised methodology agreed to in discussions with DNR, and began an internal quality review of the revised UIF dataset, which included testing in the Saluda SWAM model. CDM Smith also began updating the UIF Results Memorandum.
- CDM Smith conducted a preliminary calibration/verification using the monthly time step and the original UIF dataset. The revised UIF dataset was also incorporated into the model, and the model was used to assist in checking the dataset, using both monthly and daily time steps.
- CDM Smith began development of a report documenting the objectives, framework, model inputs, calibration results and usage guidelines for the Saluda Basin Pilot Model.

Edisto

- Developed matrix of reference gage options to use for flow gage extensions and provided to DNR for review. Also continued setting up UIF workbooks.
- Submitted the UIF methodology report.
- Held additional discussions with Charleston Water System (CWS) and Kapstone to understand and analyze the historical withdrawal amounts from the Edisto River. Received additional data characterizing withdrawal amounts from CWS various sources.

Broad

- Reservoir data was compiled and organized to determine data gaps and to begin to develop an approach for calculating UIFs downstream of the reservoirs.
- Began hindcasting and gap filling withdrawal and discharge data, as part of the UIF dataset development.

Pee Dee

- Continued with withdrawal and discharge data collection and analysis.
- Finished development of the draft model framework and submitted to DNR and DHEC for review.

Catawba

- Continued contacting permitted and registered water users to confirm current and collect historical operations and water withdrawal data.

Santee

- As part of the UIF development in the Saluda, updated UIF worksheets that will be used in the Santee and other basins. Continued organizing withdrawal and discharge data.

Savannah

- As part of the UIF development in the Saluda, updated UIF worksheets that will be used in the Savannah and other basins. Continued organizing withdrawal and discharge data.

Salkehatchie

- As part of the UIF development in the Saluda, updated UIF worksheets that will be used in the Salkehatchie and other basins. Continued organizing withdrawal and discharge data.

Stakeholder Involvement

- Presented the model framework at the first Broad River basin stakeholder meeting on August 5.

Summary of Upcoming Work

Over the next month, the project team will:

- Continue data collection in the Catawba, Santee, and Salkehatchie basins. Initiate data collection in the Savannah basin.
- Finalize and submit the updated Saluda UIF Results Memorandum.
- Finalize development and calibration of the draft Saluda model to the confluence of the Broad River, incorporating the revised UIF dataset.
- Continue development of the Edisto UIF dataset and the Broad UIF dataset. Once the Broad dataset is complete, the Saluda UIF dataset will be completed to the confluence of the Wateree River.
- Incorporate DNR/DHEC and TAC comments on the draft Pee River Basin model framework and submit a revised draft for posting on the DNR website, in preparation of the first Pee Dee Basin stakeholder meeting in October.
- Begin developing the draft Catawba River basin model framework.

Issues Impacting Scope, Schedule, or Project Cost

Development of the UIF dataset in the Saluda Basin has taken longer than anticipated, and has pushed back the schedule for delivery of the Draft Saluda Basin Pilot Model. Issues regarding the methodology used to develop the UIF dataset, and the resulting precision of the UIFs, have been resolved following discussions between CDM Smith and DNR. As a result, a mutually agreed-to and repeatable process has been established and all of the tools and information necessary to efficiently develop the subsequent UIF datasets.

Schedule adjustments were made to reflect the project progress and more accurately account for future deliverables.

During the project kickoff meeting, and based on DNR and DHEC review of the draft Modeling Plan, several potential out-of-scope model enhancements were identified. These include:

- A "Current Situation Analysis" for quasi-real time operational support. This functionality would provide a probabilistic analysis of current conditions at any future point in time and how conditions are likely to change within 6 or 12 months based on projected use and management patterns.
- The ability to use near-term hydrologic flow forecasts (for example, 60-day streamflow forecasts from NOAA) for month-to-month operational planning.
- Use of HEC DSSVue and DSS files for results display and analysis.

CDM Smith has presented a scope for implementing these enhancements to DNR and DHEC, and will prepare cost prior to completion of the pilot (Saluda) model. The decision on whether to implement one or more of these enhancements will likely be made once the pilot model is completed.