South Carolina Surface Water Quantity Models
Monthly Summary

Invoice Date:	April 4, 2016
For Services Between:	March 5, 2016 and April 2, 2016
Invoice No.:	19

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

- Data collection most river 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

- Calibration model adjustments to inflow (by way of adjustments to headwater UIFs) and evaporation were made, based on the results of the Lake Murray verification exercise. Similar updates are being made to the baseline model and the new SWAM reservoir enhancements are being incorporated. Updates to the model report were also initiated.
- Reservoir enhancements to the SWAM code, which will apply to reservoirs in the Saluda basin, were developed and tested.

Edisto

- Based on DNR review of the Montmorenci gage verification exercise and previous calibration scenarios, a final UIF dataset was selected by DNR. The calibration and baseline models are being updated and the model report is being finalized.

Broad

- The draft UIF dataset and supporting technical memorandum were completed and submitted to DNR and DHEC for review.
- Development of the calibration model was initiated.

Pee Dee

- The draft UIF dataset and supporting technical memorandum were completed and submitted to DNR and DHEC for review.
- Development of the calibration model was initiated.

Catawba-Wateree

- Reservoir enhancements to the SWAM code, which will apply to reservoirs in the Catawba-Wateree basin, were developed and tested.

Santee

- No additional work was conducted.

Savannah

- Reservoir enhancements to the SWAM code, which will apply to reservoirs in the Savannah basin, were developed and tested.

Salkehatchie

- CDM Smith continued working on the draft model framework and memorandum.

Stakeholder Involvement

- On March 14, CDM Smith gave a presentation at the South Carolina Environmental Conference (SCEC) on various aspects of model development and use. (Note that this effort did not count toward the additionally budgeted stakeholder meetings, but was done separately by CDM Smith).

Summary of Upcoming Work

Over the next month, the project team will:

- Submit the final Edisto UIF dataset and Results Memorandum
- Finalize the Edisto Model Report, based on the final, calibrated model
- Submit drafts of the Broad and Pee Dee calibration models.

Issues Impacting Scope, Schedule, or Project Cost

In late 2015, discussions were held between CDM Smith and DNR regarding how reservoir operating rules are incorporated in SWAM. DNR indicated the preference for additional flexibility in SWAM to allow the user to evaluate more complex alternative management rules. It was noted that when more complex rules (such as the Lake Murray Striped Basin release rules) were included in SWAM as “prescribed rules”, user-initiated adjustments to test variations of the rule were not easily performed. CDM Smith prepared, submitted, and recently received approval for a change order to implement model enhancements that will allow for increased flexibility with regard to reservoir operating rules.

Schedule adjustments were made to reflect the project progress and more accurately account for future deliverables. It is currently anticipated that due to delays in completion of the pilot model, the project schedule will need to be extended approximately six months, to the end of 2016. An updated schedule is attached.

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. The decision on whether to implement one or more of these enhancements will likely be made once the additional models are completed.

South Carolina Surface Water Quantity Assessment

Schedule

Updated Jaunary 5, 2016

Basin and Milestone	2016 Jan 4-Jan	11-Jan	18-Jan	25-Jan	Feb 1-Feb	8-Feb	15-Feb	22-Feb	29-Feb	Mar 7-Mar	14-Mar	21-Mar	28-Mar	Apr 4-Apr	11-Apr	18-Apr	25-Apr	May 2-May	9-May	16-May	23-May	30-May	June 6-Jun	13-Jun	20-Jun	27-Jun	Jul 4-Jul	11-Jul	18-Jul	25-Jul	Aug 1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	Sep 5-Sep	12-Sep	19-Sep	26-Sep	Oct 3-Oct	10-Oct	17-Oct	24-Oct	31-Oct	Nov 7-Nov	14-Nov	21-Nov	28-Nov	Dec 5-Dec	12-Dec	19-Dec	26-Dec
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1 = First Meeting
2 = 2nd Meeting
D = Draft Comlpetion Date
F = Final Completion Date
T = Training

2016 Proposed Stakeholder Meeting Schedule

Basin	1st Meeting Week of:	2nd Meeting Week of:
Saluda	*completed*	*completed*
Edisto	*completed*	*completed*
Broad	*completed*	2-May-16
Pee Dee	*completed*	2-May-16
Catawba-Water.	*completed*	11-Jul-16
Santee	*completed*	29-Aug-16
Savannah	25-Jul-16	14-Nov-16
Salkehatchie	25-Jul-16	14-Nov-16