South Carolina Department of Health and Environmental Control

Promoting and Protecting the Health of the Public and the Environment

Surface Water Availability Assessments

Catawba/Wateree River Basin
Bi-State Commission
June 12, 2015

Surface Water Availability Assessments

- SC has limited scientific information about the availability of our water supplies, and future demands on those supplies
- Surface water assessments are necessary to complement SCDHEC's new surface water permitting program and for SCDNR to update the State Water Plan
- 1.5 million dollars allocated to the project from the SC General Assembly

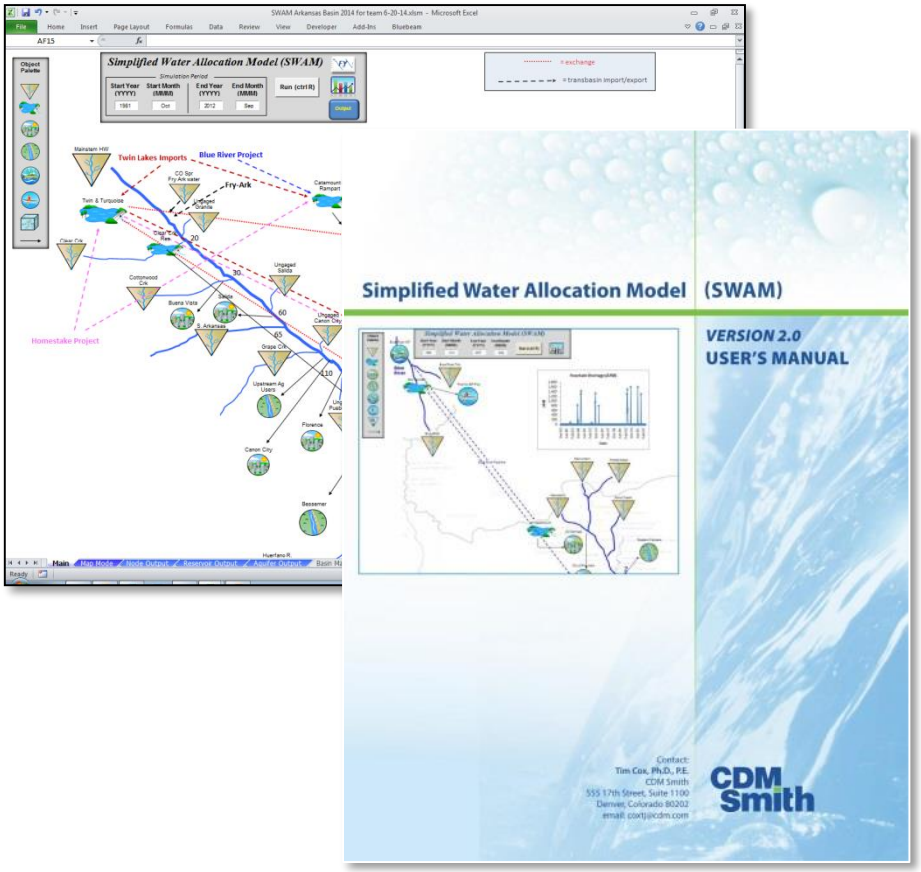
SC DHEC and DNR Co-Managing Process

- CDM Smith, Inc. was contracted to develop the models using its *Simplified Water Allocation Model* (SWAM) modeling tool

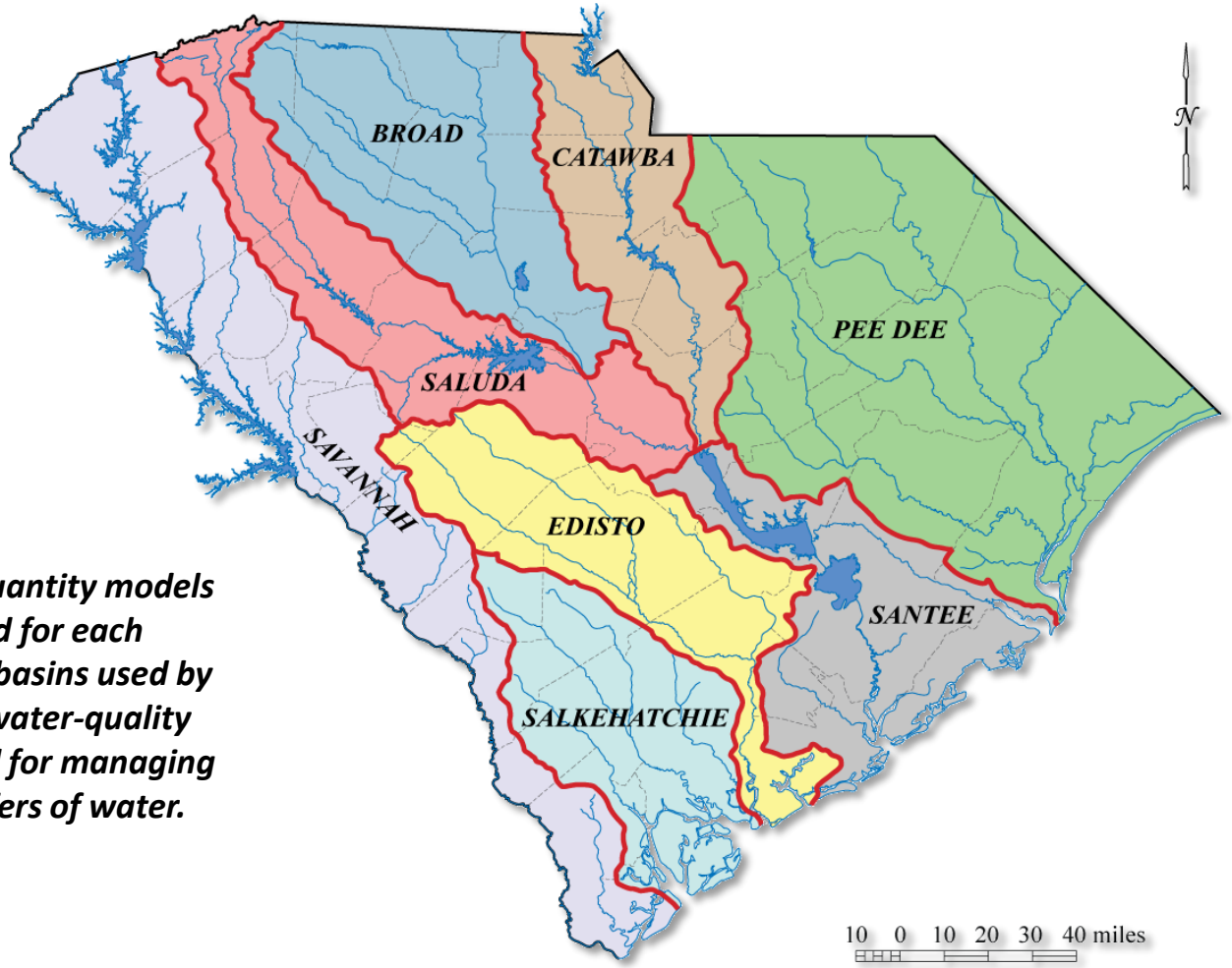
- Clemson University will facilitate the stakeholder engagement process

Simplified Water Allocation Model (SWAM)

- Developed in response to an increasing need for a desktop tool to facilitate regional and statewide water allocation analysis
- Calculates physically and legally available water, diversions, storage consumption and return flows at user-defined nodes
- Used to support large-scale planning studies in Colorado, Oklahoma, Arkansas and Texas

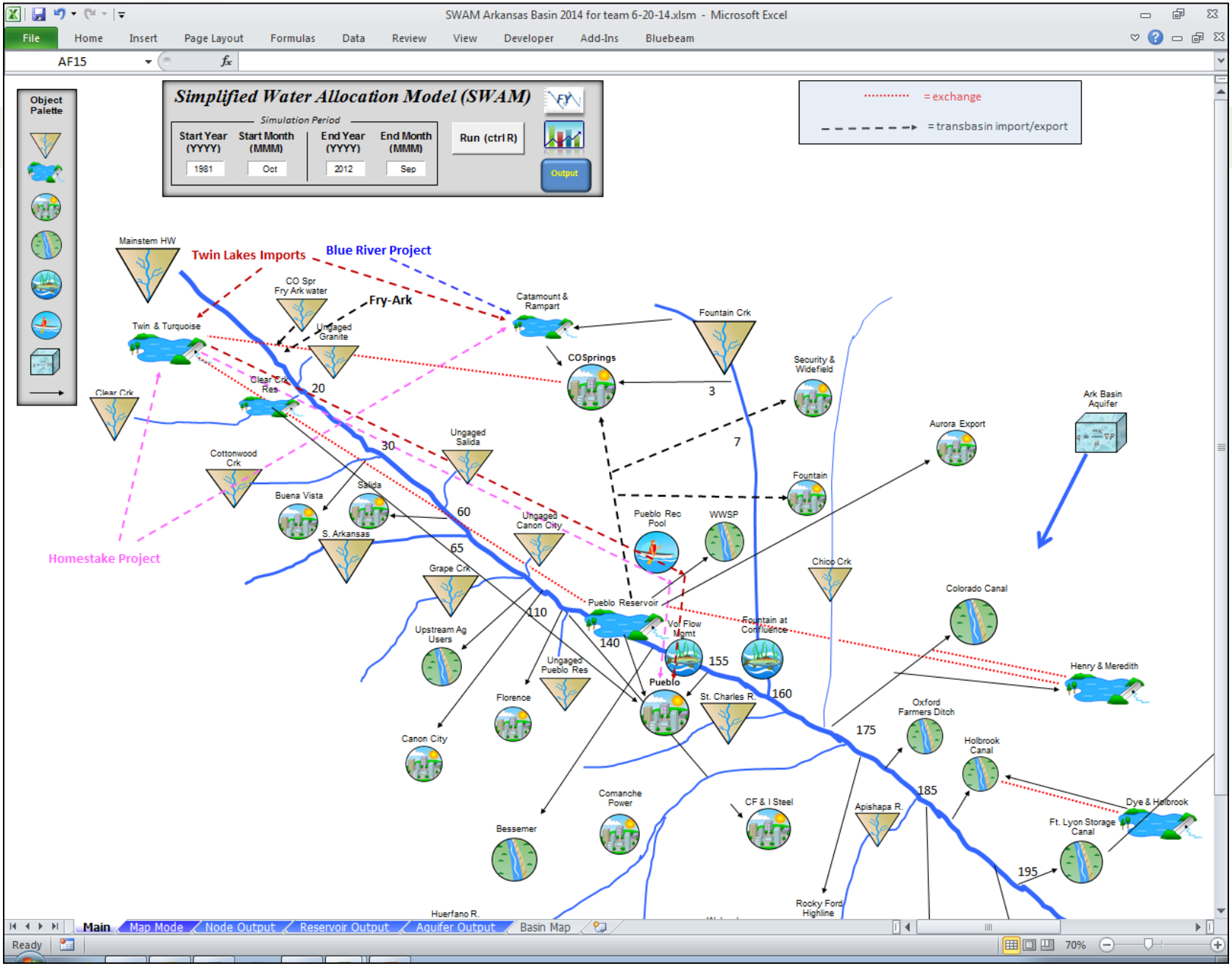


River Basin Delineation



Surface-water quantity models will be developed for each basin, the same basins used by DHEC for doing water-quality assessments and for managing interbasin transfers of water.

SWAM Model Main Screen



The Models Can Be Used To…

- Determine surface-water availability
- Predict where and when future water shortages would occur
- Test alternative water management strategies, new operating rules, and “what-if” scenarios
- Resolve water disputes
- Consolidate hydrologic data
- Evaluate the impacts of future withdrawals on instream flow needs
- Evaluate interbasin transfers
- Support development of Drought Management Plans

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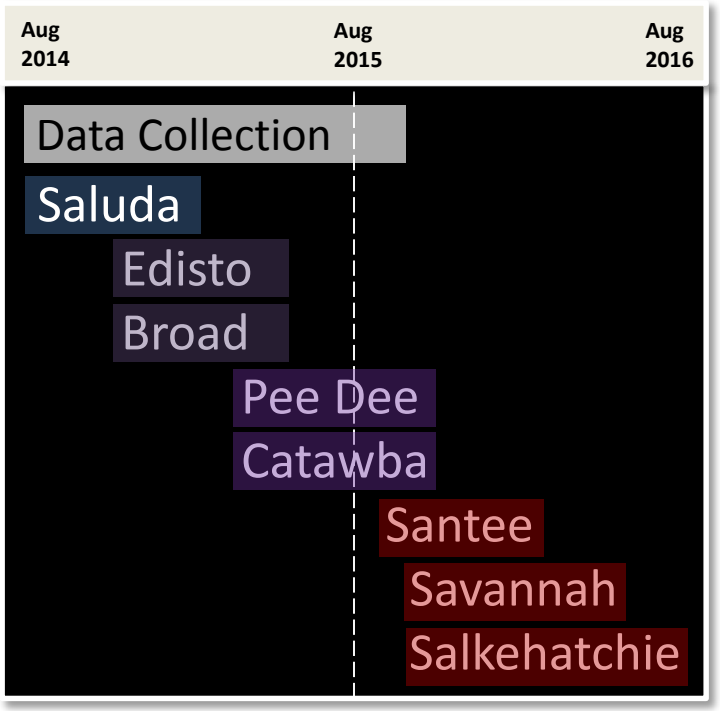
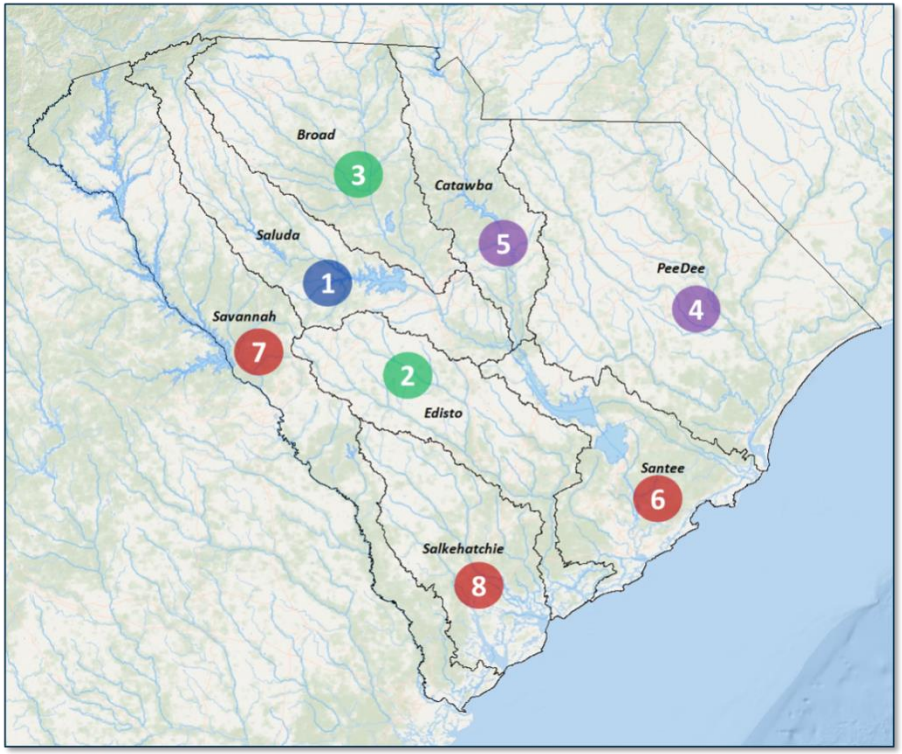
Schedule for Developing the Models

- ***Pilot Model*** of the Saluda River Basin
- Other models to follow, with order based on data availability
- 2-year schedule requires that groups of models be constructed in parallel





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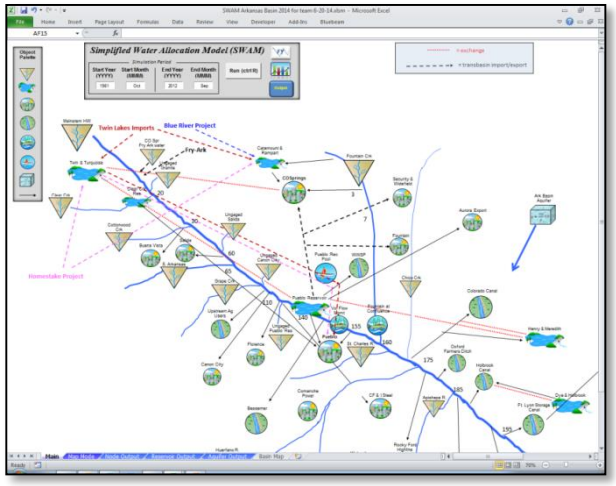
Data is Needed to Support…

1. Development of Unimpaired Flows (UIFs)

UIF Definition:	Flow in a river as it would be in a completely unaltered state Historically removed flows with human influences removed
UIFs Provide:	A baseline for evaluating impacts of human use by allowing analysts to compare altered flows to UIFs

2. Development of each baseline model
   - A. Withdrawal and return amounts and locations
   - B. Current reservoir operating rules
   - C. Drought Management Plans and Requirements
   - D. Instream flow requirements



Data Needed to Support Unimpaired Flows

Streamflow, dating back to earliest continuous gage data

Historical withdrawals (>100,000 gpd) and discharges for M&I, agriculture, hydropower

Reservoirs

a) Operating rules and elevation-storage-area curves

b) Historical elevation release data

c) Precipitation and evaporation records

Interconnections

Project Overview

Task 1

Data Collection
- Streamflow, M&I and ag withdrawals, discharges, precipitation, reservoir operations, interconnections, facility operation dates, etc.

Unimpaired Flow Development
- Daily mean UIFs

Data Analysis
- Gap filling and record extension

Stakeholder Input

Task 2

Basin Schematic
- Model framework development

Model Calibration
- Reproduce actual conditions

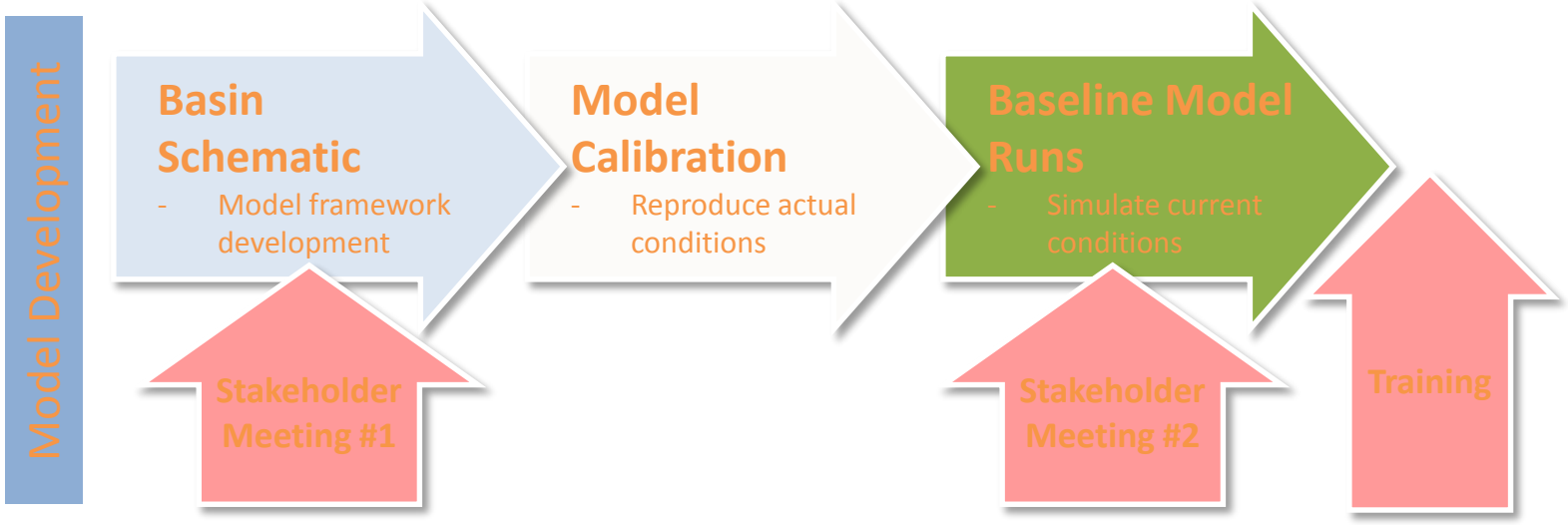
Baseline Model Runs
- Simulate current conditions

Stakeholder Meeting

Stakeholder Meeting

Stakeholder Involvement

Project Overview (Webinar) Opportunities



- Two meetings per basin offered during model development
- Stakeholder engagement is being led by Clemson University

Stakeholder Involvement Opportunities

- **Meeting #1 - Review of Basin Framework (Workshop Format)**
  - Are all interests included in the framework?
  - Are all important tributaries represented?
  - Are additional model nodes needed for environmental flows?
  - Are there significant data gaps which still need filling?

- **Saluda Basin Meeting #1 – completed in April**
- **Edisto Basin Meeting #1 – June 18th, Blackville**

Stakeholder Involvement Opportunities

- **Meeting #2 - Review of Unimpaired Flow Dataset and Baseline Model**
  - Review of UIF development and gap filling
  - Review of baseline model
  - Review of model calibration and verification results
  - Review of model uses and limitations

- **Training**
  - Training to interested parties will be provided for each basin model after all models are completed

Questions?

www.scwatermodles.com