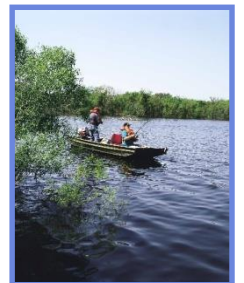
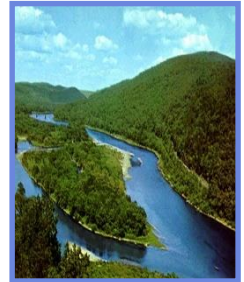


French Broad River Basin
Hydrologic Model -
Kickoff Meeting
April 11, 2018

Steven Nebiker

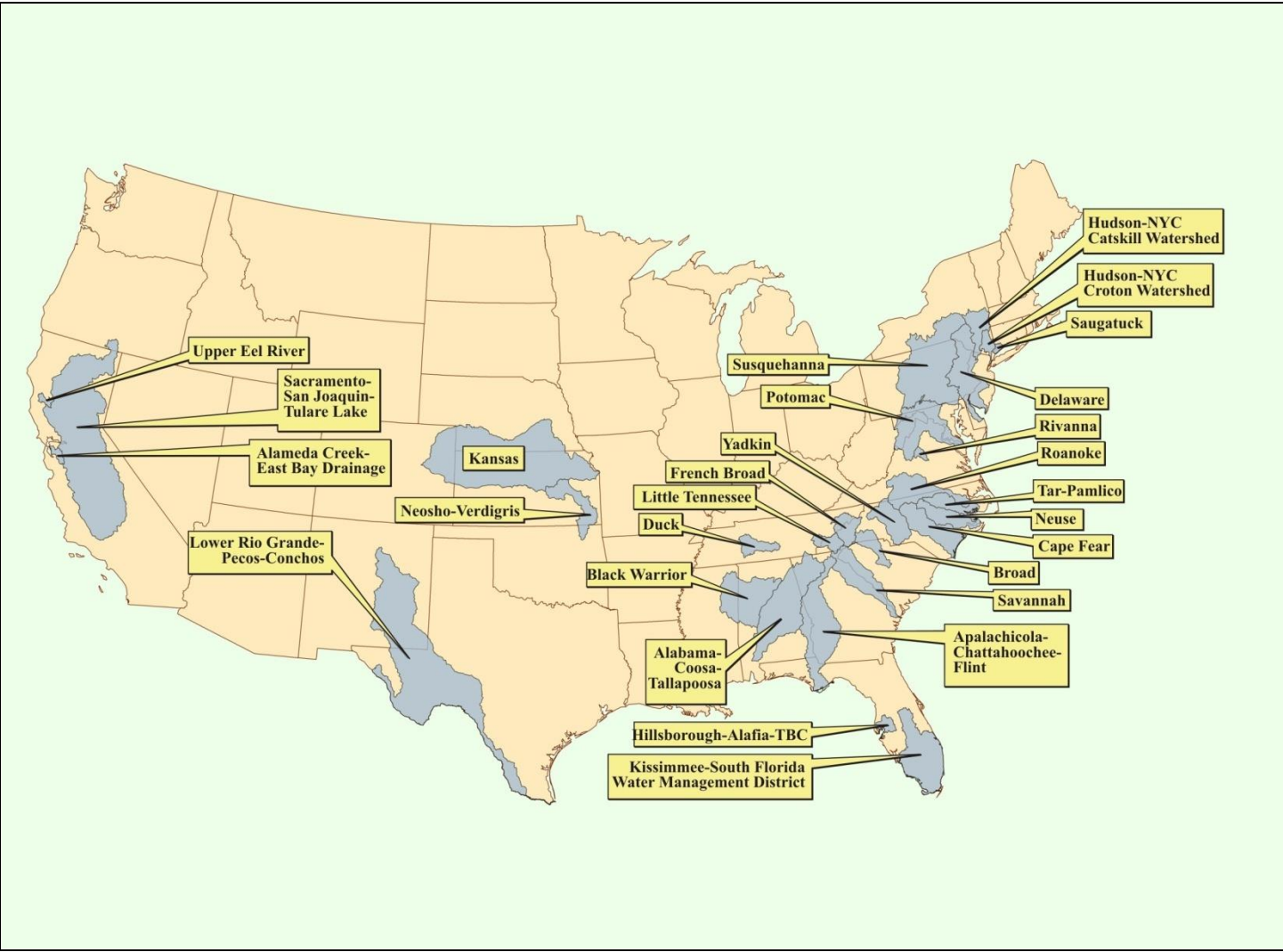


Who and What is HydroLogics?

- 10 people, 4 states
- In business since 1985
- Specialties: hydrology, modeling, systems analysis, operations research
- Developers of OASIS
- Services:
 - Water allocation/conflict resolution
 - Risk/drought management
 - Water supply planning
 - System operations

www.hydrologics.net

Small Firm – Broad Reach



What is OASIS?

- A patented, mass balance, water resources simulation/optimization model
 - Runs quickly on a long-term hydrologic record
 - Can model virtually any flow prescription or operating policy
 - Uses real-time forecasts for probabilistic operations
- Same model for:
 - Alternatives evaluation (planning)
 - Real-time operations
 - Gaming

Model Input

- Time series of unregulated inflows
- Time series of net evaporation
- Physical data (reservoir SAE, turbine characteristics, channel capacities, etc.)
- Operating Policies, e.g.
 - Rule curves
 - Minimum releases/ecological flows
 - Drought and flood management policies
 - Energy requirements

Model Output

- Tables and Graphs of
 - Flow
 - Storage, and
 - *Derived attributes*, e.g. habitat availability, energy, revenue, water supply shortages, recreation days

for every time step

at every point in the system

Alternatives Evaluation

A major purpose of OASIS is to compare alternatives. That is, to compare the performance of alternative sets of **facilities**, **demands**, and **operating policies** over the whole range of the hydrologic record.

Concept of Basin Hydrologic Model

A basin-wide model of the French Broad River at the finest practical geographic resolution and timestep.

Concept of Basin Hydrologic Model

A basinwide model of the French Broad River at the finest practical geographic resolution and timestep.

Possible Uses:

1. Evaluation of the combined effects of municipal water supply plans
2. Evaluation of interbasin transfer permit applications
3. Development of individual water supply plans – model will be on the DWR server and available to stakeholders and their consultants
4. A platform for developing risk-based drought plans.

Data

- Majority of data collection to be performed by HDR
- HydroLogics responsible for collecting data on streamflows and system operations (reservoirs, drought plans, etc.)

Project Timeline

- 9 month timeframe
- Components
 - Basin schematic: 1 - 2 months
 - Data collection (HDR): 2 - 3 months
 - Inflow development: 2 - 3 months
 - Verification
 - Operating rules: 2 months
 - Basecase run (current conditions): 2 - 3 months
 - Documentation and training: 1 month
 - **Expected completion date: November 2018**
- Accelerated timeline for preliminary modeling results (and drought forecasts): 3 - 4 months

Demonstration of Neuse Hydrologic Model