


Cape Fear River Basin Hydrologic Model Update

June 10, 2010


CAPE FEAR RIVER BASIN HYDROLOGIC MODEL



Developed for the
Cape Fear River Assembly
and its Partners, including

North Carolina Division of Water Resources	LCFR WSA
	Morrisville
	OWASA
Apex	Pittsboro
Burlington	PWC
Cary	Reidsville
Chatham Co.	Wake Co.
Durham	Wilmington
Greensboro	
Harnett Co.	Dupont
High Point	Progress Energy
Holly Springs	International Paper

An application of OASIS with OCL covered by U.S.
Patent Nos. 6,002,863 and 6,581,027 © 2005

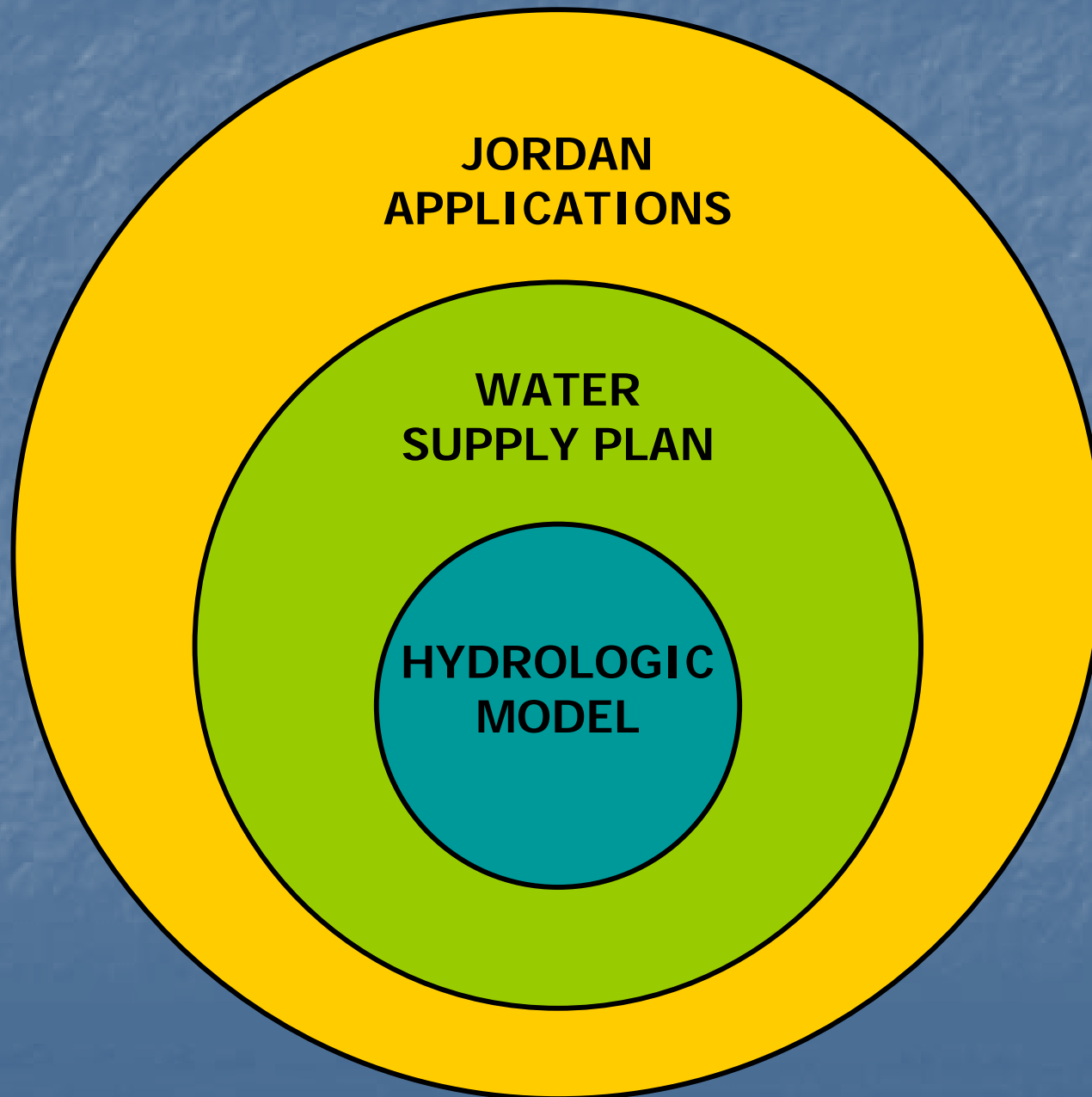


HYDROLOGICS
Advancing the management of water resources

[CLICK TO CONTINUE](#)

Round 4 Allocation Process

Three Simultaneous Tracks



Model Updates

Model Node Changes

- Add Siler City to the model
- Add instream flow nodes (number not certain; inflows needed at the nodes)
 - Identified 19 sites and 2 already model nodes. Need 17 additional nodes.
- Add node for Progress Energy skimming operations (inflows needed at the node)
- *Model L&D and Buckhorn as reservoirs.*
- *Add Deep River small hydropower projects.*

Minimum Updates

Estimated Cost \$75,000 and 6 months to complete.

- Update inflows from 2005 to current.
 - Update of withdrawals, discharges, agricultural uses, and reservoir operations.
- Calibrate smaller reservoirs, if historical data is available.
- Simplify Jordan Lake drought code.
- Improve coding of operations of OWASA and Fayetteville.
- Link withdrawal and discharges.
- Update documentation.

Additional Updates

Estimated cost \$40,000

- Add Siler City's reservoir.
- Add Buckhorn and the Locks & Dams as reservoirs.
- Add Progress Energy skimming.
- Add instreamflow ecological flow nodes.
- Include water shortage plans and switch to turn on/off.
- Sensitivity analysis parameters (\pm percentage) – inflows, evaporation, precipitation, and/or withdrawals.
- Combine Cape Fear and Neuse models.
- Add a feature to let users select runs, plots and tables from a "common directory."

Updates that need additional discussion.

- Consider changes in water use patterns depending on weather patterns (wet yr versus dry) that are not reflected in WSRPs.
- Rather than asking for 2060 projections, DWR may just want to ask for a characterization of water demand at "buildout" (may or may not be appropriate depending on service area).
- How does the model characterize the losing segment of the Cape Fear?
- Climate change- how to characterize? One method might be to develop some hypothetical flow patterns ("what would happen IF" situations).
- Understanding that there is somewhat of a disconnect; there is still an interest in taking what we can to look at impacts to water quality.
- BRAC Regional Taskforce indicated we may need to consider adding the Black and possibly Northeast Cape Fear River basins. *Note 3 of the requested instream flow nodes are in the Black and Northeast Cape Fear.*

Suggestions outside the current scope.

- Growing issue of ecological flow requirements (need to figure out approach).
- Is it possible to include a discussion of impacts to/from groundwater use?
- What will happen to the WQ of Jordan Lake during droughts?
- What WQ effects will we see downstream of the dam during droughts?
- The State Geologist estimates that there economically valuable reserves of shale gas in the Deep River valley of Chatham, Lee & Moore Counties. The current technology to extract shale gas requires pumping large volumes of water under pressure under ground.
- Increasing impervious surfaces increases runoff to streams during storms and decreases groundwater recharge.

Funding

- Makes sense for Triangle J to play a contracting role (checks will be made out to them).
- - Need to emphasize that all water users are "getting something" out of having an updated model and basin water supply plan.
- - Need to add a component to the budget for unforeseen needs (maybe \$150K total) -PE will be refining their withdrawals in the model (will not need to be a paid portion of the update)
- - DWR will do water use collection piece of the model update (also won't be a paid piece of the update).
- - Important to acknowledge that this is the State's model (for those that may not be familiar with process).

Potential Partners	Submitted Letter of Intent	Jordan Lake Allocation ¹ (MGD)	Facility Capacity ² (MGD)	Cost Share Proportion ⁴
Lower Cape Fear W&S Authority			84.400	22.1%
Jordan Lake Partnership		63	7.6	18.5%
Piedmont Triad Regional Water Authority			57.440	15.1%
City of Fayetteville PWC	Yes		57.500	15.1%
Harnett County			18.000	4.7%
City of Sanford	Yes		12.000	3.1%
Siler City			4.000	1.0%
BRAC Regional Task Force				
DuPont			27.360	7.2%
International Paper			50.000	13.1%
Progress Energy Carolinas ⁸			0.000	0.0%
Total	12	63.000	318.300	100%

Next Steps

- Let agreement on updates.
 - Get a better cost estimate based on agreed upon updates.
 - Develop RFP
- Get funding commitments
 - Develop funding agreements

Contact Information

- Email Lists
 - Cape-Fear-Plan-join@lists.ncmail.net
 - Cape-Fear-Model-join@lists.ncmail.net
- DWR Staff
 - *Email* - jordan-water-supply@lists.ncmail.net
 - *Primary Contact* – Tom Fransen – (919)715-0381
 - *Water Supply Planning* – Don Rayno (919)715-3047
 - *Contracts & IBT* – Toya Ogallo (919)715-0389

Questions

Contact Information

Tom Fransen
919-715-0381

jordan-water-supply@lists.ncmail.net

www.ncwater.org

