

RISK-BASED CONTINGENCY PLAN USING WATER SUPPLY RELIABILITY MODELING DURING DROUGHT

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Abstract. Climate change is predicting dryer conditions for the Southeastern United States. This will result in greater dependence on storage of raw water in lakes and reservoirs and produce greater variability in water levels as lakes fill and drain. During the 2007/08 Level 4 drought in Georgia, Gwinnett County Department of Water Resources (GCDWR) was faced with historical low lake levels in Lake Lanier. Since Lake Lanier is their sole drinking water source, GCDWR was concerned that the lake level could drop below their intake elevations and the entire county of 800,000 people could be out of water. Faced with such a dire situation, GCDWR was making preparations to contract with a contractor under “emergency authority” to construct a floating intake pump station to withdrawal water from the center of the lake, which would cost upwards of \$11M. GCDWR was faced the circumstance of \$1 spent too soon or implementation 1 second too late and the opportunity for backlashed was intensified. Therefore, GCDWR contracted with Hazen and Sawyer to develop a reliability model of the lake that predicts the numbers of days remaining until the water level drops below the intake. The model used lake release flows and the historical, worst-case climate conditions for the coming months to estimate the probability and the number of days remaining until their intake goes dry. They were able to see seasonal variation in the water level and understand the cause and effect relationship with the Army Corps of Engineer’s release flows. This was combined with internal procurement practices to create a more effective process that allows GCDWR to make risk-based decisions to implement a cost-effective land-based temporary pump station. Capital expenditures were to be triggered at specific risk levels – combination of lake level and season. Even with the drought behind them, GCDWR now has a contingency plan in place for next drought.