

November 15, 2011

L-31N Seepage Barrier Monitoring Plan

The modeling results indicate that there will be measurable changes in water level and L-31N canal flow with a 2-mile 35-foot deep barrier. Due to the multiple variables that influence water level and flow, such as local rainfall, evaporation, and operation of the adjacent canal system, actual changes in the field attributed solely to the barrier may be difficult to quantify. This calls for a network of hydrologic data gathering sites to provide the necessary information to evaluate the performance of the barrier. As shown on the attached map, there is already an extensive USGS and SFWMD water level and canal flow monitoring network in the vicinity of the project with years of historical data. The existing network will be supplemented with new flowmeter stations in the L-31N and L-29 canals, 7 new shallow (Miami Limestone) monitoring wells located upgradient and downgradient of the barrier on the L-31N levee, 2 new deep downgradient (Ft. Thompson) monitoring wells in the center of the barrier, and 1 new shallow (Miami Limestone) monitoring well located south of the barrier on the L-31N levee for background water level information. Dataloggers will be installed in all of the new wells.

Existing monitoring network

1. L-31N Canal flowmeters - AVM-1, 3, 4, 5, and 7 (1 to 7 miles south of Tamiami Trail)
2. Upgradient monitoring wells in the vicinity of the 2-mile barrier – 3574, 3576, NESRS3, NESS20, and L31NN (4 well cluster)
3. Downgradient monitoring wells in the vicinity of the 2-mile barrier – Krome and 3559
4. Background upgradient monitoring wells – 3575, 3577, 3578, and L31NS (4 well cluster) – (all 2 miles south of project) and NESRS2 (3 miles west of the project)
5. Background downgradient monitoring wells – 3558, 3551, and 3552

Proposed supplemental drilling / monitoring locations

1. Additional geologic information – two 50' deep coreholes will be drilled at 400 and 2400 feet south of the north end of the proposed barrier.
 2. L-31N Canal flowmeters at Tamiami Trail and 2 miles downstream – the Tamiami Trail location will measure the upgradient canal flow at the north end of the barrier and the 2-mile location will measure the downgradient flow at the south end of the barrier.
 3. L-29 Canal flowmeter – will measure the flow in the L-29 Canal between the S334 structure and the L-31N Canal, to be able to determine if there is groundwater seepage into the L-29 Canal downstream of S334 as a result of construction of the barrier.
 4. 7 new shallow (Miami Limestone) monitoring wells located upgradient and downgradient of the barrier – four 11' deep wells will be drilled approximately 25' east of the barrier on the bench adjacent to the L-31N Canal. Three 19' deep wells will be drilled on top of the L-31N Levee approximately 25' west of the barrier. The wells will be drilled 1/2, 1, 1 1/2, and 2 miles south of Tamiami Trail. The L31NN cluster will provide the upgradient water level at the 1-mile location.
 5. 2 new deep (Ft. Thompson – 26 and 46') monitoring wells located downgradient of the barrier at the 1-mile location will be drilled approximately 25' east of the barrier on the bench adjacent to the L-31N Canal. The L31NN cluster will provide the equivalent upgradient water levels at the 1-mile location.
 6. 1 new shallow (Miami Limestone – 19') monitoring well located south of the barrier on top of the L-31N Levee at the AVM-3 location for background water level information. The L31NS cluster will provide background upgradient water levels at the AVM-4 location.
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Figure 1. Monitoring Plan location map. The green line represents the 2-mile seepage barrier and the blue squares represent the proposed shallow upgradient and downgradient monitoring wells.