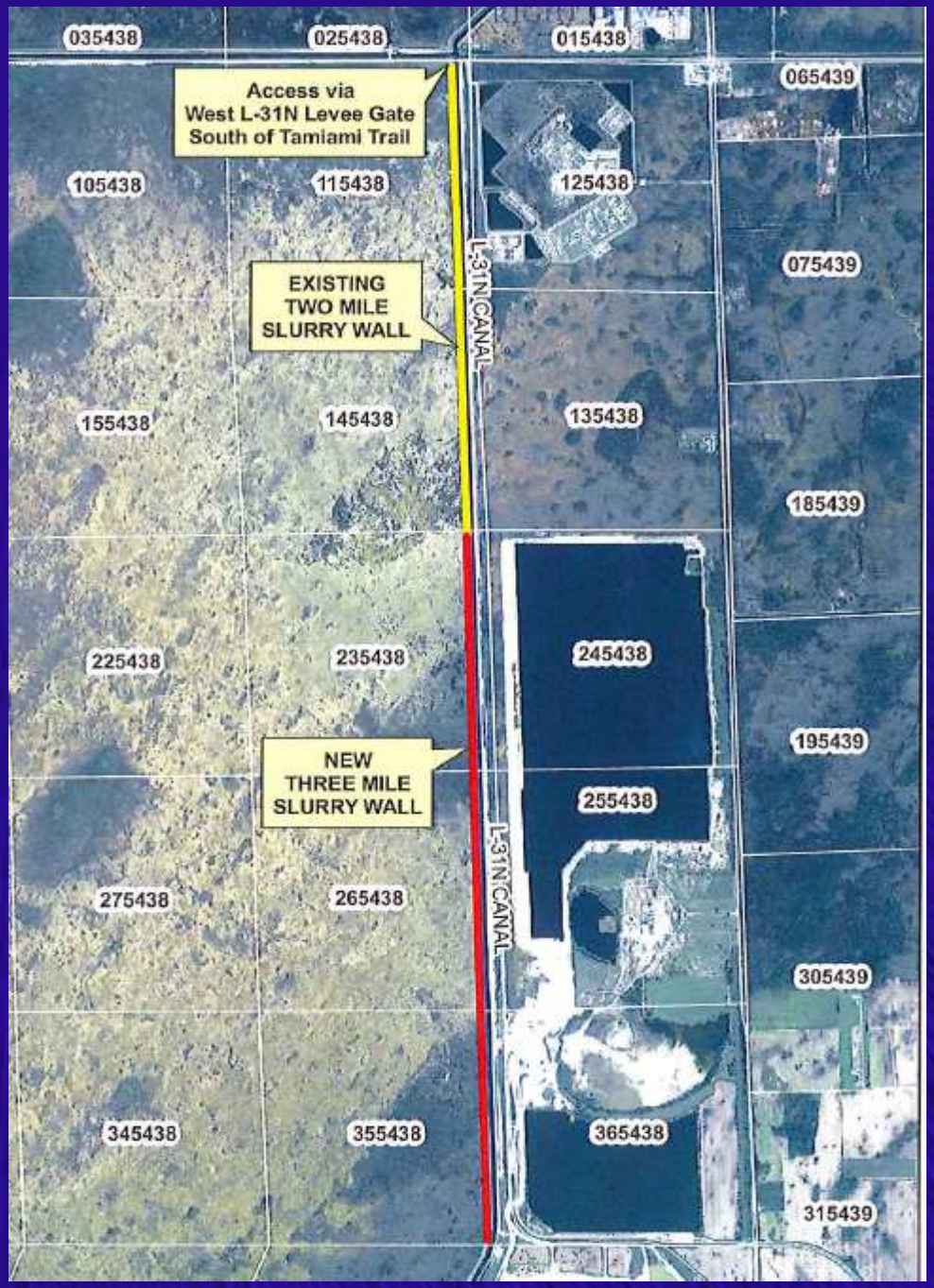
MDLPA Seepage Projects

Dade-Broward Levee Project
- Mitigation for groundwater flow changes

L-31N Project
- Wetland enhancement within Everglades National Park

Design/Construction

Modeling/Data Evaluation



west side of L-31N Canal

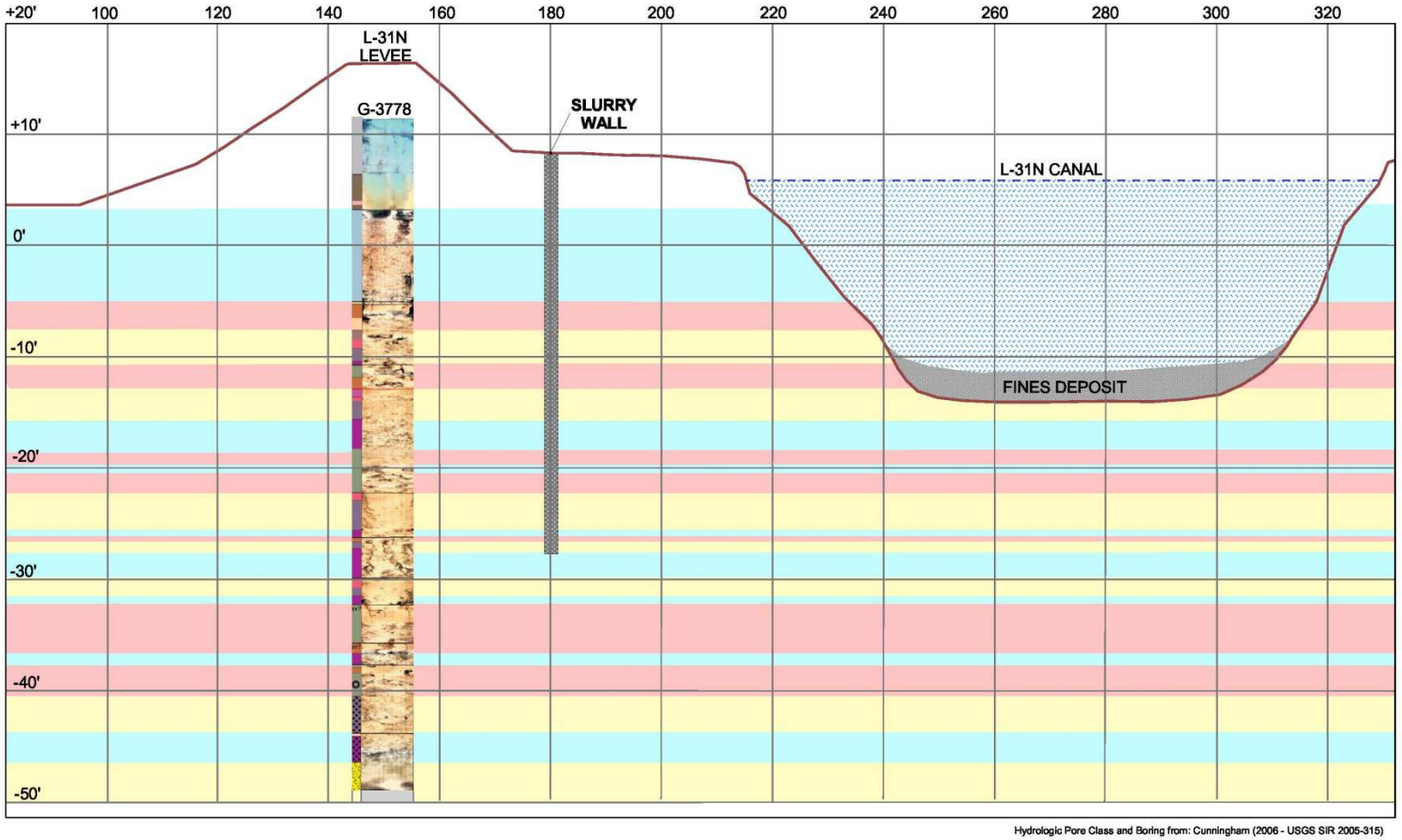
(between ENP and canal)

2012: 2 miles completed

2016: additional 3 miles

35 feet deep
cement, bentonite slurry
seepage barrier

Schematic of Barrier Installation: 35 feet deep; 5 miles long



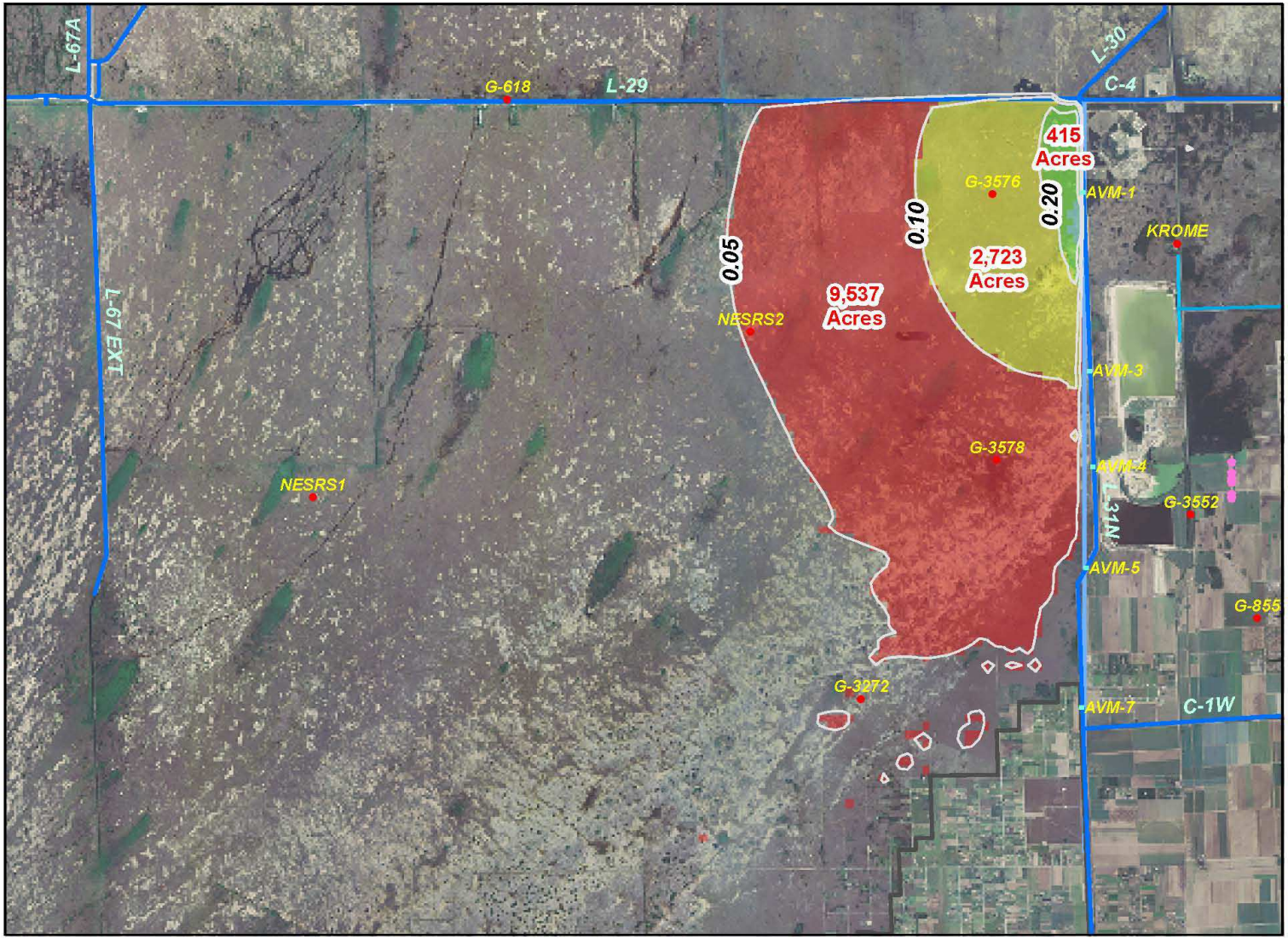
Rock core at L-31N project site


71+65
31+36

Phase 1 cost	$ 7.8 million
Phase 2 cost estimate	$13.8 million

Assumption: Phase 1 costs + 15%

Model simulation of water level change in Northeast Shark River Slough



Effect of a 2-Mile Barrier Wall on Groundwater Levels Inside the ENP
Barrier Depth: 30 ft; Daily Average: 7/1/2008-10/31/2008 (Wet)

Monitoring Program

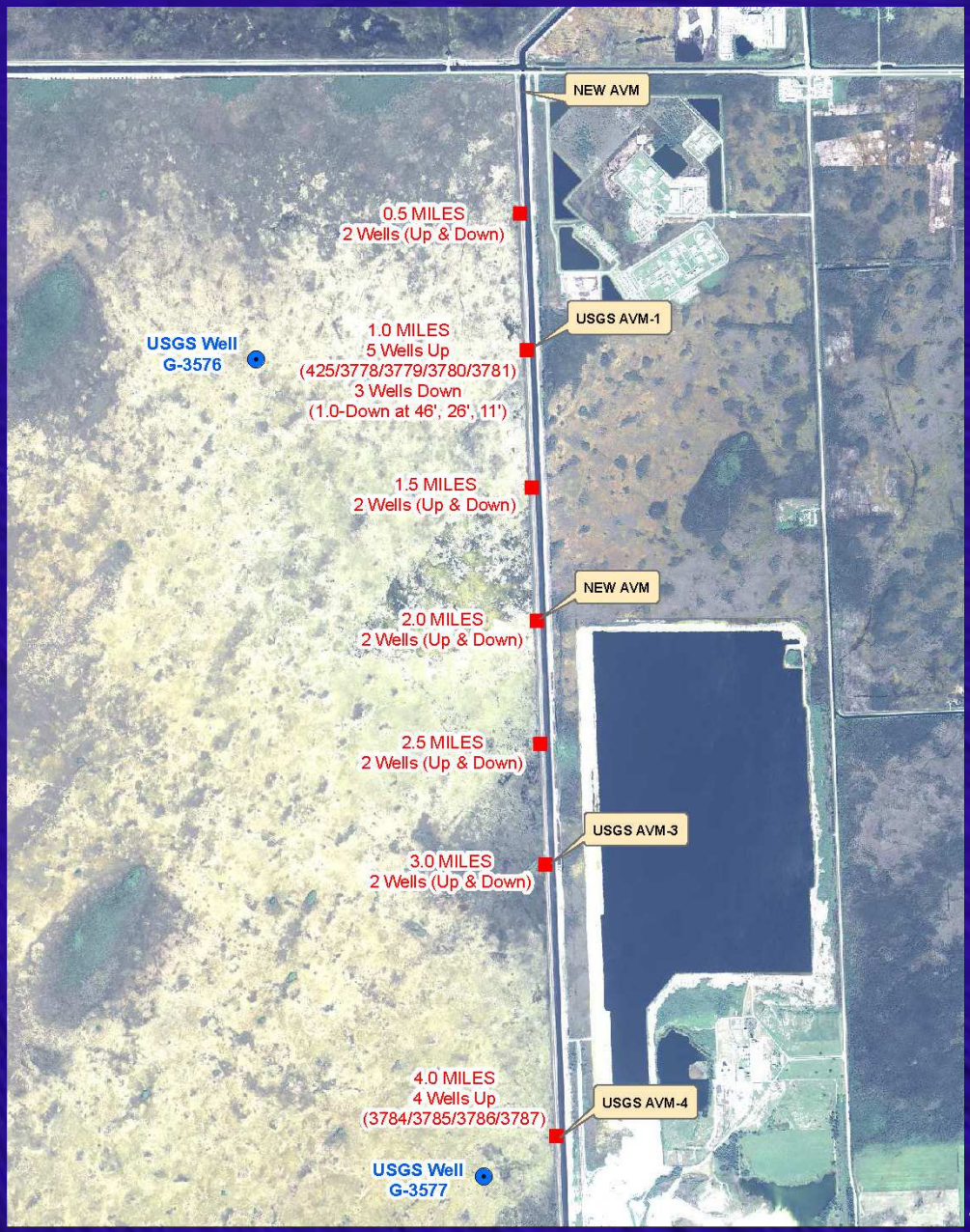
4 up/downgradient pairs of wells at wall

2 up/downgradient pairs of control wells to south

2 new AVM – 0 & 2 miles

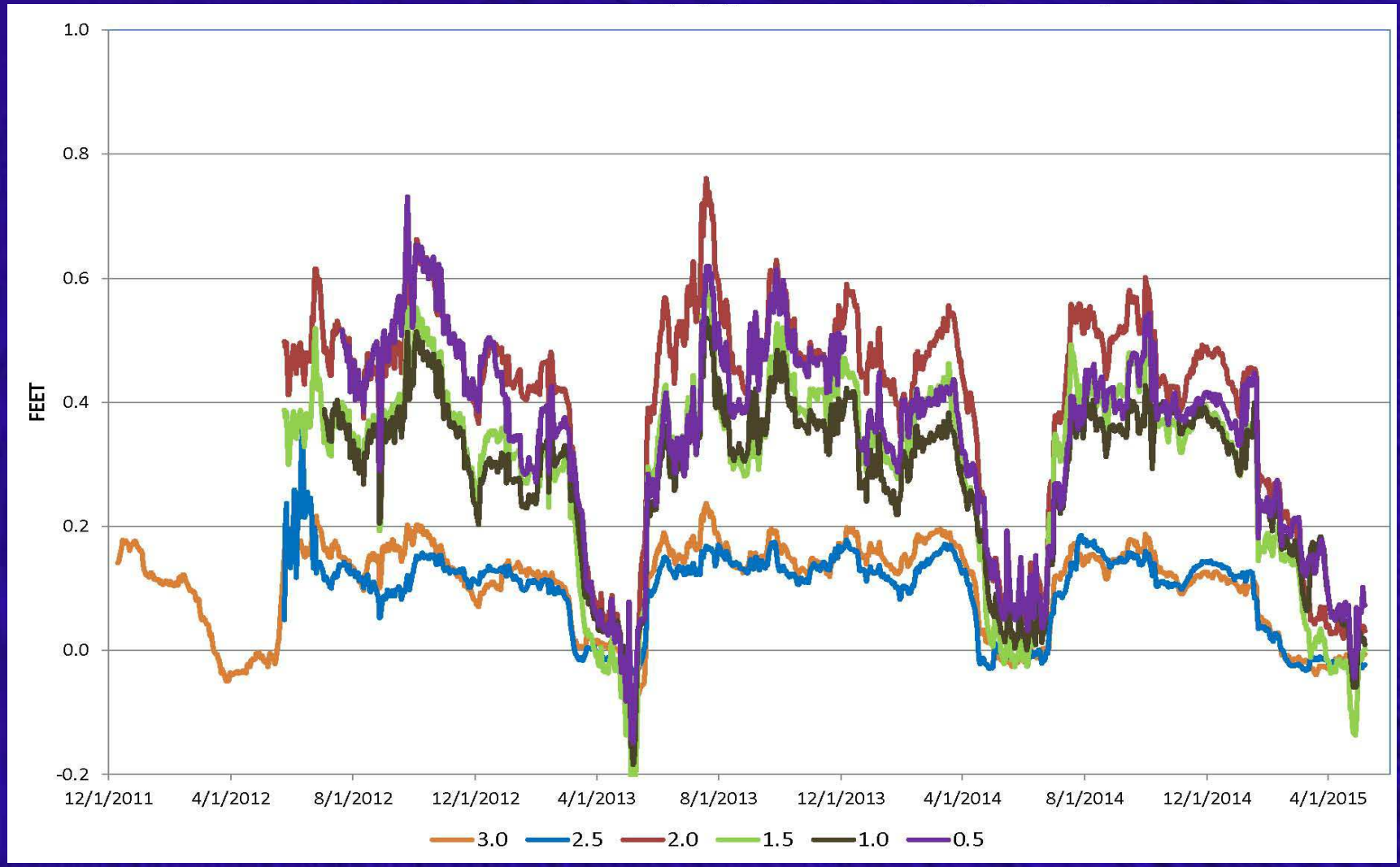
(data 12/2011 – present)

USGS AVM and monitoring wells

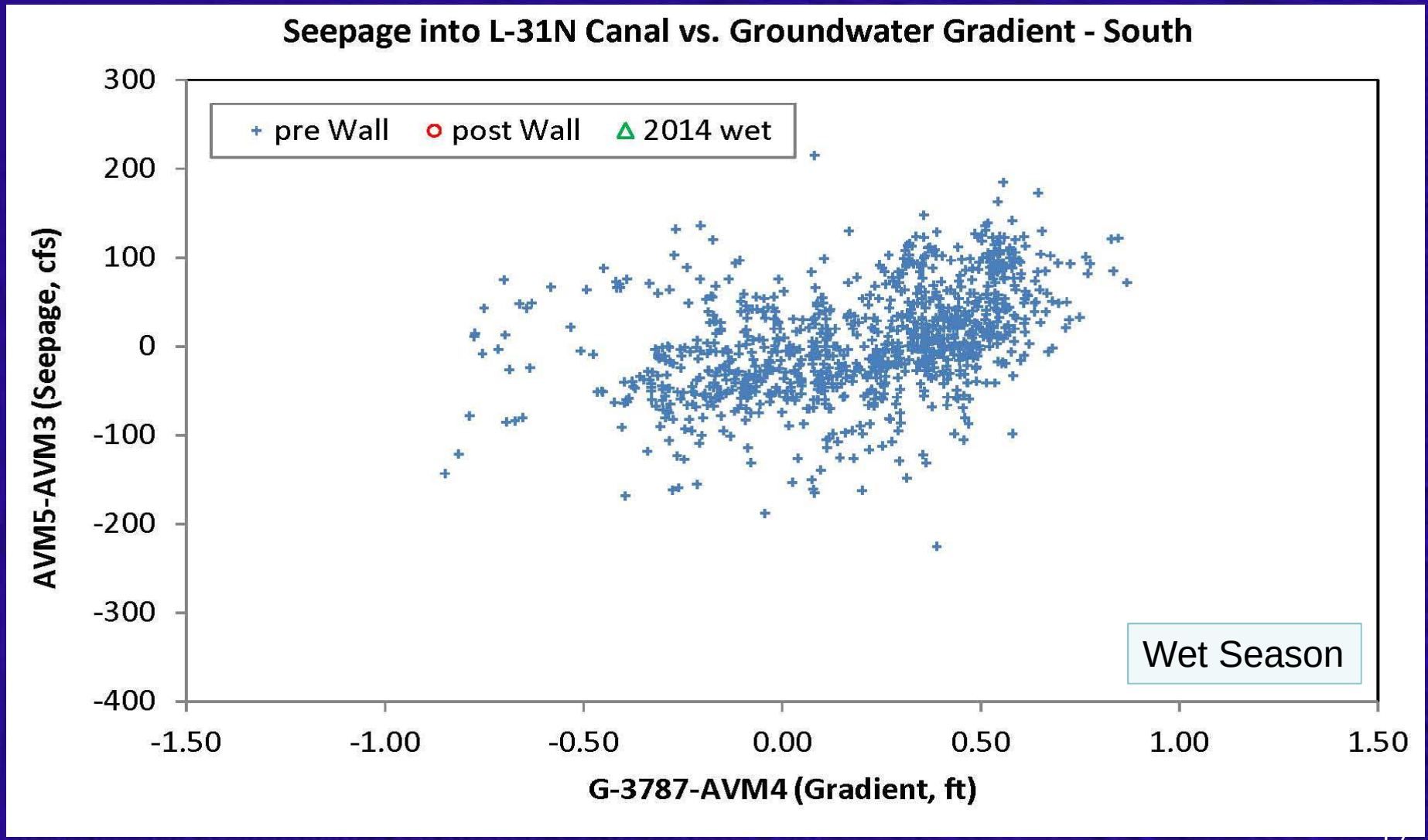


Stage Difference With and Without Barrier

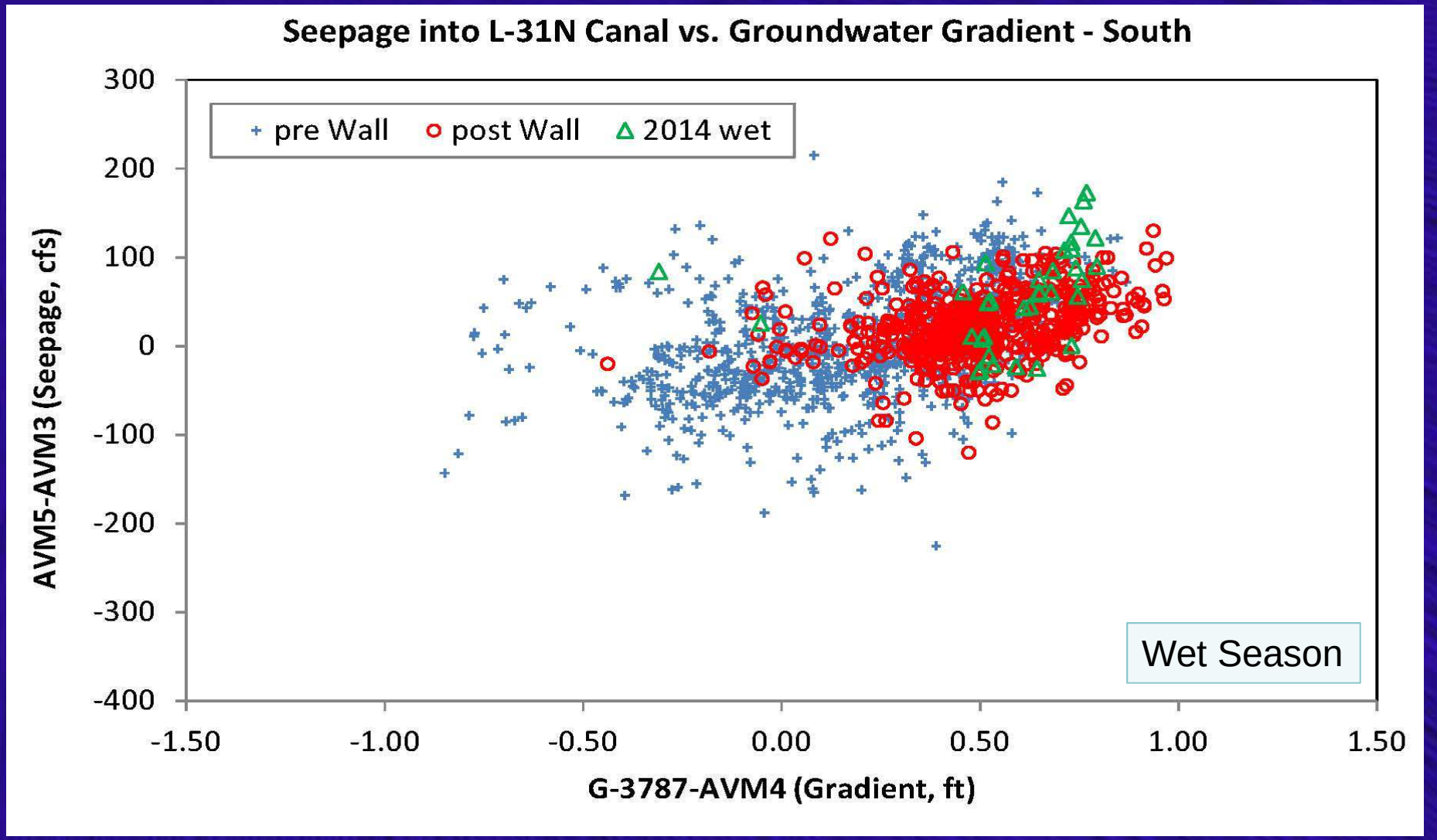
upstream minus downstream groundwater levels
(no barrier at sites 3.0 and 2.5)



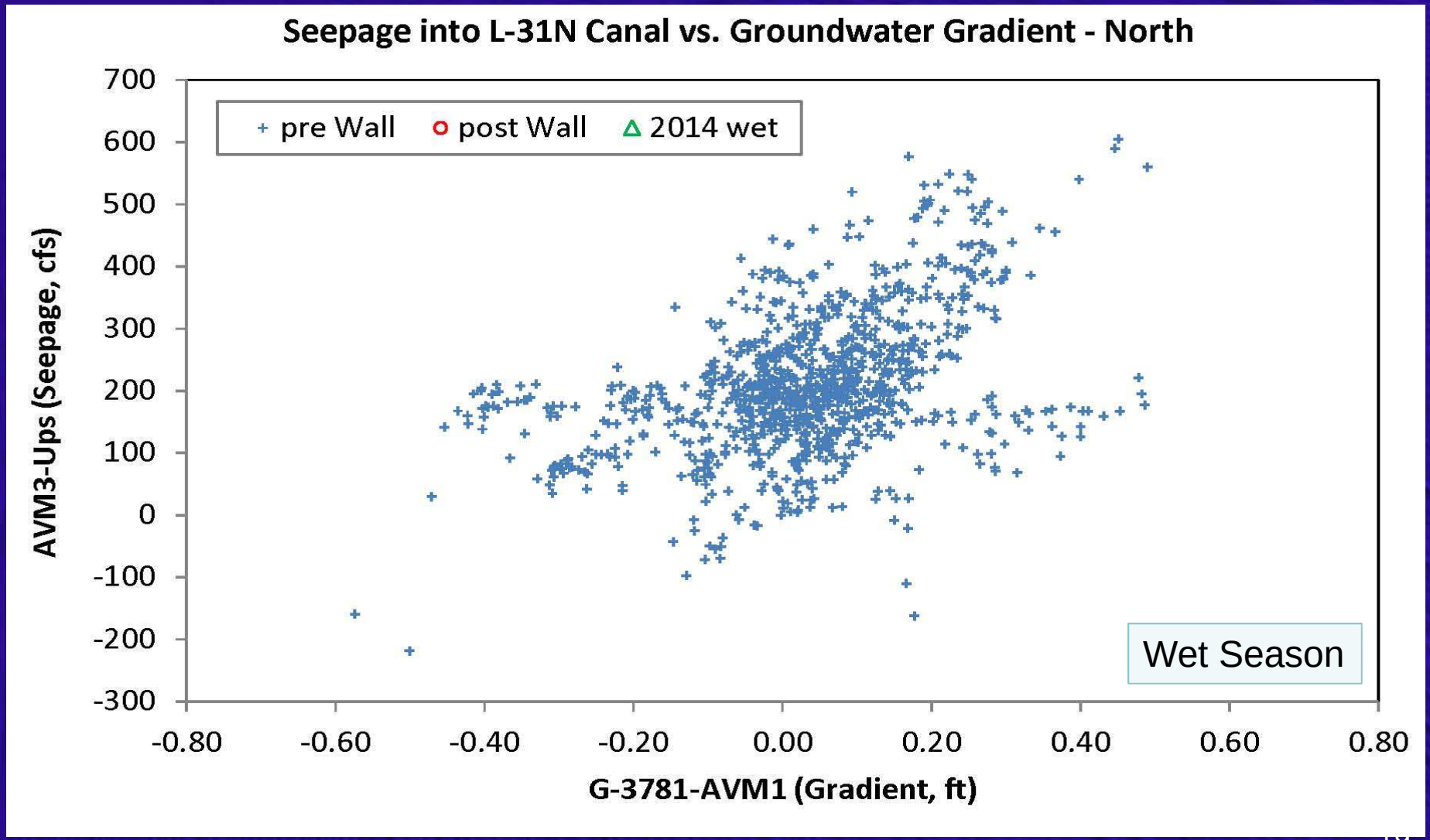
Control Site. Seepage into the L-31N Canal between AVM3 and AVM5 vs. stage difference between the water table west of the barrier and the canal



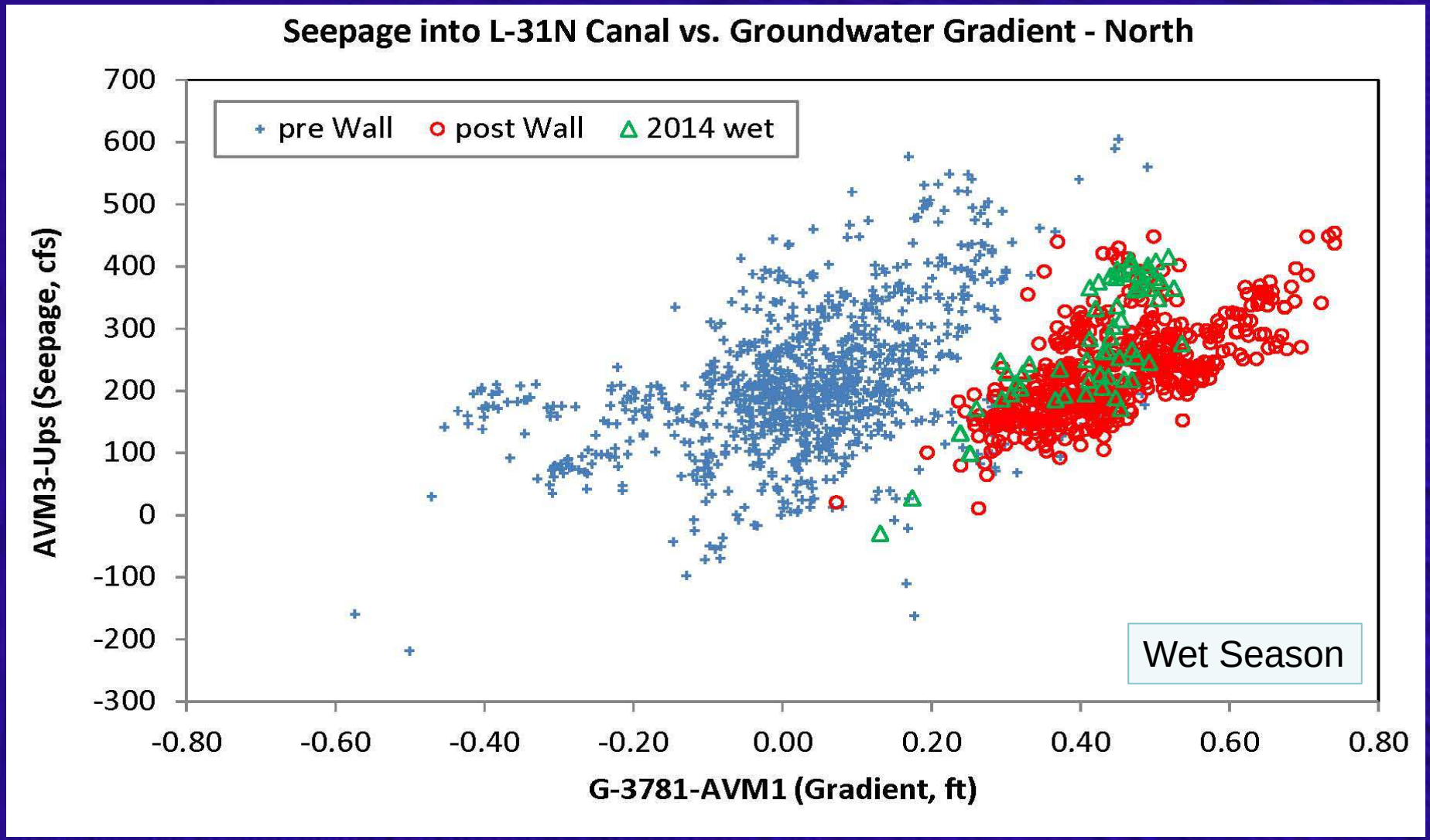
Control Site. Seepage into the L-31N Canal between AVM3 and AVM5 vs. stage difference between the water table west of the barrier and the canal



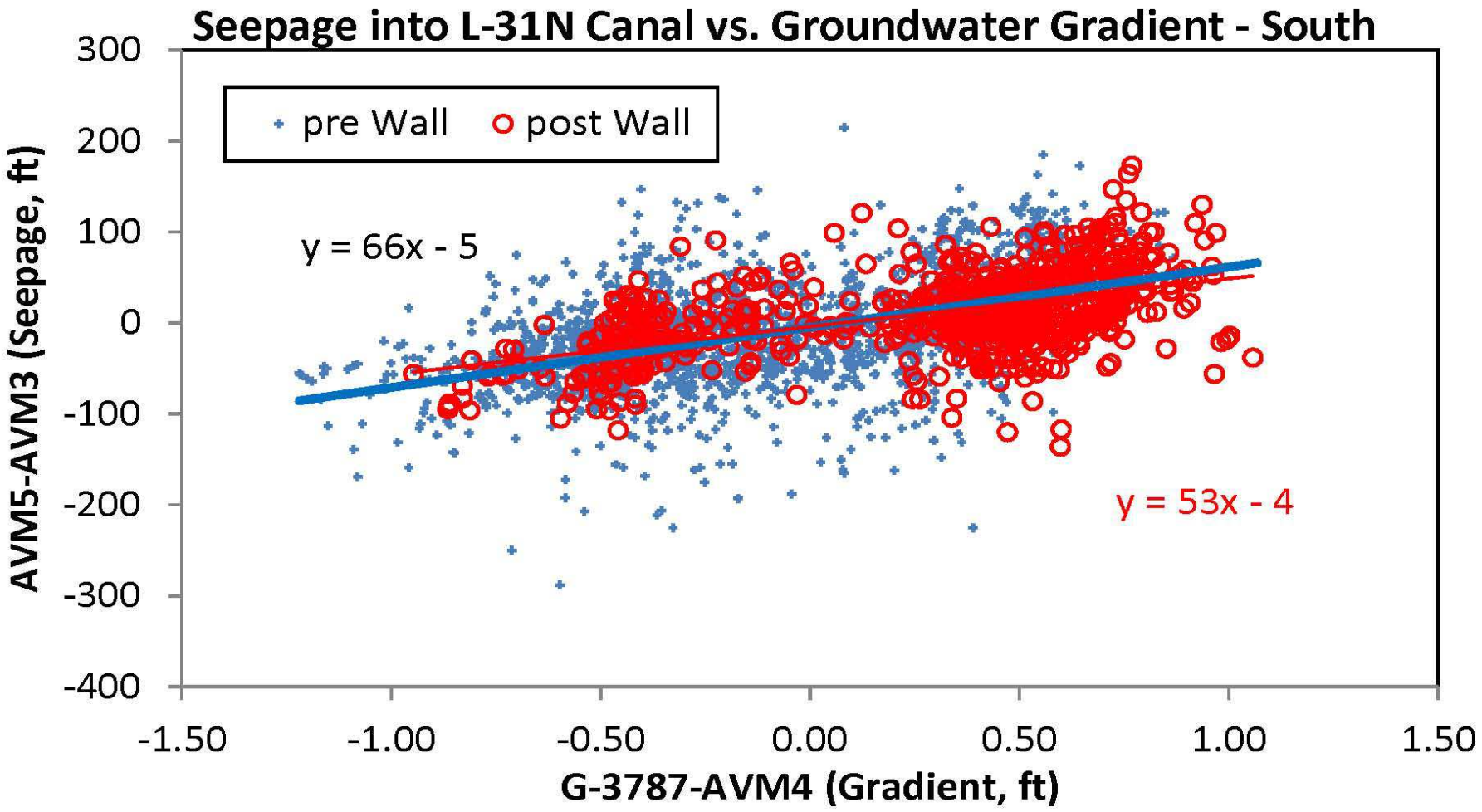
Seepage into the L-31N Canal between S-335 and AVM3 vs. stage difference between the water table west of the barrier and the canal



Seepage into the L-31N Canal between S-335 and AVM3 vs. stage difference between the water table west of the barrier and the canal

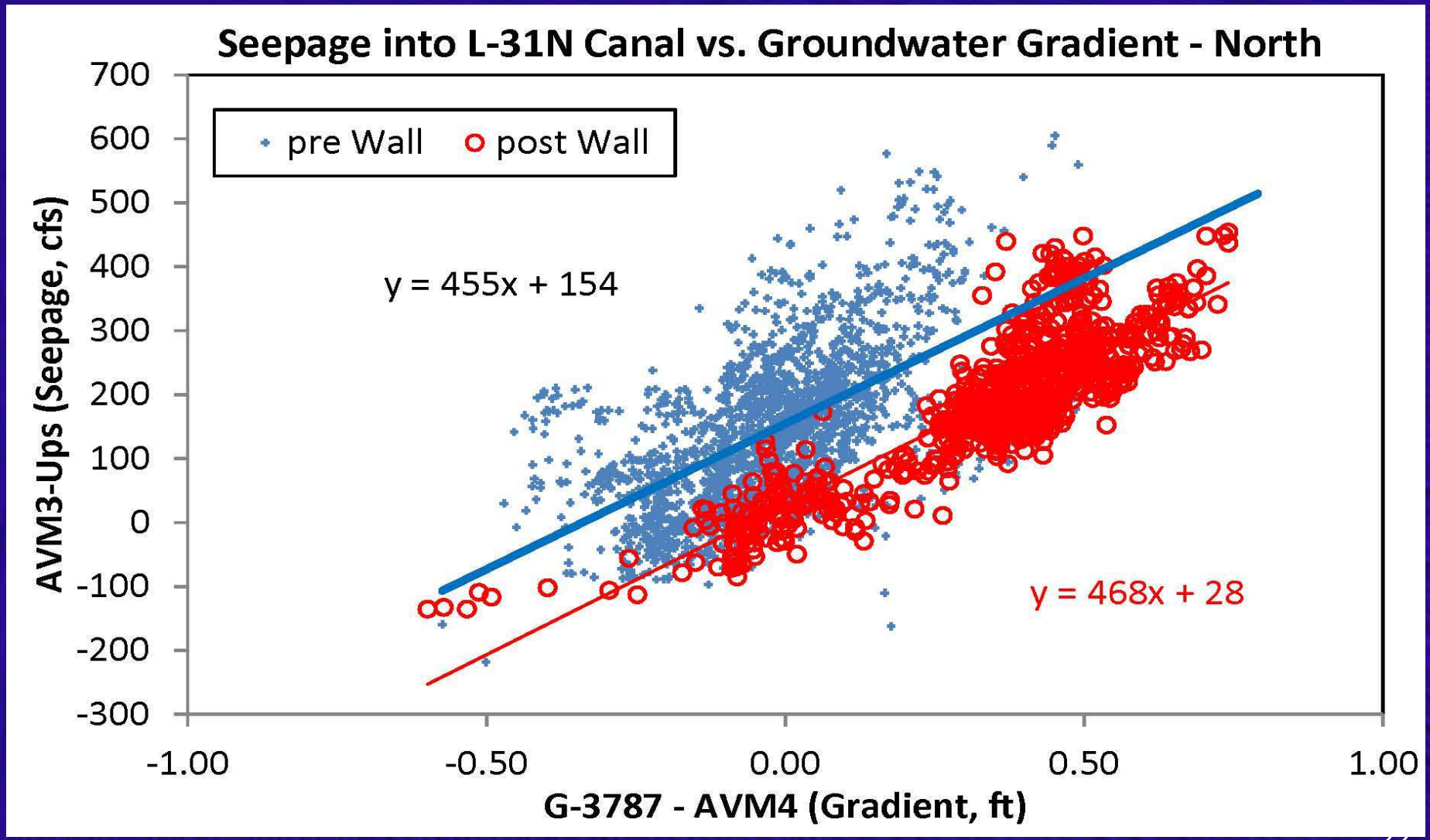


Control Site
No change in seepage into the L-31N Canal between AVM3 and AVM5

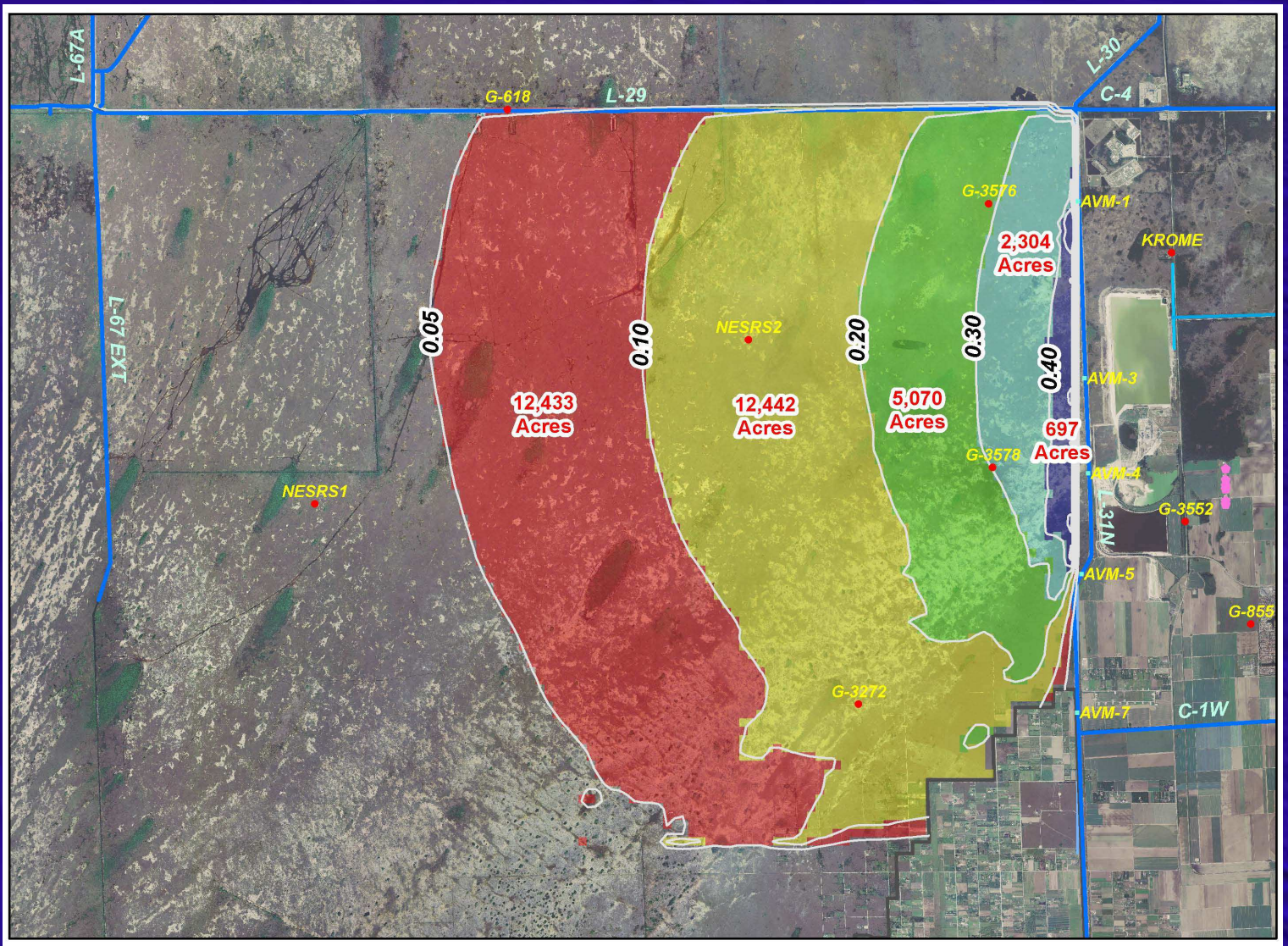


Wall Site

Reduction in seepage into the L-31N Canal between S-335 and AVM3



Model simulation of water level change in Northeast Shark River Slough



Effect of a 5-Mile Barrier Wall on Groundwater Levels Inside the ENP
Barrier Depth: 30 ft; Daily Average: 7/1/2008-10/31/2008 (Wet)

Summary

- Proven construction method at roughly $4 million per mile
- Monitoring well and flowmeter data indicate that the 2-mile barrier is influencing water levels and seepage from the Park into the L-31N Canal
- Measured changes in water levels and seepage reduction are similar to model predictions
- Additional 3 miles to be completed in 2016