



Status Report
of
Brevard County
Flood Duration Reduction Projects
for
North Merritt Island

North Merritt Island Flood Duration Reduction



Due to the TOPOGRAPHY (lack of slope), SOILS (hardpan), and the LIMITED NUMBER OF OUTFALLS on North Merritt Island:

- The County's Stormwater Improvements **REDUCE THE DURATION OF FLOODING; NOT THE PEAK STAGES DURING HEAVY RAINFALL EVENTS.**
- The County's Number One Priority is **KEEPING WATER OUT OF HOMES.**
- Nuisance Yard Flooding **WILL NEVER BE RESOLVED** even with all of the stormwater projects and improvements described in the following County Stormwater Plan for North Merritt Island.

North Merritt Island Flood Duration Reduction



- Since 2008, the Brevard County Stormwater Management Program has spent approximately \$3.2 Million on flood control related stormwater projects on North Merritt Island.
- The Environmental Protection Agency & the Florida Department of Environmental Protection contributed an additional \$1.7 M in cost-share funding for water quality enhancement for the Pine Island Conservation Area Stormwater Improvement Project.
- St. Johns River Water Management District contributed \$160K to the Lake George Drainage Improvement Project.
- Since 2008, the Brevard County Public Works Department has spent roughly \$500,000 on flood control related projects and “above normal” maintenance on North Merritt Island. This does not include costs for routine maintenance nor diesel fuel for the permanent pumps.

North Merritt Island Flood Duration Reduction: Completed Projects



Completed Projects, Improvements & Maintenance	Date of Completion
Tide Flex (aka check valves) Installations along E. Crisafulli drainage ditch	Late 1990's
Flap Gate @ Horseshoe Bend (48-inch Pipe)	2009
Lake George Stormwater Management System included Stormwater Pond and Flash Board Controls under Hall Rd.	2010
Pine Island Ditch System Maintenance from 90° Bend to the west towards the Indian River Lagoon	2013
Pine Island Rd. Rebuild/Repaving (Portions with 4-6-inch Elev. Increase)	2013
Pine Island Conservation Area SWMS (Pump Station) Phases 1 & 2	2012 & 2014

North Merritt Island Flood Duration Reduction: Completed Projects (continued)



Completed Projects, Improvements & Maintenance	Date of Completion
Hall Rd. Mobile 24-inch Pump	Fay 2008
Addition of two more mobile pumps during Hurricane Irma (12-inch @ PICA & 12-inch @ Hall Rd.)	2017
Remove excess vegetation along embankment of Pine Island Drainage Ditch from SR 3 south north to 90° Bend (Phase 1)	2018
Remove excess vegetation along embankment of Pine Island Drainage Ditch from SR 3 south to Chase Hammock Rd. (Phase 2)	2018
Upsized 36-inch culvert on E. Hall Rd. under Judith Lane to 48-inch	2019
Anti-Vortex Plates over Pumps to allow lowering of water elevation within settling basin (cavitation concern)	2019
Weather Station with Telemetry	2019
Ditch and Culvert Cleaning throughout NMI	Two Year Cycle

North Merritt Island Flood Duration Reduction Projects & Improvements



Projects in the Queue	Status
Remove Excess Sediment from Pine Island Rd. Drainage Ditch from State Road 3 south of 90° Bend to State Road 3: Phase 1	Completion in 2020; Funded (PW)
Re-evaluate Automatic Pump Control Settings	2019
Hall Rd. Pump Station: Two Permanent 25K Gallon per Minute Electric Pumps with Diesel Back-up Generator; New 34x53-inch culvert under Hall Rd. (lower invert); Deeper Sump and Weir Replacement	Land Acquisition; 2020; Funded (SW)
W. Crisafulli-Church Rd. Outfall via and west of Florida Inland Navigation District (FIND) property	Engineering Design & Modeling; 50% Plans; Partially Funded (SW)
Increase Outfall Pipe Size at W. Hall Rd. & N. Tropical.; Model Horseshoe Bend & existing 48-inch discharge pipe to determine if an additional pipe is needed under Hall Rd. to improve recovery time	Engineering Design & Modeling; 30% Plans; Funded (PW)

North Merritt Island Flood Duration Reduction Modeling for Future Development



FEMA Drainage Model Update for Future Land Development Permitting

Task	Status & Estimated Completion
Preparation of Request for Qualifications (RFQ) for Civil Engineering Firm Selection	30% Complete Spring 2019
NMI Stormwater Inventory Field Surveying	88% Complete; 121 remaining pertinent structures of 1,031; Spring 2019
Geographic Information Systems (GIS) Data Cataloging for NMI Stormwater Inventory (Office)	65% Complete; Summer 2019
Advertise, Selection, & Award (Execution of Contract)	Late Summer 2019
Hydrology and Hydraulic 3D Drainage Modeling by Civil Engineering Consultant	Fall 2020

North Merritt Island Flood Duration Reduction Potential Additional Improvements



Potential Improvements & Modifications	Status
At Pine Island Conservation Area Stormwater Management: Create Second Emergency Discharge Location within North Impoundment in Northwest Corner; Provide Means to Block Existing Outfall Weir in Emergency (Heavy Rainfall) Conditions	Unfunded
At Pine Island Conservation Area Stormwater Management: Increase Gravity Discharge Capacity additional pipe at diversion Weir; Only beneficial when IRL is low.	Unfunded
Remove Excess Sediment from Judson Rd. Ditch from State Road 3 to Chase Hammock Rd.: Phase 2	Schedule TBD; Based Upon Completion of Phase 1

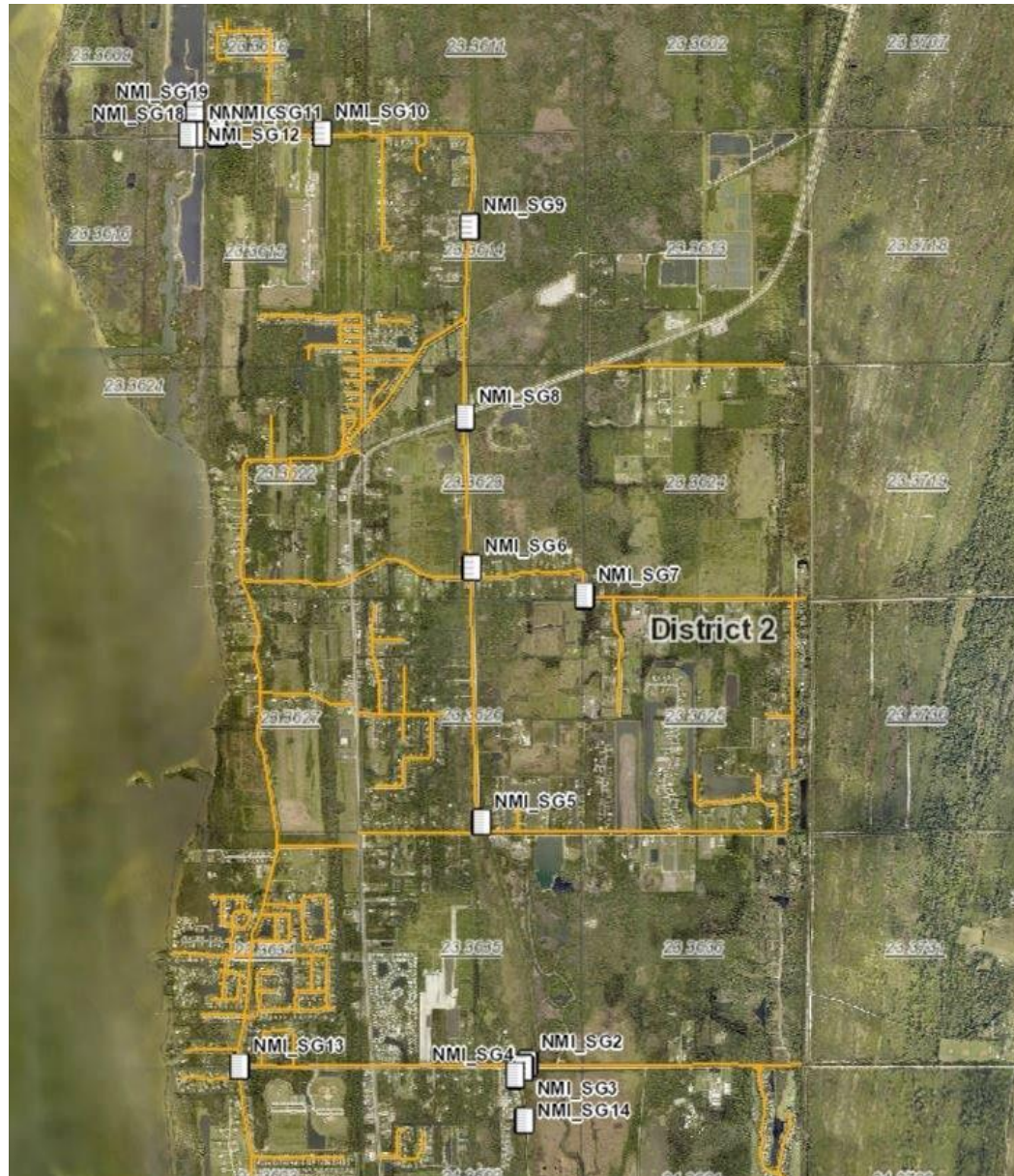


Thank You.

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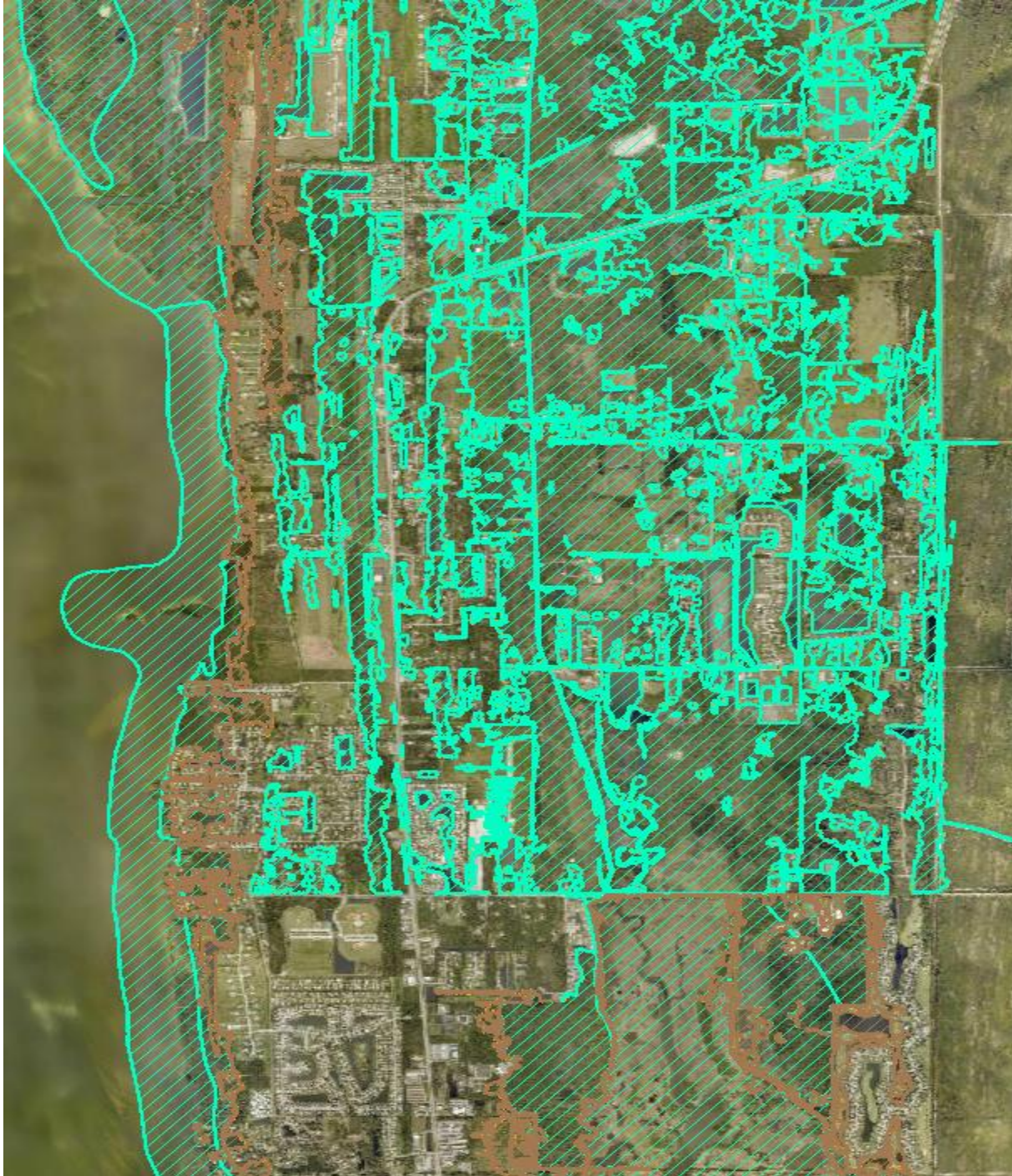


North Merritt Island Staff Gauges



NMI Flood Zones

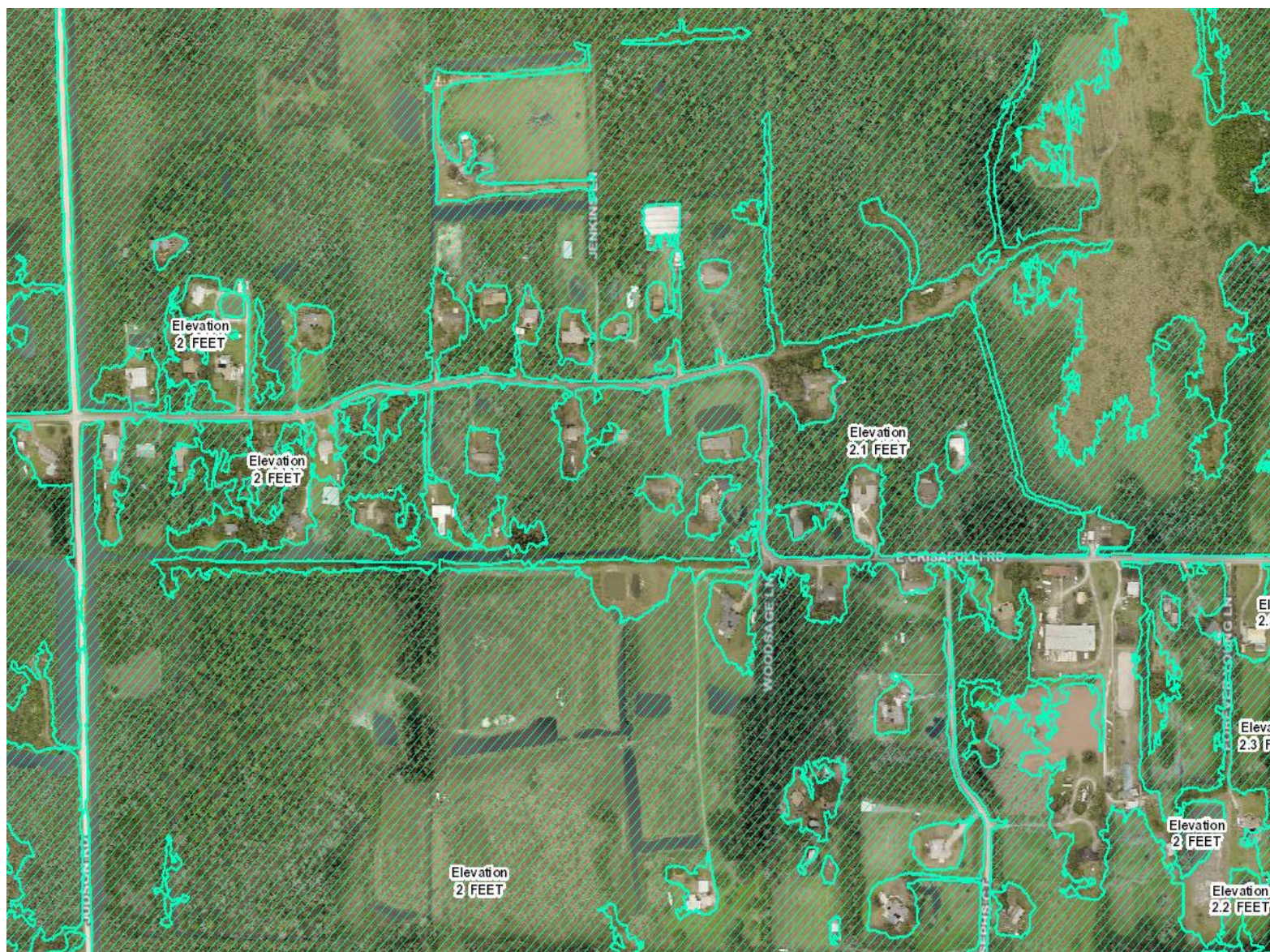
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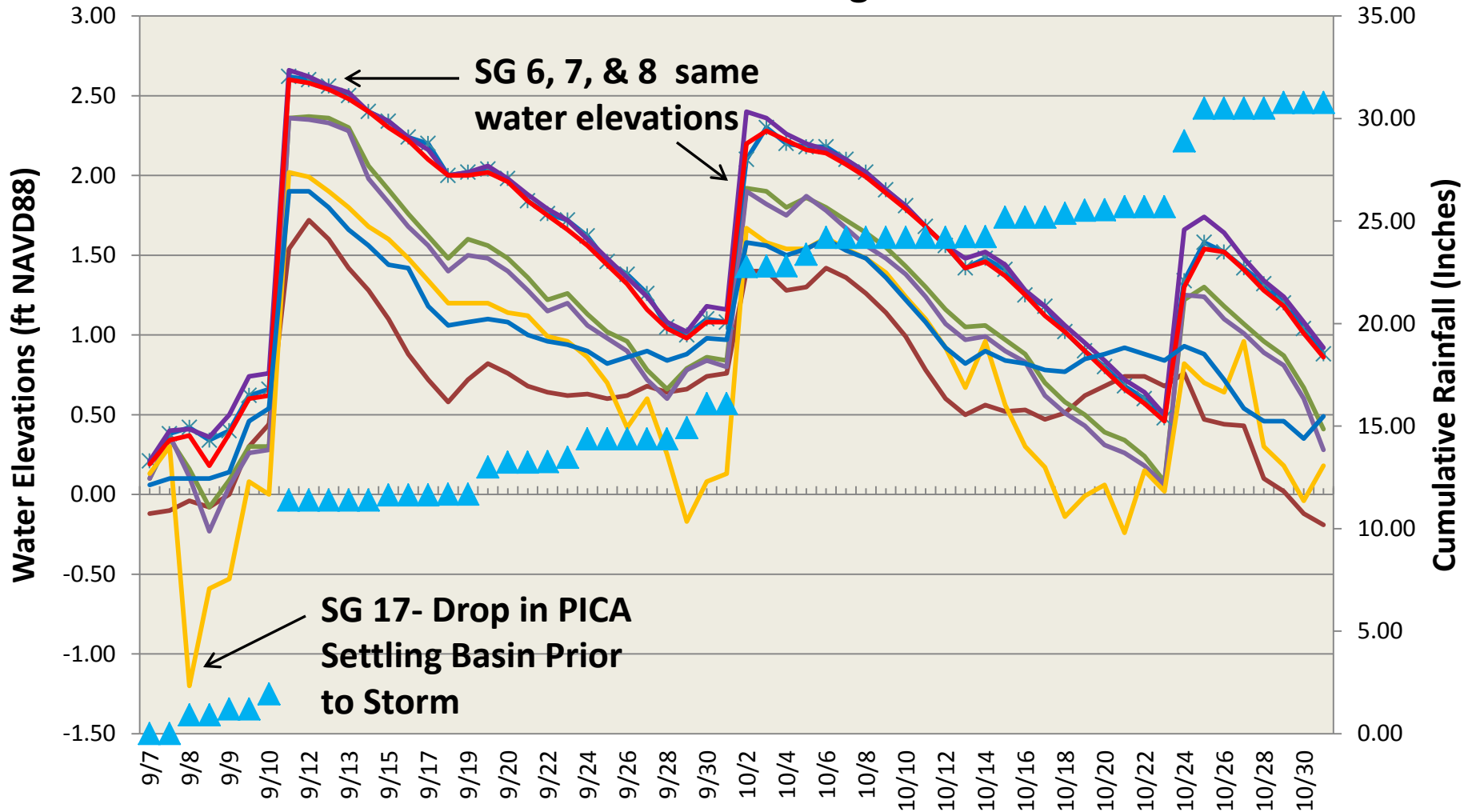
Flood Zone Mapping @ E. Crisafulli & Joseph's Ct.



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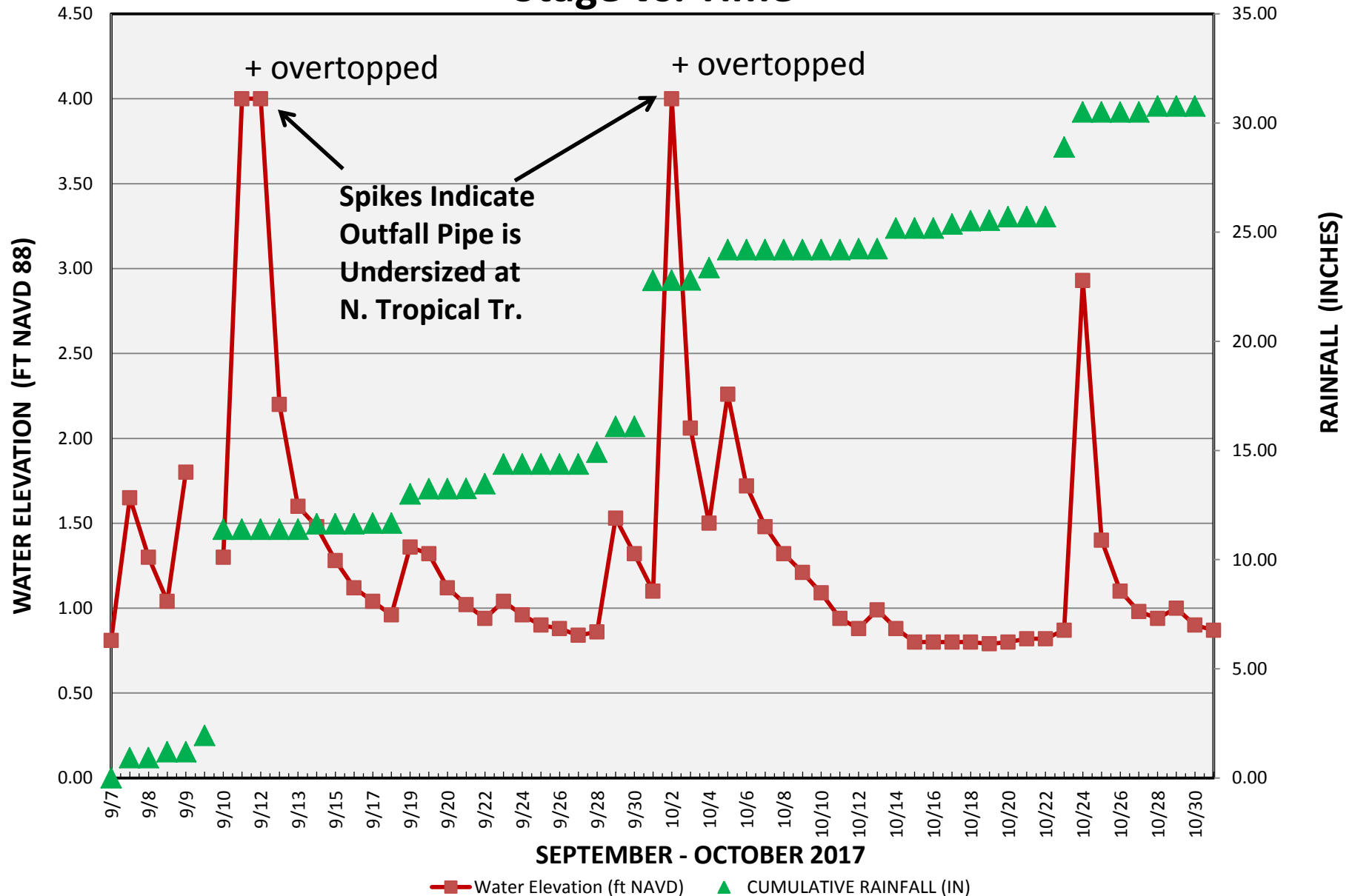
Comparative Water Elevations for NMI Staff Gauges



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|------------------------------|------------------------------------|-----------------------------------|
| — SG 1 - Sykes Creek @SeaRay | — SG2 - Hall Rd. Northside | — SG3 Hall Pump Sta. |
| —* SG6 E. Cris.@Judson | — SG7 - Joseph's Ct. @ Crisafulli. | — SG8 N. Courtenay @ Pine Is. Rd. |
| — SG17 PICA Settling Basin | — SG18 - PICA Riverside | ▲ Cumulative Rainfall (in) |

Staff Gauge 13 - W. Hall Rd. @ N. Tropical Trail

Stage vs. Time



Staff Gauge Location vs. Water Elevation (October 12, 2017)

