Sarasota County Watershed Model Conversion and Maintenance

(RPS202061 MN)

Hudson Bayou Model Update Report

August 2024

Prepared For:
Sarasota County
1001 Sarasota Center Boulevard
Sarasota, Florida 34240

Under Contract 2021-269

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1. Introduction

Collective Water Resources (Collective) performed an update of the Interconnected Pond and Routing Version 4 (ICPR4) model and associated Geographic Watershed Information System (GWIS) Version 2.1 geodatabase to include recent developments, incorporate additional overland connections for the 500-year storm event, and to address watershed boundary gaps and overlaps with adjacent watersheds for eight (8) Sarasota County watersheds as requested by Sarasota County (County). Collective performed these updates to eight watersheds models as assigned by the County, which includes:

- Dona Bay/Roberts Bay Coastal Fringe,
- Lemon Bay Coastal Fringe,
- Sarasota Bay Coastal Fringe,
- Hudson Bayou,
- Lemon Bay (Alligator Creek, Forked Creek, Woodmere Creek, Gotfried Creek, and Ainger Creek),
- Roberts Bay (Hatchett Creek and Curry Creek),
- Upper Myakka River (Big Slough, Deer Prairie Slough, Howard Creek, and Flatford Swamp), and
- Whitaker Bayou.

This report summarizes the model update methods and preliminary modeling results for the Hudson Bayou (HB) watershed. This is a deliverable under Task 2, Model Update, of Agreement 2021-269 for professional services in support of Watershed Model Conversion and Maintenance. These model updates build upon the work previously completed by others in 2022 on behalf of the County converting the ICPR version 3 model and associated GWIS Version 1.6 geodatabase to the current model (ICPR version 4) and geodatabase versions used as a basis for these updates.

2. Developments

Collective reviewed the watershed's GWIS data provided by the County relative to 2020 aerial imagery to identify developments that have been constructed or show groundbreaking as of the 2020 imagery but are not reflected in the model and GWIS data. **Table 1** summarizes the recent developments and associated Southwest Florida Water Management District (SWFWMD) Environmental Resource Permits (ERP) identified within the watershed having an impact on the intermediate and/or regional hydrology and hydraulics and that warranted updates to the watershed model.

Table 1. Summary of Developments included with Model Update

Name	SWFWMD ERP
Sarasota High School Renovations	44-12941-7
Brother Geenen/Alderman Street Improvements	44-40835-0
Hudson Bayou In-Stream Restoration and Water Quality Improvements	47-42528-0

3. Topographic Data Voids

The most recent digital topographic data for the county was published by the United States Geological Service (USGS) in partnership with the Florida Department of Emergency Management (FDEM) reflecting light detection and ranging (lidar) data acquisition between November 30, 2018, and January 10, 2019 (Dewberry 2020). The Sarasota County project was completed as part of the Florida Peninsular 2018 D19 DRRA project. Lidar products include classified LAS point files, breaklines, digital elevation model (DEM) rasters, and associated reports for a total of 694 5,000 feet by 5,000 feet tiles (approximately 622 square miles) of coverage across the county.

The SWFWMD provided enhancements of the Sarasota County lidar products including additional breakline features for waterbodies and building footprints. SWFWMD produced a countywide, DEM raster (as an IMAGINE Image file, floating point, 32-bit, 1 band) with 2.5 feet by 2.5 feet cell size referenced to North American Datum of 1983 with the 2011 Adjustment (NAD83_2011) horizontal datum, Florida State Plane Zone West coordinate system and North American Vertical Datum of 1988 (NAVD88) vertical datum. This 2019 SWFWMD DEM served as the base topographic layer for the model updates performed in the watershed.

Collective reviewed the 2019 SWFWMD DEM against the grading and surface elevations defined in the plans for the developments listed in Table 1 as well as 2020 aerial imagery and confirmed the developments are reflected in the DEM. No topographic voids were identified for this watershed. At the request of the County, Collective projected the 2019 SWFWMD DEM to the North American Datum of 1983 with the HARN Adjustment (NAD83_HARN) horizontal datum.

4. Model Development Updates

For each development listed in Table 1, the design plans and other relevant permit information were obtained from the District's ERP data warehouse application – Water Management Information System (WMIS). Additionally, the County provided plans, exhibits, GIS files, and ICPR version 3 model files associated with the Hudson Bayou In-Steam Restoration project. As-built plans were used for the updates of all three developments.

The plans were reviewed to identify the sheets that have relevant information to the GWIS being updated. The plan view sheets and a model schematic (if available in the permit files) were exported

to image files (JPEG), clipped to the limits of the development, and georeferenced in ArcMap to make it easier to correlate the existing GWIS features to the modifications shown in the plans.

Next, a new ArcMap MXD file was created with the following data:

- The GWIS to be updated under this task
- The original GWIS - for comparison purposes
- The GWIS of adjacent watersheds, as needed
- The georeferenced plan sheets and permit model schematic
- The 2019 SWFWMD DEM
- Current aerial imagery (2020 and 2022 from the County's image service)
- Current 2020 land use feature class
- County impervious area (IA) feature class

Any modifications/updates to the GWIS were noted in the *Comment* field of the appropriate feature class. The elevation datum of the plans was noted so that, if needed, plan elevations were converted to NAVD88 using a conversion factor of -1.08 feet.

4.1. Hydrologic Parameterization Methodology

Collective's overall hydrologic parameterization approach for model updates is summarized below. Specifics related to individual developments included in this update are presented in Section 4.3.

The design plans and permit information are reviewed to identify any appropriate changes to the basin boundaries. When available, the model schematic from the permit application is used as a guide, considering the permit model may have been developed to a differing level of detail than appropriate for the watershed model. The permit model's basins, hydraulic features, and 2019 DEM are collectively used to perform any needed modifications to the ICPR_BASIN feature class.

For any basins that are modified, they are reviewed to determine if revisions to the time of concentration (TOC) and IA are required.

TOCs for modified small, urban basins with minimum TOCs (10 minutes) originally assigned are maintained. If the estimated flow path for a revised basin changes by more than 10-percent from the original basin, a revised flow path is digitized and the Natural Resources Conservation Service (NRCS) TR55 methodology used to calculate new TOC(s), which is/are entered into the *TC [min]* field of the ICPR_BASIN feature class.

If the revised basin area differs by more than one-percent from the original, it is reviewed to determine if changes to the curve number (CN) and IA/directly connected impervious area (DCIA) are needed. If the overall land use remains the same, no adjustment is needed. However, if the land use or the acres of IA/DCIA change, the land use and impervious area mapping are used to update these values. Where needed, buildings, roads, and other impervious areas are digitized to obtain complete IA coverage for the revised basins.

Next, the IA is assigned as either directly connected or non-directly connected and the acreage of each determined. The revised curve number is calculated using the County-approved methodology as described below (Sarasota County 2021):

- The DCIA is not used to calculate the CN
- Pervious area assigned a CN of 78
- NDCIA assigned a CN of 98
- Basin CN calculated using: CN = (($A_{pervious}$ * 78) + (A_{NDCIA} * 98))/($A_{pervious}$ + A_{NDCIA}), where A is the area in acres and the subscript indicates the type of area (pervious or NDCIA).

Any updated *CurveNumber*, *PctImpervious*, and *PctDCIA* fields are entered into the ICPR4_Simple_Basin, ICPR4_CURVE_NUMBER_ZONES, and ICPR4_IMPERVIOUS_ZONES tables of the GWIS geodatabase accordingly.

4.2. Hydraulic Connectivity and Parameterization Methodology

Collective's overall approach to updating hydraulic connectivity and parameterization for new developments is summarized below. Specifics related to the individual developments included in this update are presented in Section 4.3.

The as-built and approved construction plans are reviewed to identify any hydraulic features that should be included in the model, such as:

- Pipes connecting stormwater ponds
- Stormwater system trunk lines
- Control structures
- Outfall pipes
- New/modified channels
- New/modified stormwater ponds

Features that would not typically be included in the watershed model/GWIS include:

- Local drainage systems
- Individual inlets along the trunk lines
- Exfiltration trenches

The georeferenced plan sheets are compared to the existing GWIS to identify differences. Where possible, existing node and link names are maintained, though the location and connectivity may be changed.

Nodes

New nodes are placed at the following locations:

- For stormwater trunklines, new nodes would be placed at manholes/junction boxes where the pipe diameter changes or to divide exceptionally long runs of pipe.

- Stormwater ponds

Where appropriate, basins are subdivided to load to the new nodes. The *INITIAL_STAGE* field of the ICPR_NODE feature class of new or modified nodes is updated to be the elevation of the invert of the lowest connecting pipe or the normal water elevation of a connected water body, whichever is highest.

For nodes associated with basins that are modified, the storage is updated using the ArcHydro Drainage Area Characterization (DAC) tool with the 2019 DEM as the elevation raster input. If a channel link is inside the modified basin, the Storage_Exclusion_Polygon feature class is updated to include the channel and its area excluded from the DAC storage calculations.

Pipe Links

The georeferenced plans are reviewed to identify both new pipes to be added to GWIS and ones that should be modified. Potential updates to pipe links would be:

- Changes in connectivity (upstream and downstream nodes)
- Pipe diameter and material
- Length
- Inverts
- Entrance and exit losses

New pipes are added to the ICPR_LINK feature class and, for both new and modified pipes, the appropriate parameter changes are made to the associated PIPE_BARREL table.

Drop Structure Links

Drop structures have both pipe and weir components and are most commonly used for watershed modeling to simulate control structures. Plans are reviewed to identify new drop structures and existing ones that were modified or differ from current model parameters. New/modified drop structure links are set to use the “interval halving” solution method based on the County’s standard by setting the *Solution* field to “Combined” and the *Increments* field to “0” in the DROP_STRUCTURE table.

The PIPE_BARREL and WEIR tables are modified as needed to capture parameters of the drop structure’s components. WEIR table entry updates would typically include:

- Weir shape
- Weir type
- Weir crest
- Weir span and rise
- Weir discharge coefficient

Structural Weir Links

For purposes of the watershed GWIS updates, structural weirs are manufactured structures controlling flow between two points that do not have an integrated pipe component like a drop structure does. The structural weirs are added to the ICPR_LINK feature class and associated WEIR table entries completed.

Surface Overflow Weirs

Surface overflow weirs (SOWs) simulate flow across basin boundaries. When basins are modified, they are examined to determine if existing SOW(s) cross(es) basin boundary segments that were modified. If so, the cross-section representing the ground elevations of the modified basin segment is generated to replace the existing cross-section and the ArcGIS 3D Analyst Stack Profile tool is used to obtain station/elevation data to define the cross-section's geometry. The associated WEIR table entry is updated with the crest elevation (minimum cross-section elevation) and the ICPR_XSECT_STATIONS table data replaced with the new data.

For modified basin segments without an existing SOW, they are reviewed to determine if they are likely to have flow across them for the 500-year/24-hour design storm. If so, a new SOW link is added to the ICPR_LINK feature class, a cross-section added to the ICPR_XSECT feature class, and the associated WEIR and ICPR_XSECT_STATIONS tables completed.

Channels

If a development area includes a channel (natural or constructed), it is reviewed to determine if any modifications are necessary to GWIS. Potential modifications may include:

- Existing channel connectivity changing
- Existing channel length, inverts, or geometry changing
- A new channel was constructed

For existing channels that are modified, the ICPR_LINK and ICPR_XSECT feature classes and the CHANNEL and ICPR_XSECT_STATIONS tables are modified as appropriate.

For new channels, a new channel link is added to the ICPR_LINK feature class and new channel cross-sections added to the ICPR_XSECT feature class. The CHANNEL table entries are completed, and design plan data combined with the 2019 DEM are used to complete the ICPR_XSECT_STATIONS table entries.

4.3. ERP 44-12941-7, Sarasota High School Renovations Model Updates

The updates for ERP 44-12941-7 included modifications to basins, pipes, drop structures, surface overflow weirs, and cross-sections as shown in **Figure 1**.

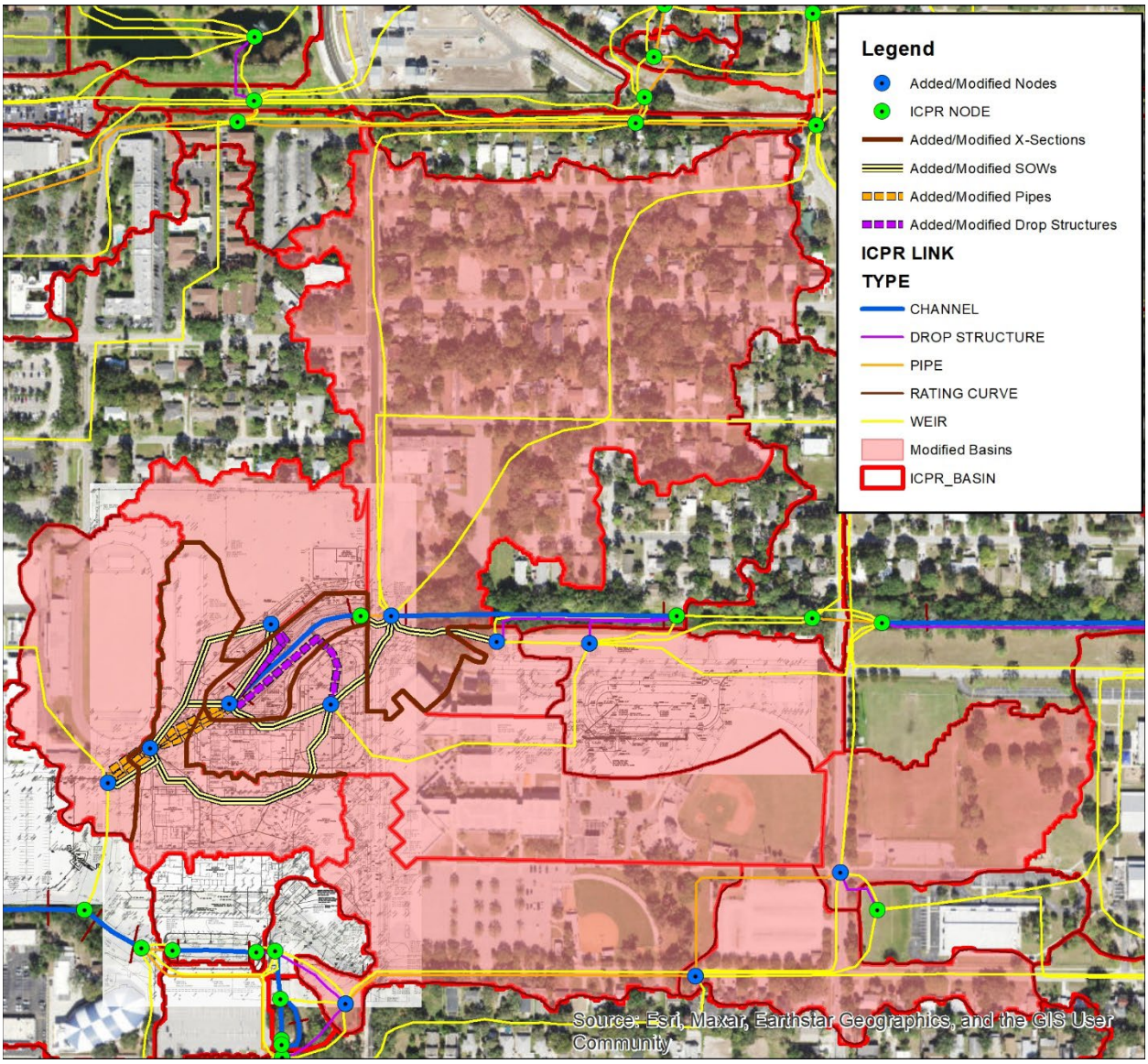

Figure 1. ERP 44-12941-7, Sarasota High School Renovations, Model Updates

The updates included:

- **Basins** – 11 basins were modified, and the associated node storage, TOC, CN, and IA were updated.
- **Nodes** – 11 nodes were added/modified.
- **Drop Structures** – three drop structure links were added/modified.
- **Pipes** – six pipe links were added/modified.
- **Surface Overflow Weirs** – nine surface overflow weir links were added/modified along with their associated cross-sections and weir table entries.

4.4. ERP 44-40835-0, Brother Geenen/Alderman Street Improvements Model Updates

The updates for ERP 44-40835-0 included modifications to basins, nodes, pipes, surface overflow weirs, and cross-sections as shown in **Figure 2**.

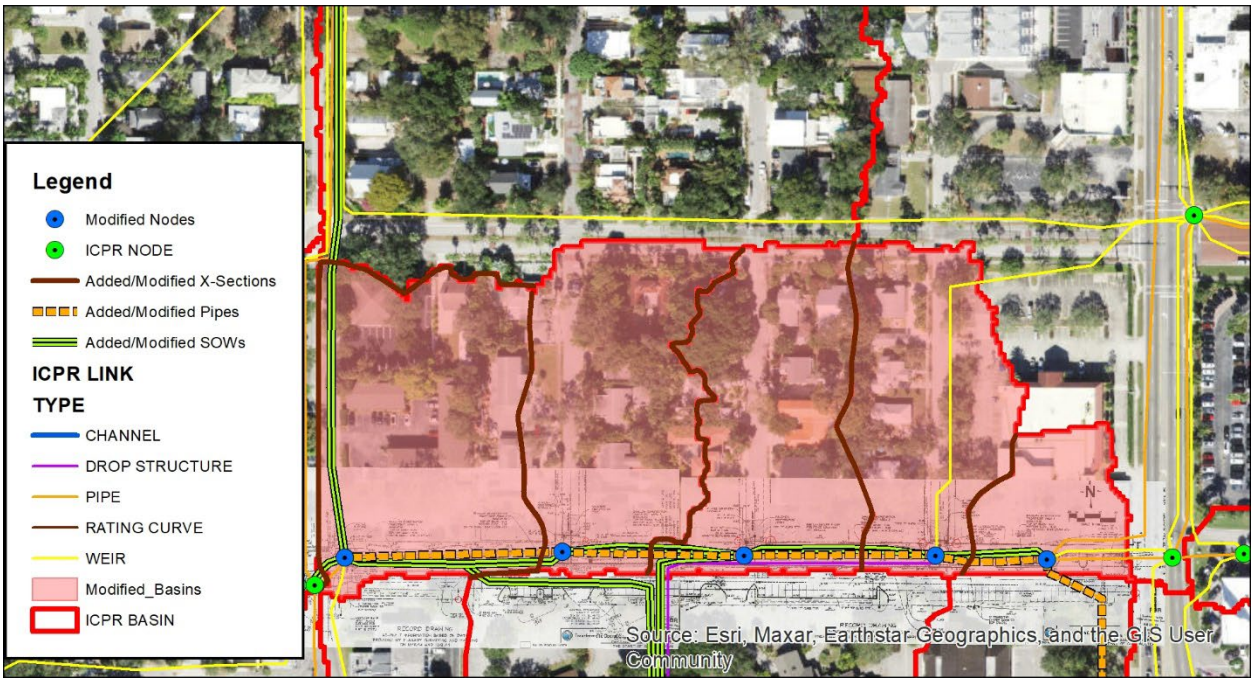

Figure 2. ERP 44-40835-0, Brother Geenen/Alderman Street Improvements, Model Updates

The updates included:

- **Basins** – five basins were modified, and the associated node storage, TOC, CN, and IA were updated.
- **Nodes** – five nodes were added/modified.
- **Pipes** – five pipe links were added/modified.
- **Surface Overflow Weirs** – eight surface overflow weir links were added/modified along with their associated cross-sections and weir table entries.

4.5. ERP 47-42528-0, Hudson Bayou In-Stream Restoration Model Updates

The updates for ERP 47-42528-0 included modifications to basins, channels, drop structures, structural weirs, surface overflow weirs, and cross-sections as shown in **Figure 3**.

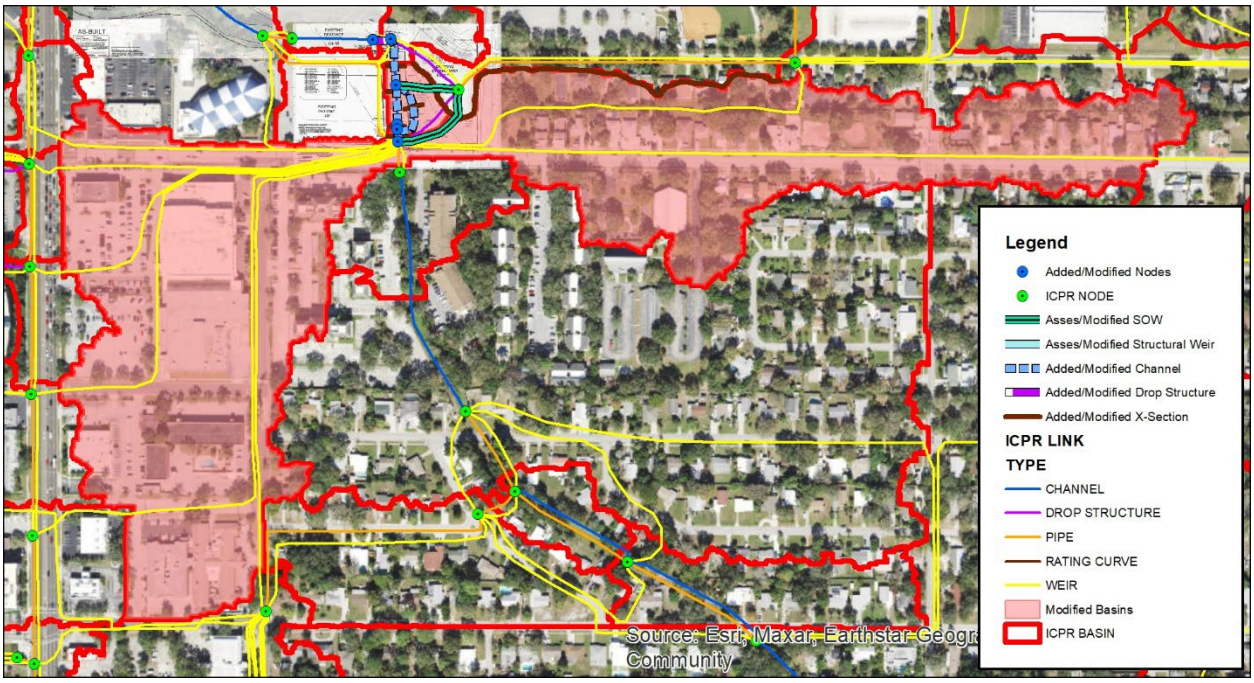

Figure 3. ERP 47-42528-0, Hudson Bayou In-Stream Restoration, Model Updates

The updates included:

- **Basins** – two basins were modified, and the associated node storage, TOC, CN, and IA were updated.
- **Nodes** – six nodes were added/modified.
- **Drop Structures** – one drop structure link was modified.
- **Channels** – four channel links were added/modified.
- **Structural Weirs** – one structural weir was added.
- **Surface Overflow Weirs** – three surface overflow weir links were added/modified along with their associated cross-sections and weir table entries.

4.6. QA/QC Process Description

The GWIS/ICPR4 model undergoes QAQC checks both during and after the update process. During the update process, when a new feature or table entry was added, the connections to all of the related tables were verified and the data inputs were checked to ensure they matched plan set data.

After the development updates were initially completed, the revised data were reviewed for reasonableness. The GWIS was exported to csv format, imported to ICPR4, and the model simulated for the 100-year/24-hour storm. The model results were reviewed for reasonableness.

Additionally, the GWIS updates were independently reviewed by another member of the project team based on QAQC checklist prepared by Collective for this model update task and provided as a separate deliverable.

5. Adjacent Watershed Connectivity and Boundary Updates

Since the County's watershed models have been developed and updated over the course of a several decades, relying on the best available data at the time, individual watershed's basin delineations may not match those of adjacent watersheds. Included in the model updates for this project, Collective is tasked to review and update model elements along shared watershed boundaries and will be merging coastal fringe watersheds with their respective mainland model(s). It should be noted that the project scope does not include updating the basin/watershed boundaries based on the current 2019 DEM.

The HB watershed borders the Whitaker Bayou (WB), Phillippi Creek (PC), and Sarasota Bay Coastal Fringe (CF_SB) watersheds. The geometric union of the HB's ICPR_BASIN feature class was computed with all the adjacent watersheds' basin feature classes to generate polygons of the gaps and overlaps between the basins. The gaps and overlaps by watershed are listed below.

HB and WB

- Gaps: 2
- Overlaps: 4

HB and PC

- Gaps: 320
- Overlaps: 215

HB and CF_SB

- Gaps: 4
- Overlaps: 15

Gaps were reviewed against the 2019 DEM and hydraulic features and assigned to the appropriate watershed. Similarly, the overlaps were reviewed and assigned to be kept in one watershed and removed for the other. The GWIS of each watershed was updated appropriately based on these gap/overlap assignments. Fourteen HB basins had areas change by more than one-percent as part of the watershed check and their associated CN, IA, and/or node storage parameters were updated. None of the basins were modified enough to require an update to the TOC. Seven SOWs and their associated cross-sections were also updated.

6. 500-year/24-hour Interconnectivity Updates

Most of the County's watershed models were developed and parameterized to simulate design storm events up to and including the 100-year/24-hour storm. Collective, as directed by the County, developed additional SOW interconnectivity to ensure overland flow routing occurs within the model during the 500-year/24-hour design storm. A preliminary ICPR4 model was generated from the GWIS based on the development and watershed boundary updates completed in the watershed and used to simulate the 500-year/24-hour storm. Preliminary, node peak stages were used to generate a level-

pool floodplain raster to facilitate the identification of missing overflow weir connectivity. The basins were reviewed to identify locations where:

- The floodplain raster abutted a basin boundary and there was not an associated SOW link
- The floodplain raster abutted a basin boundary with an associated SOW, but the cross-section did not cover the entire basin boundary segment along the floodplain.

Seventy-five SOWs and the associated cross-sections were added. Eight boundary nodes were added to allow surface overflows to adjacent watersheds.

7. Summary of Changes

A total of 48 basins, 44 nodes, and 122 links were added or modified as part of the updates completed by Collective. **Table 2** summarizes the basin, node, link, and cross section changes compared to the converted, adjusted ICPR4 model and GWIS v2.1 geodatabase provided by the County in February 2022. In addition to the changes to these features, associated hydrologic and hydraulic parameters within the HB watershed were updated as previously discussed in this report.

Table 2. Summary of Model Feature Changes

Feature	Converted Adjusted ICPR4 Model (February 2022)	Updated ICPR4 Model (April 2023)	Added/Modified As Part Of Update
ICPR_BASIN	226	232	48
ICPR_NODE	314	329	44
ICPR_LINK	769	862	122
ICPR_XSECT	559	642	106

8. Response to Model Update Peer Review Comments

On May 15, 2023, Collective received review comments related to the development, watershed boundary, and 500-year simulation surface overflow weir updates as well as general ICPR4 quality control/quality assurance (QAQC) comments generated from a tool developed by Jones Edmunds for the County. Comments were provided in an email from the County as well as peer review comments submitted as a comment geodatabase (six comments), a technical memorandum, and an Excel spreadsheet summarizing the ICPR4 QAQC tool results. Collective reviewed the provided comments and responded to all comments. The HB model/GWIS originally delivered by the County included elevations based on the NGVD29 datum but had comments indicating values were converted to NAVD88. However, the County subsequently confirmed the model was still in NGVD29. With this current response to comments, Collective converted all associated NGVD29 node and link elevation data to NAVD88 by subtracting 1.08 feet.

All six-point comments have been addressed and responded to accordingly. The majority of the items flagged by the QAQC tool reflect comments outside of the update areas; these are future maintenance items to be addressed in subsequent updates. Those QAQC tool items that fell with updated areas were addressed according to the responses noted in the appended comment geodatabase and spreadsheet.

Additionally, during the process of addressing review comments, Collective adjusted basin boundaries to eliminate remaining gaps and overlaps with the adjacent watersheds and added additional interconnections to be consistent with the surface overflow links represented in these adjacent watersheds.

The total number of model feature changes in response to review comments and additional watershed boundary adjustments slightly increased compared to the initial development updates. **Table 3** summarizes the basin, node, link, and cross section changes compared to the converted adjusted ICPR4 model and GWIS v2.1 geodatabase prepared by others for the County and provided to Collective in February 2022.

Table 3. Summary of Model Feature Changes

Feature Class	Converted Adjusted ICPR4 Model (February 2022)	Updated ICPR4 Model (September 2023)	Added/Modified As Part Of Update
ICPR_BASIN	226	233	51
ICPR_NODE	314	330	45
ICPR_LINK	769	860	125
ICPR_XSECT	559	640	109

Revised GWIS geodatabase and ICPR4 model have been provided addressing comments along with updates to both the comment shapefile and QAQC Tool summary spreadsheet noting Collective's responses.

9. Model Verification

Upon addressing peer review comments, Collective performed model verification to compare simulated stages with observed data for two recent and significant storm events. Gauge data and NEXRAD rainfall data for two historic storms were used as the basis for calibration and validation. As the HB model had been previously verified, significant and/or numerous model parameter adjustments were not anticipated. A sensitivity analysis of typical calibration parameters was not included in the scope of work nor were specific calibration metrics specified by the County. The

following subsections summarize the storm selection, data, calibration adjustments, and simulated versus measured results for the HB model verification.

9.1. Verification Storm Selection

Collective reviewed daily rainfall records published by SWFWMD for Sarasota County as well as Federally-declared flooding disaster reports to identify historic storm events within the 2017 to 2022 time period, which was considered to be recent and generally reflective of the conditions represented in the model. Storm selection was prioritized based on the following characteristic, listed in order of preference:

1. Significant rainfall (i.e., six inches or greater) in a day or over successive days.
2. Measured stage data available.
3. Isolated storm event, with several days of no rainfall before or after the event.
4. Significant amount of rainfall consistent across the County, so the same event could be applied to all verification efforts as part of this project.

Collective reviewed the rainfall records at 11 stations throughout the county and as illustrated in **Figure 4**:

- Station 25616, Sarasota-Bradenton Airport
- Station 25654, ROMP TR SA-1 Payne Terminal
- Station 940759, Sarasota Center
- Station 25697, ROMP TR 6-1 Siesta Key
- Station 25829, ROMP 22 Utopia
- Station 25608, Myakka River State Park
- Station 25607, ROMP 20 Osprey
- Station 26020, ROMP TR 5-3 Knights Trail
- Station 25605, ROMP TR 5-1 Laurel Park
- Station 25600, ROMP TR 4-1 Caspersen Beach
- Station 25056, ROMP TR 3-3 Lemon Bay

Based on the four storm characteristics, Hurricane Eta (11/10/2020 – 11/12/2020) and Hurricane Ian (9/27/2022 – 9/30/2022) were selected. Hurricane Irma, Tropical Storm Cristobal and Hurricane Elsa were eliminated due to rainfall not being isolated to a specific time-period. Storm selection was confirmed with Jone Edmunds who is responsible for verification of other County watersheds including PC, Little Sarasota Bay, and Dona Bay.

Rainfall conditions for the five days prior to these events were reviewed to determine antecedent moisture conditions (AMC), which is also sometimes referred to as the Antecedent Runoff Condition (ARC). Three watershed conditions are defined by the NRCS (dry, average, and wet).

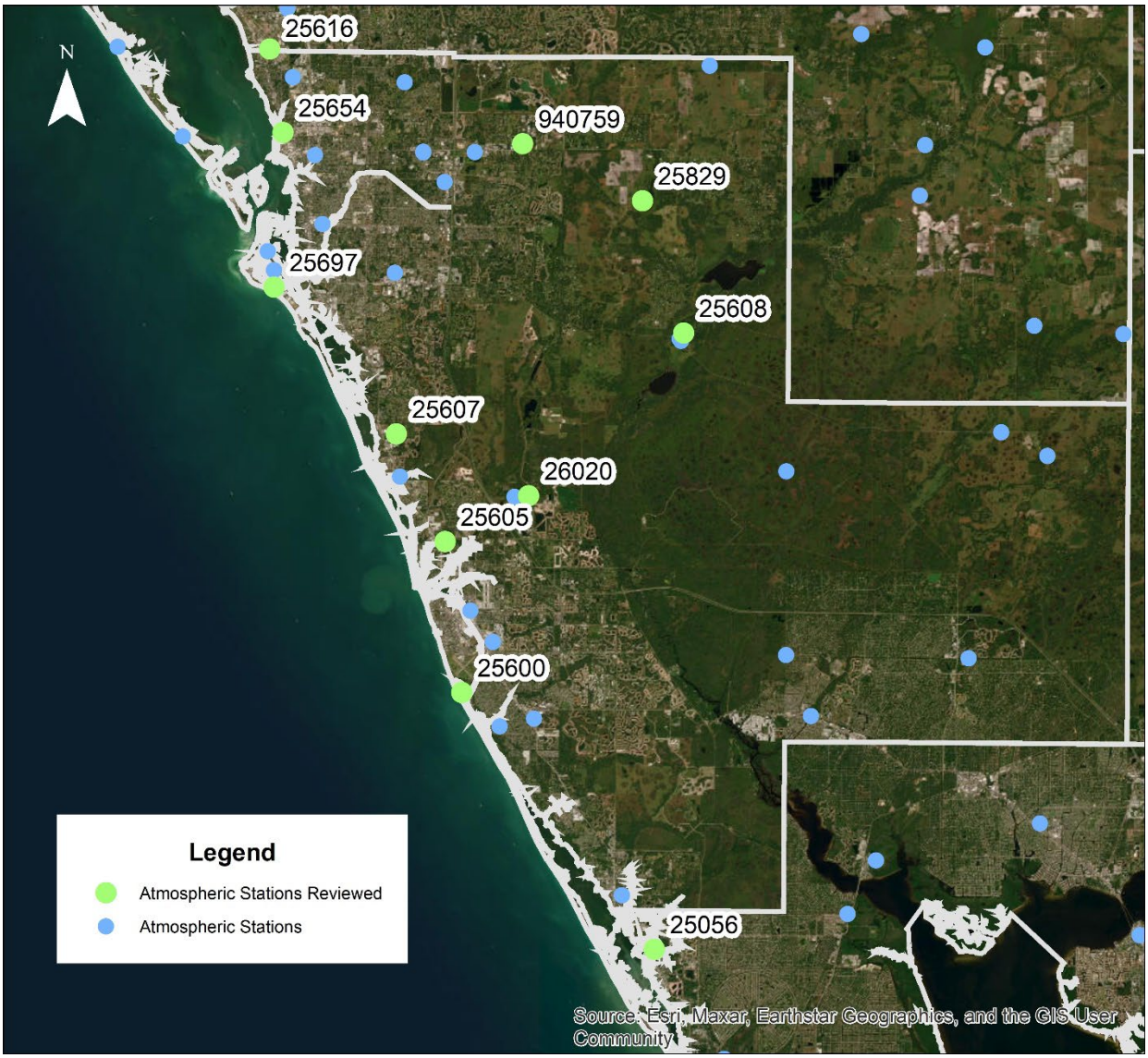

Figure 4. SWFWMD Rainfall Stations

For Hurricane Eta, 2.24 inches of rainfall fell during the preceding month of which 0.46 inches of rainfall was recorded at Station 530 in the five days prior to storm. For Hurricane Ian, 6.36 inches of rainfall fell during the preceding month at Station 530, of which 1.19 inches fell during the five days preceding the storm. AMC affects the amount of runoff generated by a storm and influences the CN parameterization applied within the model. Specifics of how the AMC is accounted for within the model are discussed in Section 9.6 below.

Hurricane Ian was selected to serve as the calibration event, given the significant amount of rainfall, and average AMC. Hurricane Eta served as the validation storm event.

9.2. NEXRAD Data

SWFWMD publishes Next Generation Weather Radar rainfall data (or NEXRAD data) in various time increments for 2-kilometer grid cells from 1995 to present. Collective acquired the NEXRAD data in 15-minute increments for the months of November 2020 and September 2022 for all cells overlapping the watershed. The data were processed to generate the rainfall time series for both Hurricanes Eta (11/10/2020 0:00 – 11/12/2020 23:45) and Ian (9/27/2022 0:00 – 9/29/2022 23:45) for each cell that can be read by ICPR4. **Figures 5 and 6** illustrate the total rainfall distribution across the watershed for Hurricane Eta and Hurricane Ian, respectively, and the location of County monitoring stations within the watershed as discussed in Section 9.3 below. Rainfall is fairly consistent across the watershed for Hurricane Eta while for Hurricane Ian rainfall exhibits and increasing trend towards the southeast.

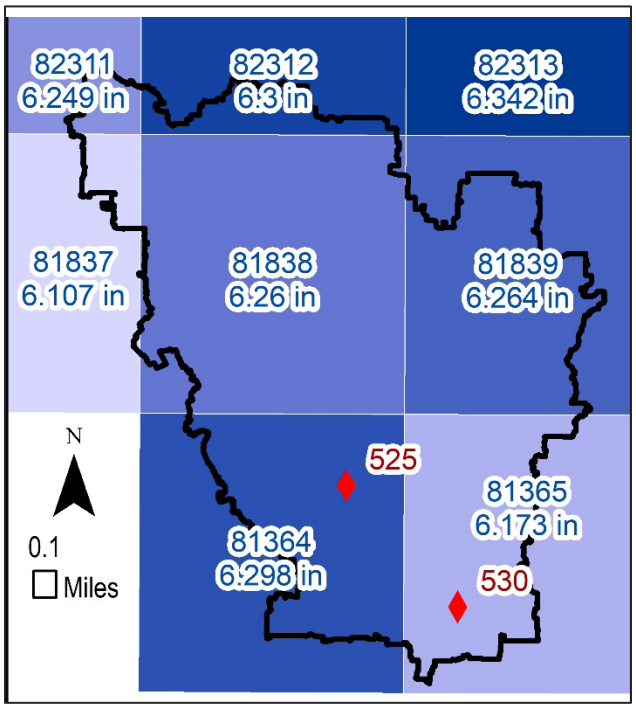

Figure 5. NEXRAD Rainfall Totals, Hurricane Eta

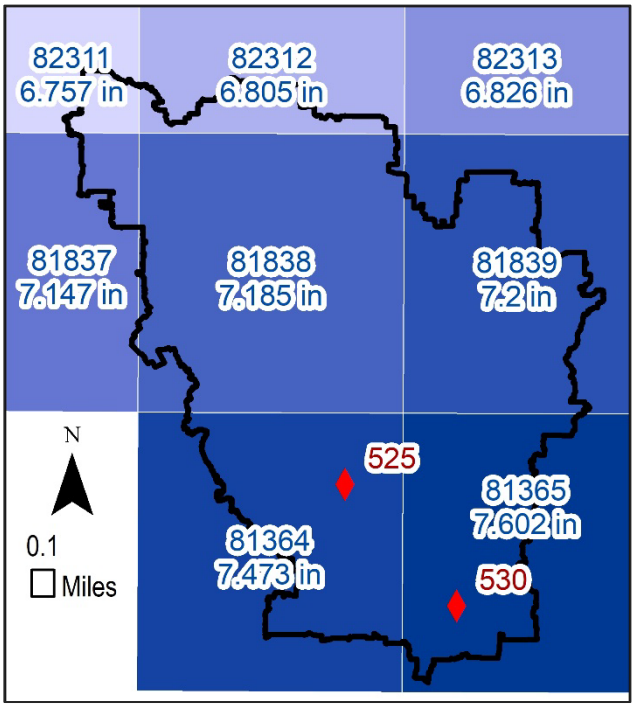

Figure 6. NEXRAD Rainfall Totals, Hurricane Ian

9.3. Measured Rainfall and Stage Data

Sarasota County monitors rainfall amounts and water levels in two locations within the watershed as part of its Automated Rainfall Monitoring System (ARMS):

- Station 525, HUD-1 at Sarasota High School
- Station 530, HUD-2 at Arlington Street

The location of each station, relative to the watershed boundary and NEXRAD cells is shown in Figures 5 and 6 above**.** For each of the storm events, hourly rainfall and stage data were downloaded from the Sarasota Water Atlas maintained by the University of South Florida and is the publicly available

source of ARMS data. It should be noted that the location of Station 530, HUD-2 is incorrectly mapped by the Sarasota Water Atlas. The correct location along Hudson Canal is just south of Bahia Vista street, as confirmed by County staff. **Table 4** summarizes the peak stage and total rainfall measured at each station for Hurricanes Eta and Ian. Water level data is not available at HUD-1 for Hurricane Ian.

Table 4. Sarasota ARMS Measured Peak Stages and Total Rainfall for Hurricanes Eta and Ian

Station ID, Name	Hurricane Eta		Hurricane Ian	
	Peak Stage (ft, NAVD88)	Total Rainfall (inches)	Peak Stage (ft, NAVD88)	Total Rainfall (inches)
525, HUD-1	9.64	10.72	--	6.30
530, HUD-2	6.2	6.94	5.37	5.26

Comparing the total observed rainfall amounts to the NEXRAD data for the same period, the NEXRAD data reflects more than an inch of additional rainfall for Hurricane Ian. The opposite is the case for Hurricane Eta, where the differences range from less than an inch (at Station 530) to over 4.5 inches (at Station 525). Moreover, the ARMS-measured rainfall does not follow the same trends as the NEXRAD rainfall since there is a large variation in rainfall for Hurricane Eta between the two stations and the southeastern trend for Ian isn't replicated - Station 525 measured more rainfall for Hurricane Ian compared to Station 530.

Figures 7 and **8** graph the observed stages and rainfall for each station for the validation event, Hurricane Eta. Both gauges exhibit three surges in the stage hydrographs consistent with the rainfall pattern over the three days.

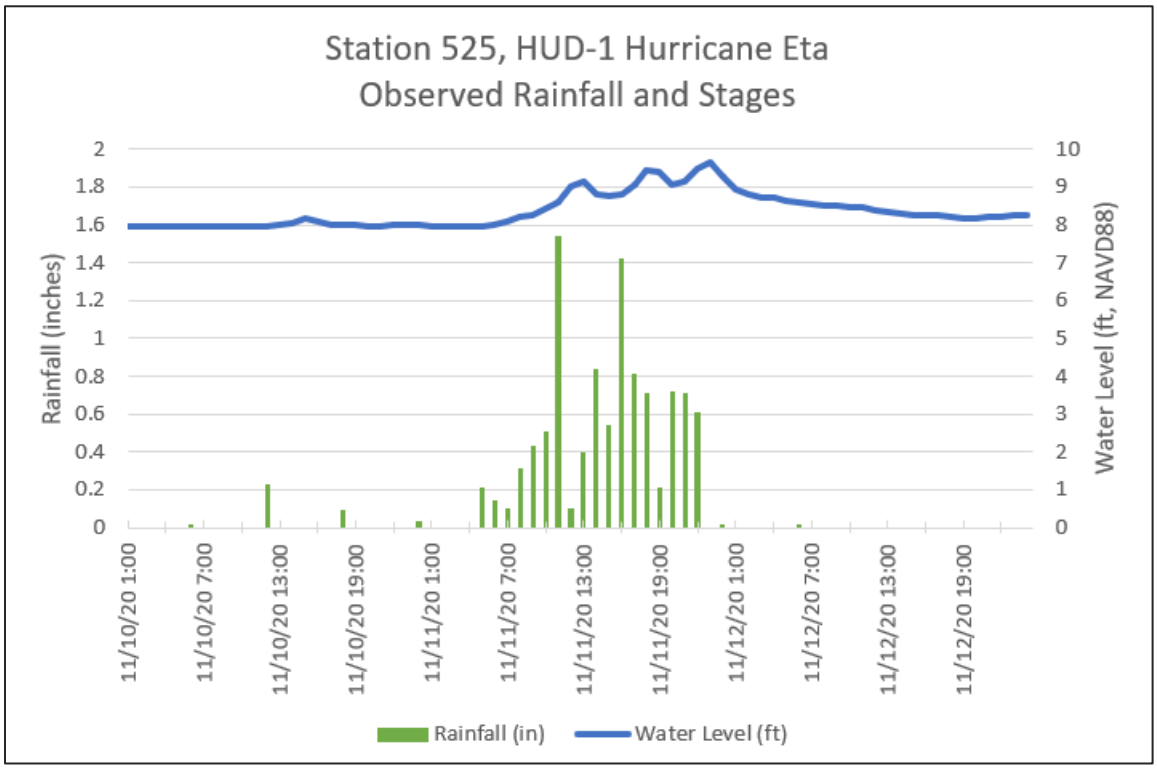

Figure 7. Station 525, HUD-1 Stage and Rainfall 11/10/2020 – 11/12/2020

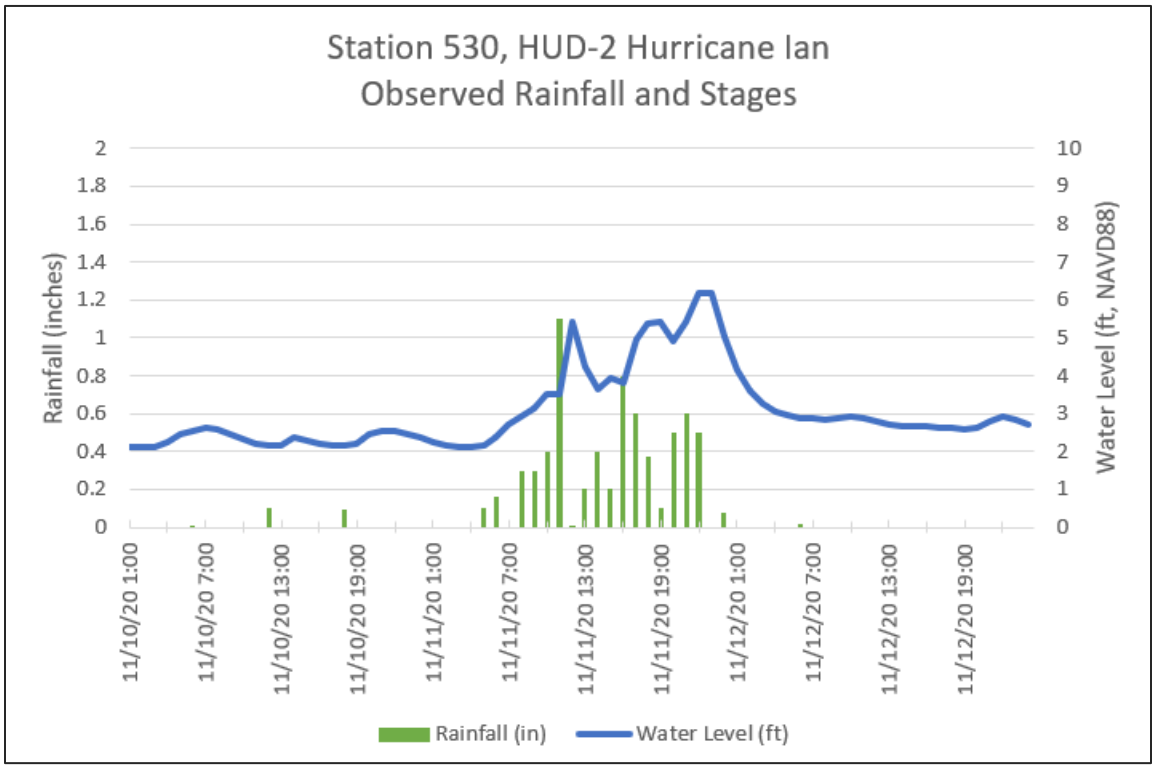

Figure 8. Station 530, HUD-2 Stage and Rainfall 11/10/2020 – 11/12/2020

Figure 9 graphs the observed stages and rainfall for station 530 for the calibration event (Hurricane Ian); no rainfall or stage data are available for Station 525 during this period.

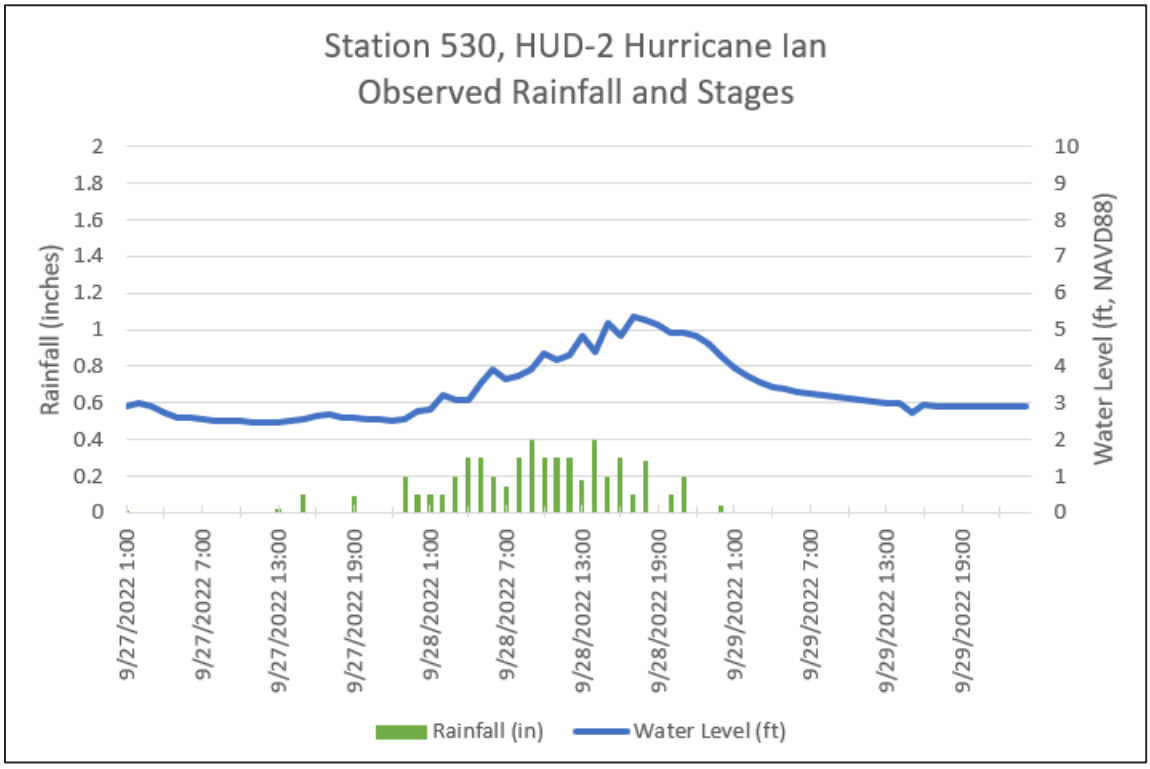

Figure 9. Station 530, HUD-2 Stage and Rainfall 9/27/2022 – 9/29/2022

9.4. Boundary Conditions for Verification Events

Tidal

For both storm events, the 15-minute measure water levels at the Venice Inlet at Crow's Nest Marina, USGS gage 02299735, were utilized as the tidal boundary condition.

Adjacent Watersheds

Boundary condition time series for nodes representing adjacent watersheds' basins were updated for both PC and WB reflecting the calibration and validation simulations completed for each. Model simulations representing the verification events were not performed for CF_SB. Boundary conditions for CF_SB nodes utilized design storm simulated stages: 100-year/24-hour boundary conditions for Hurricane Ian/calibration, and 25-year/24-hour boundary conditions for Hurricane Eta/validation.

9.5. Calibration Adjustments

Collective took an iterative approach to adjusting model parameters to improve the goodness of fit of simulated stages at each gauge. The design storm model, reflecting the response to peer review comments, was adjusted to apply the spatially distributed NEXRAD rainfall data, and updated to reflect the tidal and watershed boundary conditions for both events. After the initial simulation, initial stages for nodes upstream and downstream of the two stations were adjusted but provided no benefit for overall goodness of fit to measured stages during the peak storm response for either event. Overall, initial stage from the design storm model were kept the same. Initial results for Station 525 (HUD-1 and Sarasota High School) for Hurricane Eta compared well and no additional adjustments were deemed necessary. Again, no water level data is available for the calibration event to suggest additional adjustments are necessary. It is, however, suggested that the portion of Hudson Bayou below the structural weir at the southern end of Sarasota High to node 03NB2010 be modeled as a channel to better simulate the tailwater conditions at the weir.

For both the storm events, the model underpredicted stages at Station 530. Upon further review of the plans for ERP 47-42528-0 the following adjustments were made to better reflect the stormwater management system:

- Drop structure link 03RB2116A
    - Pipe Manning's n changed to match permit (0.02)
    - A 4th structural weir added per plans
- Pipe link 03RB2120B
    - Entrance loss changed to 1 for bars across inlet
    - Pipe Manning’s n change to match permit (0.02)
    - Bend loss changed to 1

Additionally, Manning’s n parameters were increased for channel cross-sections 03RB21161A,03RB21162A,03RB21163B, 03RB2010A, 03RB2110A, and 03RB2125. Lastly, based on a review of stages upstream of Station 530, it was apparent that some amount of baseflow was contributing to the channel system. A total of 60 cubic feet per second baseflow was applied to node 03NB2150 based on the change in standing water levels at this location compared to upstream.

9.6. Validation Adjustments

The validation simulation applies the Hurricane Eta boundary conditions and rainfall to the calibrated model as well as an additional adjustment to the CN values to account for the dry AMC of the area at the time of the event. The design storm model was developed based on average rainfall conditions, or AMC II, and CNs were corrected to AMC I by Collective using a published and accepted conversion method (Feyereisen et al., 2008).

9.7. Simulated Versus Observed Comparison

Application of the aforementioned adjustments improved the predicted results for both the calibration and validation events. Goodness of fit comparisons confirm the adjusted model’s runoff

response is reasonable, especially given the differences in ARMS-recorded rainfall amounts and NEXRAD rainfall data. **Table 5** compares the simulated peak stage at each station to the observed peak stage. Hydrograph comparison of simulated results against measured stages at Stations 525 and 530 are presented below in **Figures 10** and **11** for the calibration event. The invert elevation of the link (according to the model input) associated with each station is also included in the graphs for comparison purposes. There are no measured water levels to compare against for Station 525. As illustrated by Figure 11, the calibrated model reflects the observed timing, shape, and the peak stage well at Station 530. The falling limb of the simulation hydrograph reflects a steeper drop in stages than observed; however, this type of response is not reflected in the validation simulation presented below.

Table 5. Peak Stages Comparison for Hurricane Ian

Station ID, Name	Observed Peak Stage (ft, NAVD88)	Simulated Peak Stage (ft, NAVD88)	Difference (*Simulated* – *Observed*, ft)	Percent Difference
525, HUD-1	--	10.07	--	--
530, HUD-2	5.37	5.38	0.01	0.2%

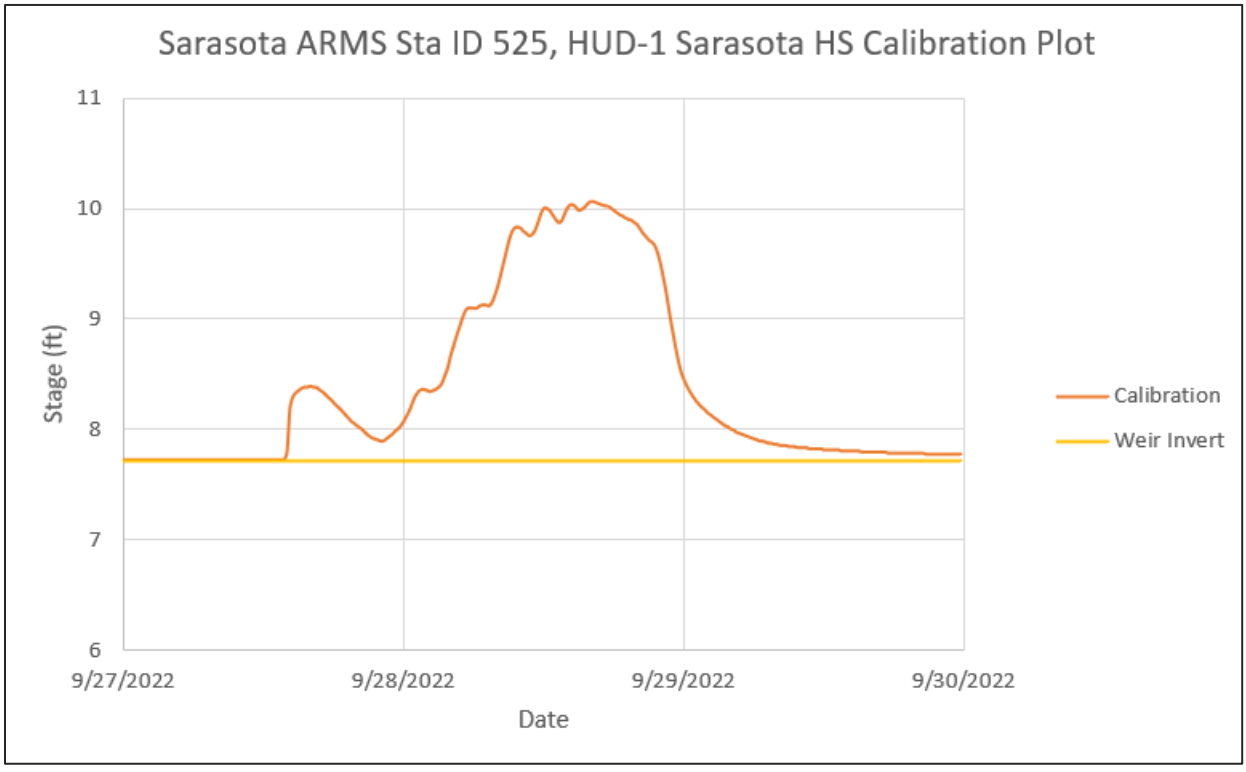

Figure 10. Station 525, HUD-1 Simulated Stages, 9/27/2022 – 9/29/2022

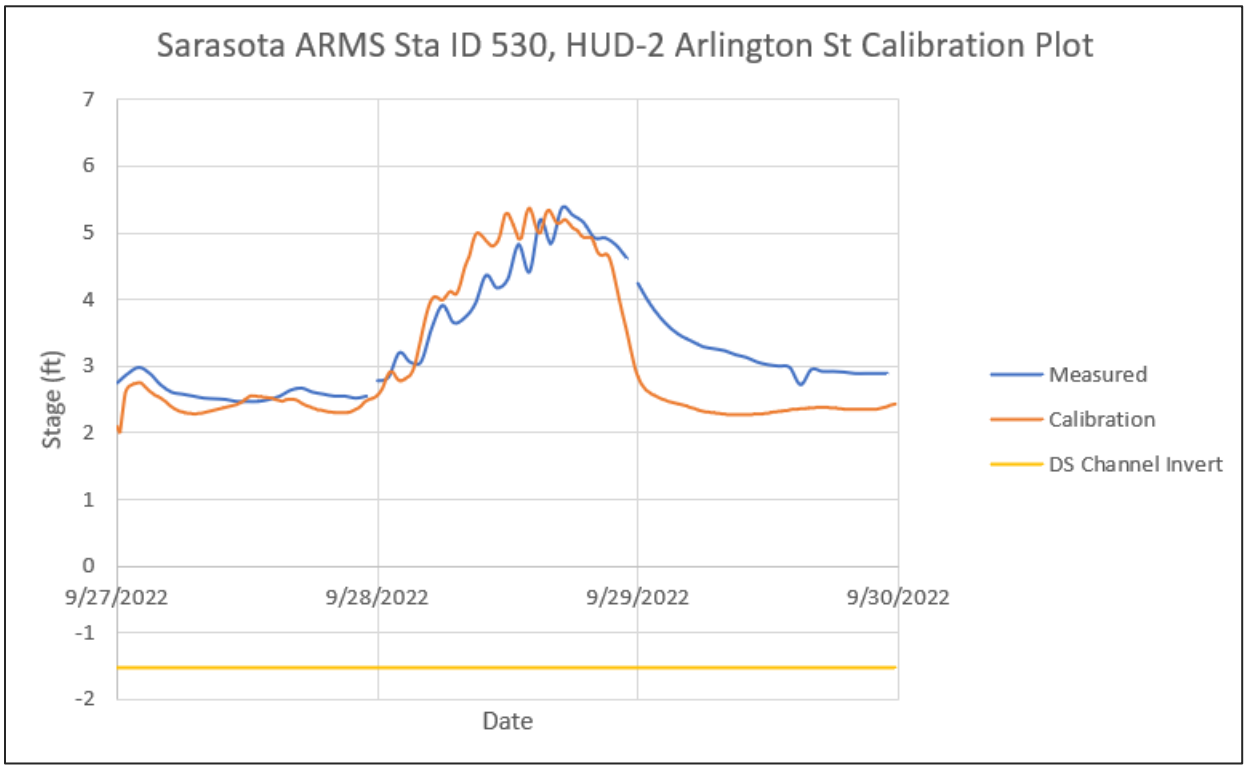

Figure 11. Station 530, HUD-2 Observed versus Simulated Stages, 9/27/2022 – 9/29/2022

Table 6 compares the simulated peak stage at each station to the observed peak stage. Comparison of simulated results against measured stages at both Stations 525 and 530 are illustrated below in **Figures 12** and **13** for the validation event. The larger difference in stages for the validation event is likely due to the larger variance in the rainfall observed in the watershed based on the two ARMS stations compared to the NEXRAD data utilized for the simulation. For both stations, the timing and shape of the model hydrograph compare well to the observed. There is more variability in the stage differences throughout the time-period, compared to the calibration event; however, stage differences are reasonable. The falling limb of the simulation hydrograph at Station 525 reflects a steeper drop in stages than observed; however, without measured data for the calibration event it cannot be determined if this is related to the model.

Table 6. Peak Stages Comparison for Hurricane Eta

Station ID, Name	Observed Peak Stage (ft, NAVD88)	Simulated Peak Stage (ft, NAVD88)	Difference (*Simulated* – *Observed*, ft)	Percent Difference
525, HUD-1	9.64	10.05	0.41	4.3%
530, HUD-2	6.2	5.41	-0.79	12.7%

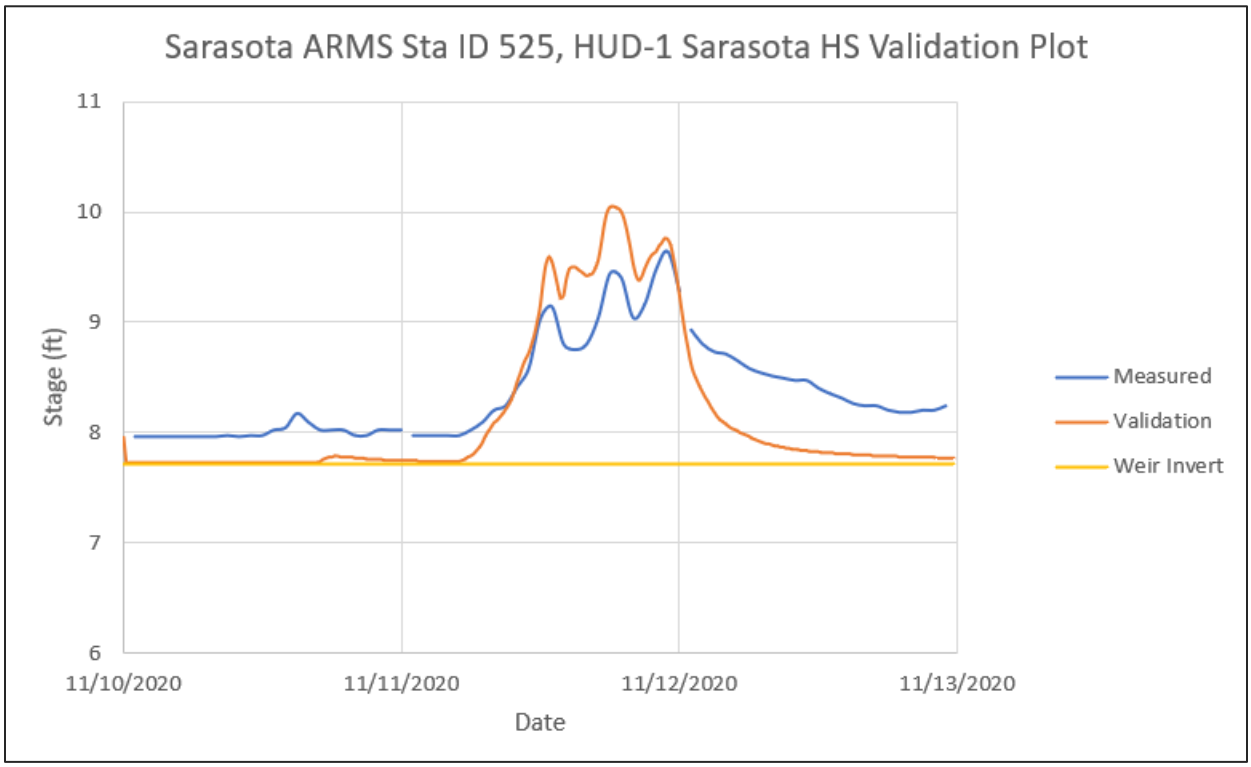

Figure 12. Station 525, HUD-1 Observed versus Simulated Stages, 11/10/2020 – 11/12/2020

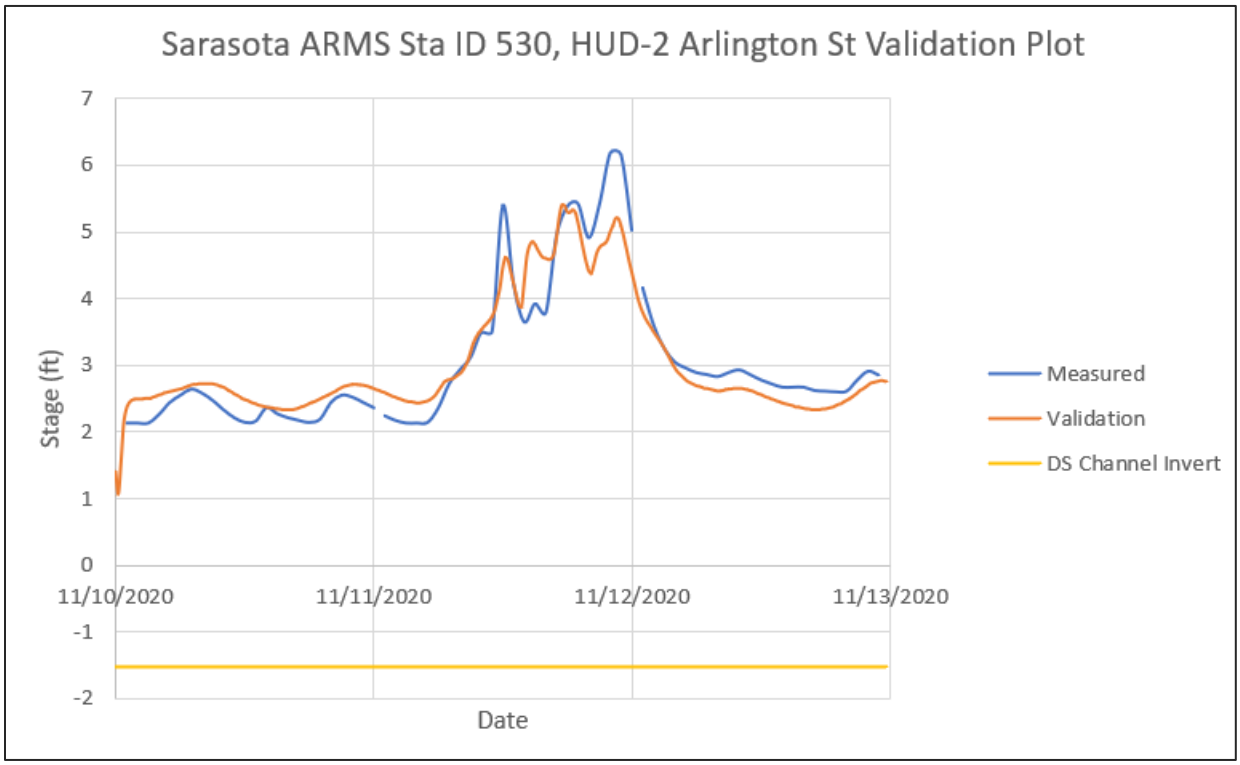

Figure 13. Station 530, HUD-2 Observed versus Simulated Stages, 11/10/2020 – 11/12/2020

10. Watershed Merge

Calibration adjustments were applied by Collective to the design storm model. As requested by the County, Collective merged adjacent portions of the CF_SB watershed GWIS and model into the HB GWIS/ICPR4 model. The CF_SB watershed is adjacent to both HB, WB, and PC. CF_SB model elements were assigned to either HB or WB based on hydrology (adjoining basins) and hydraulics. A total of 159 CF_SB basins (with associated nodes and links) were merged with the HB watershed. Fourteen of these basins, which are adjacent to the PC watershed, should be merged with the PC GWIS/model in a future maintenance update. The remaining 101 basins (with associated nodes and links) were merged with the WB watershed.

As part of the merge efforts basin, node, and link topologies were reviewed and corrected to address basin gaps and overlaps as well as snapping links to nodes. Node 03NF2600 was deleted since there were no links associated with it. Storage for node 03NB2158 was updated since the area changed by more than 0.01 acre as part of the gap/overlap edits.

Additionally, boundary stage conditions were updated based on latest version of both the CF_RBN, PC, and WB models. This included adding a boundary stage set and associated data for the 500-year/24-hour simulation. The "TO Nodes" for eight surface overland flow links connecting the HB and PC watersheds were updated to reflect the most recent PC GWIS model:

- Link 03RA2080E TO node updated to 37515
- Link 03RA2225B TO node updated to 30735
- Link 03RA2220D TO node updated to 37545
- Link 03RA2203D TO node updated to 30738
- Link 03RA2204D TO node updated to 30738
- Link 03RA2205D TO node updated to 30738
- Link 03RA2211C TO node updated to 30738
- Link 03NB21157B TO node updated to 30585
- Node 03NA2180 deleted based on corrected PC nodes being assigned
- Node 30603 was replaced with node 30585.

11. Model Boundary Conditions Updates

The merged HB watershed boundary and boundary interconnections required additional updates to be consistent with adjacent watersheds. Collective coordinated with Jones Edmunds to update basin boundaries to resolve basin gaps and overlaps and connectivity with PC. Additionally, basins and interconnections were reviewed and updated with the adjacent WB watershed, which Collective is updating a part of this project, too. As needed, associated node storage, TOC, CN, and IA were updated for revised basins. Hydraulic links were reviewed by Collective to ensure consistency with adjacent watersheds, which required both adding and modifying link features and updating parameter data (e.g., to/from nodes, etc.).

Since all County watersheds are being updated concurrently, the HB watershed was merged into a countywide watershed model by Jones Edmunds to establish boundary conditions efficiently and consistently for all watersheds at once. During the process of merging the watersheds into the countywide master model, Jones Edmunds performed the following (Jones Edmunds 2024):

- Additional updates to basin delineations to eliminate gaps and overlaps
- Renamed nodes and links to eliminate duplicate names between watersheds
- Addressed link/node topology errors
- Updated spatial features to match model inputs
- For features represented in adjacent models but reflecting mismatched information, reviewed and retained the features with the more credible source

Jones Edmunds provided Collective the merged, countywide GWIS 2.1 geodatabase and ICPR4 model with simulation results for the 10-year/24-hour, 25-year/24-hour, 50-year/24-hour, 100-year/24-hour, and 500-year/24-hour design storm events. The Type II Florida-Modified rainfall distribution was maintained for all watersheds. Rainfall amounts for each storm event applied to all watersheds are summarized in **Table 7**.

Table 7. Design Storm Rainfall Depths for Countywide Model

Rainfall Return Period and Duration	Rainfall Depth (inches)
10 years/24 hours	7.0
25 year/24 hours	8.0
50 years/24 hours	9.0
100 years/24 hours	10.0
500 years/24 hours	12.4

Collective extracted the HB watershed from the countywide master model into a new, separate GWIS 2.1 geodatabase. Based on the County's request, watershed assignments were modified for several basins:

- **Removed from HB watershed and assigned to PC:** H0760, H0770, H0780, H790, H0800, H0810, H0820, H0830, H1240, H1250, H1260, H1290, H1300, H1310, H1690, H1700, H1710, H1720, H1730, H1890, H1900, H2420, H 2430, H2440, H3190

Adjustments were also made to the extracted HB watershed to adjust several parameter elevations from NGVD29 to NAVD88. Specifically, initial stages for nodes 03NB21161, 03NB21162, and 03NB21163 as well as boundary stage points for nodes 03NG2700 and 03NC2000 were adjusted from 2.5 ft (NGVD29 tidal elevation) to 1.42 ft (NAVD88 tidal elevation). Lastly, boundary stage time series

were assigned based on the results of the countywide model for all storm events. An ICPR4 model was generated by Collective from the extracted, HB geodatabase and all simulations were executed. Collective performed a review of the results of the extracted model to confirm consistency with the countywide model.

12. Floodplain Development

Node peak results of the 100-year/24-hour simulation and the previously discussed 2019 DEM (see Section 3) were used by Collective to generate level-pool floodplains for the HB watershed. Additional processing was performed to remove gaps and holes and delete insignificantly small inundation polygons applying a threshold of 2,500 square feet. Results were compared with preliminary floodplain information developed by Collective after responding to model update peer review comments (see Section 8) as well as flood zone type "AE" mapping provided by the County with the original HB ICPR3/GWIS version 1.6 geodatabase and the GWIS_FLOOD mapping provided by the County with the converted CF_SB ICPR4 model and GWIS geodatabase.

13. Response to Verification, Boundary Conditions Updates and Floodplain Peer Review

On March 19, 2024, Jones Edmunds provided peer review comments related to the verification, boundary condition updates and floodplain delineation performed by Collective. **Table 8** summarizes the comments received and Collective's responses.

Table 8. Peer Review Comments and Responses Related to Boundary Condition Updates and Floodplain Mapping

Peer Review Comment	Response
All standard pipe sizes should be updated with the original pipe sizes (e.g., 11.8-inch-x-18.4-inch should be 12-inch-x-18-inch).	*Justification for this request is needed. Pipe dimensions were adjusted for model conversion to account for differences in how ICPR3 and ICPR4 non-standard pipes geometries are determined and to satisfy peak stage metrics for model conversion, per scope of work. Reverting these dimensions to original, non-standard sizes is a considerable effort, not within Collective's current scope of work, and will impact stages throughout the model.*

Peer Review Comment	Response
Jones Edmunds reviewed the level-pool floodplains for the 100-year/24-hour design storm event. The mapped floodplains are generally consistent with the peak water-surface elevations at the model nodes; however, the post-processing appears to overestimate the floodplain extent in some locations. An example is shown in Figure 1 where the lighter blue polygon illustrates the level-pool extent and the dark blue polygon is the raster that depicts the inundation cells.	*Post-processing of floodplain to remove minor floodplain areas and fill minor gaps is consistent with the approach employed by Jones Edmunds for other Sarasota County watersheds. Raw, level-pool floodplain can be provided as well, if County desires.*

14. Flood Protection Level of Service

Collective performed an existing conditions stormwater quantity Level of Service (LOS) analysis of all basins in the HB watershed in accordance with the LOS and design criteria described in the County's Unified Development Code (UDC), Appendix C14 (Sarasota County, 2023). More specifically, Collective evaluated the LOS for buildings and road access based on the criteria summarized in **Table 9**. Site flooding was not included in the analysis.

Table 9. Sarasota County Stormwater Quantity LOS Design Criteria

Category	Type	Storm Design
Building	All	Finished floor elevation greater than or equal to 100-year/24-hour peak flood elevation
Road Access	Evacuation	No flooding at outside edge of pavement from 100-year/24-hour design storm
	Arterial	Less than 6-inches of flooding at outside edge of pavement from 100-year/24-hour design storm
	Collector	Less than 6-inches of flooding at outside edge of pavement from 25-year/24-hour design storm
	Neighborhood	Less than 6-inches of flooding at outside edge of pavement from 10-year/24-hour design storm

The methodology to assess LOS within the watershed is similar in approach to previous assessments performed for the County. The following sections detail the supporting data and methodology used by Collective to evaluate both buildings and roadway access.

13.1 Building LOS Methodology

Collective utilized the *BuildingFootprint* feature class published by Sarasota County and available from ArcGIS Online to identify buildings where the estimated finished floor elevations (FFE) are below the 100-year/24-hour flood elevations. FFEs were estimated for all buildings as follows:

- Building polygons were buffered to the outside by five feet.
- The mean and maximum surface elevations within the five-foot buffer polygon were determined from the 2019 SWFWMD DEM.
- For all buildings except mobile and manufactured housing, the average of the mean and maximum elevations was used to establish the FFEs.
- For mobile and manufactured housing, one foot was added to average of the mean and maximum elevations to establish the FFEs.

Each building was intersected with associated basin(s) and the FFE compared to the associated basin's 100-year/24-hour flood elevation. Each building where the FFE is less than the flood elevation was flagged as deficient and compared to the flood depth grid. In some instances, FFE estimates needed to be revised due to noise within the DEM around the building that appeared inconsistent with the ground surface and skewed the maximum elevation or where building footprints did not align with how the buildings are reflected in the DEM and 2020 aerial imagery. Non-habitable structures, defined as having a square footage of less than 400 square feet (ICC, 2023), were removed from the list. Additionally, buildings no longer visible in recent aerial imagery (i.e., 2020 and 2023) were removed. Lastly, buildings constructed after 2020, which are not reflected in the DEM and aerials indicating a topographic void, were not flagged. **Appendix A** includes a table summarizing the LOS deficient structures for the watershed as well as a map illustrating the locations. A total of 82 buildings within the watershed have been identified as stormwater LOS deficient; these buildings reflect 113 unique addresses based on the County's parcel data.

13.2 Road Access LOS Methodology

For the road access assessment, Collective utilized the *Streets* feature class published by Sarasota County and available from ArcGIS Online to identify roadway segments within the watershed that do not meet the access criteria established by the County. The Street feature class was supplemented with information from the County's *Thoroughfare* feature class (also available via ArcGIS Online) to classify the *Streets* segments as Evacuation, Arterial (both major and minor arterials not identified as Evacuation routes), or Collector (both major and minor collectors not identified as Evacuation routes). Remaining segments were classified as Neighborhood roads.

For this analysis, Collective assumed the *Streets* layer reflects the roadway centerlines. Edge of pavement elevation for each road segment was estimated assuming the centerline represents the crown elevation, and the edge of pavement is 12-feet offset with a 2-percent cross slope from the crown (equivalent to 0.24-feet below crown elevation). The *Streets* layer, along with the 2019 DEM, floodplain mapping and depth rasters for the 10-year/24-hour, 25-year/24-hour, and 100-year/24-hour storm events were used by Collective to identify the segments of roadways where the flooding depth exceeds the LOS criteria and flagged these as deficient. Duration of flooding for each deficient segment was estimated as well. Small (i.e., less than 25 linear feet), isolated segments of roadway flooding were removed from the list. Additionally, flagged roadways were visually reviewed for reasonableness. Lastly, Collective performed a visual review to identify any roadway segments where EOP estimates (depth and/or width) did not flag deficient roadways. Street segments that were constructed post-2020, and not reflected in the model updates and associated DEM, were not flagged.

Table 10 summarizes by road classification and LOS status the length of roadway and percentage of total length for the roads located within the watershed. **Appendix B** includes a detailed list identifying each of the 192 road segments not satisfying the County's design criteria as well as a figure illustrating their locations. Lengths represent roadway segments as defined by the County's mapping, not the length of edge of pavement inundated by the specific storm event. There are eight North Tamiami Trail roadway segments that are listed as deficient based on 2020 conditions but have since been improved; the deficiency rating may no longer apply to these segments and will need to be reassessed based on subsequent model updates that reflect the roadway reconstruction. These roadway segments are noted with an asterisk assigned to the street identification listed in Appendix B.

Table 10. Road Access LOS Summary by Roadway Classification

LOS Roadway Classification	Meets Stormwater LOS Criteria	Linear Feet	Percent of Total LOS Roadway Classification
Evacuation	Yes	26,770	43
	No	**35,168**	**57**
Arterial	Yes	2,873	23
	No	**9,773**	**77**
Collector	Yes	-	0
	No	**-**	**0**
Neighborhood	Yes	70,845	14
	No	**419,165**	**86**

15. Response to Level of Service Peer Review

Two peer review comments from Jones Edmunds were received on July 22, 2024, about the draft level of service analysis results. Comments and Collective's responses are summarized in **Table 11** below. No edits to either Appendix A or B or the summary tables presented in Section 14 were needed.

Table 11. Peer Review Comments and Responses Related to Level of Service Analysis

Peer Review Comment	Response
Building BF_08182016_227741 does not meet the FPLOS	*Floodplain inundation and depth rasters have been updated to remove flooding reflected in Basin 03D2323, whose node only reflects storage of the junction and a stormwater chamber. Flooding is contained in the stormwater management system per the model and does not reflect surface flooding.*
ST_102012_030523 does not appear to be deficient	*This segment is flagged deficient due to flooding of John Ringling Causeway at the intersection with Sunset Drive/Golden Gate Point. No changes were made in response.*

16. Conclusions and Recommendations

The watershed's ICPR4 model was updated by Collective to reflect three developments, incorporate the appropriate elements of the Sarasota Bay Coastal Fringe watershed model, address gaps and overlaps with the adjacent watersheds, add surface overland flow connections where appropriate, and reflect improved boundary condition stages generated by Jones Edmunds from a countywide Master Model. Updated model results were used by Collective to map level pool floodplains and generate depth grids. Floodplain information was used to perform a flood protection level of service assessment of buildings and roadways within the watershed. Based on the available information and assumptions used for the level of service assessment, most of the 113 deficient structures appear to flood during extreme events (i.e., the 100-year/24-hour design storm) compared to more frequent storms (i.e., 10-year/24-hour design storm). One hundred ninety-two (192) roadway segments, mostly neighborhood roads, have been identified as deficient. A significant portion of the designated evacuation routes within the watershed are identified as deficient, including segments of Bayfront Drive, Fruitville Road, John Ringling Boulevard, Boulevard of the Presidents, Gulfstream Avenue, Tamiami Trail, and Washington Boulevard.

Throughout the course of the project, Collective developed a list of recommended updates for items that fell outside of the project's scope of work. In total 56 future update items were noted, ranging from updating basin delineations and cross section geometry to align with current surface topography, verifying hydraulic links as well as parameters, and general modeling improvements (such as modeling a couple of bridges using HEC-RAS and converting the current pipe links to rating curve links). These recommendations are reflected as point features ("HB_future_fixes" within the "Misc" feature dataset) included in the final GWIS geodatabase.

17. References

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Appendix A

Stormwater LOS Deficient Buildings

Table A-1. Stormwater LOS Deficient Buildings

FACILITY ID	Address	Building Type	FFE (ft, NAVD88)	Node	Stage 100YR (ft, NAVD88)	Stage 25YR (ft, NAVD88)	Stage 10YR (ft, NAVD88)
BF_08182016_222754	1442 9TH ST SARASOTA FL, 34236	Residential vacant site	13.62	03NF2686	**14.52**	**14.31**	**13.97**
BF_08182016_222762	1434 9TH ST SARASOTA FL, 34236	Use In Transition	14.07	03NF2686	**14.52**	**14.31**	13.97
BF_08182016_222824	825 N LIME AVE SARASOTA FL, 34237	Warehouse and office	29.09	03NF2696	**29.14**	28.98	28.75
BF_08182016_222962	821 N LIME AVE SARASOTA FL, 34237	Store -one story	29.03	03NF2696	**29.14**	28.98	28.75
BF_08182016_223004	1661 8TH ST SARASOTA FL, 34236	Multi-family apts 5-9 units	18.19	03NF2627	**18.36**	**18.19**	18.05
BF_08182016_223020	1681 8TH ST SARASOTA FL, 34236	Single Family Detached	17.70	03NF2627	**18.36**	**18.19**	**18.05**
BF_08182016_223036	1673 8TH ST SARASOTA FL, 34236	Single Family Detached	18.21	03NF2627	**18.36**	18.19	18.05
BF_08182016_223075	1633 8TH ST SARASOTA FL, 34236	Single Family Detached	18.13	03NF2627	**18.36**	**18.19**	18.05
BF_08182016_223142	801 N LIME AVE SARASOTA FL, 34237	Store-1 story - mixed use	28.51	03NF2696	**29.14**	**28.98**	**28.75**
BF_08182016_223253	1644 8TH ST SARASOTA FL, 34236	Single Family Detached	18.26	03NF2627	**18.36**	18.19	18.05
BF_08182016_223257	1650 8TH ST SARASOTA FL, 34236	Single Family Detached	18.16	03NF2627	**18.36**	**18.19**	18.05
BF_08182016_223459	2188 8TH ST SARASOTA FL, 34237	Multiple Single Fam Dwellings	28.13	03NF2653	**28.23**	27.19	26.66
BF_08182016_223727	731 N LIME AVE SARASOTA FL, 34237	Store -one story	29.08	03NF2696	**29.14**	28.98	28.75
BF_08182016_224103	617 GILLESPIE AVE SARASOTA FL, 34236	2-Family Dwelling	22.90	03NF2692	**22.91**	22.55	22.17
BF_08182016_224878	2364 6TH ST SARASOTA FL, 34237	Single Family Detached	28.48	03NA2066	**28.68**	28.26	27.93
BF_08182016_224880	2370 6TH ST SARASOTA FL, 34237	Single Family Detached	28.42	03NA2066	**28.68**	28.26	27.93
BF_08182016_224938	500 N JEFFERSON AVE, SARASOTA FL, 34237	CONDO - Row House	28.05	03NA2062	**28.46**	27.66	27.26
BF_08182016_224991	1693 5TH ST SARASOTA FL, 34236	Multiple Single Fam Dwellings	18.21	03NF2627	**18.36**	18.19	18.05
BF_08182016_225024	512 N SEEDS AVE SARASOTA FL, 34237	Single Family Detached	28.44	03NA2066	**28.68**	28.26	27.93
BF_08182016_225036	500 N JEFFERSON AVE, SARASOTA FL, 34237	CONDO - Row House	27.89	03NA2062	**28.46**	27.66	27.26
BF_08182016_225038	500 N JEFFERSON AVE, SARASOTA FL, 34237	CONDO - Row House	27.47	03NA2062	**28.46**	**27.66**	27.26
BF_08182016_225067	524 ERIE CT SARASOTA FL, 34237	Single Family Detached	28.68	03NA2066	**28.68**	28.26	27.93
BF_08182016_225151	500 N JEFFERSON AVE, SARASOTA FL, 34237	CONDO - Row House	28.10	03NA2062	**28.46**	27.66	27.26
BF_08182016_225152	500 N JEFFERSON AVE, SARASOTA FL, 34237	CONDO - Row House	28.22	03NA2062	**28.46**	27.66	27.26

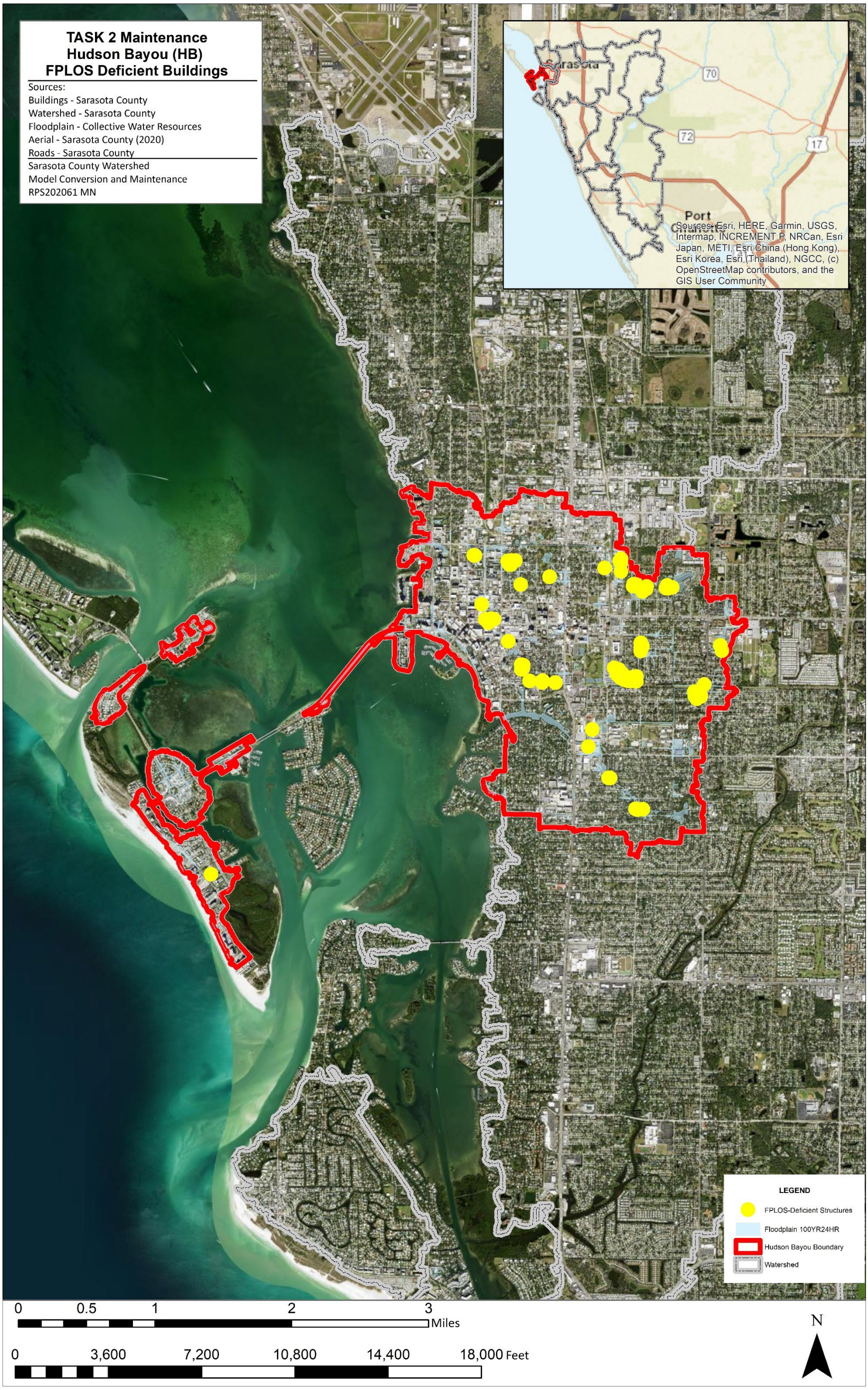
FACILITY ID	Address	Building Type	FFE (ft, NAVD88)	Node	Stage 100YR (ft, NAVD88)	Stage 25YR (ft, NAVD88)	Stage 10YR (ft, NAVD88)
BF_08182016_225275	0 ASPINWALL ST SARASOTA FL, 34237	Residential Common Areas/Elements	28.54	03NA2066	28.68	28.26	27.93
	2421 ASPINWALL ST 2421, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2423 ASPINWALL ST 2423, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2425 ASPINWALL ST 2425, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2427 ASPINWALL ST 2427, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2429 ASPINWALL ST 2429, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2431 ASPINWALL ST 2431, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2433 ASPINWALL ST 2433, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2435 ASPINWALL ST 2435, SARASOTA FL, 34237	CONDO - Cluster Villa					
BF_08182016_225386	2403 HURON LN SARASOTA FL, 34237	Single Family Detached	28.27	03NA2066	28.68	28.26	27.93
BF_08182016_225600	0 ASPINWALL ST SARASOTA FL, 34237	Residential Common Areas/Elements	28.26	03NA2066	28.68	28.26	27.93
	2401 ASPINWALL ST 2401, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2403 ASPINWALL ST 2403, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2405 ASPINWALL ST 2405, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2407 ASPINWALL ST 2407, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2409 ASPINWALL ST 2409, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2411 ASPINWALL ST 2411, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2413 ASPINWALL ST 2413, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2415 ASPINWALL ST 2415, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2417 ASPINWALL ST 2417, SARASOTA FL, 34237	CONDO - Cluster Villa					
	2419 ASPINWALL ST 2419, SARASOTA FL, 34237	CONDO - Cluster Villa					
BF_08182016_226763	1474 FRUITVILLE RD SARASOTA FL, 34236	Strip store-1 story < 10,000 sf	16.12	03NF2689	16.23	15.77	15.57
	1480 FRUITVILLE RD SARASOTA FL, 34236	Store -one story					
BF_08182016_227363	1544 1ST ST SARASOTA FL, 34236	Office - 1 story/single tenant <10,000 sf	15.31	03NE2530	15.91	15.32	14.96
BF_08182016_227371	20 N LEMON AVE SARASOTA FL, 34236	Strip store-1 story < 10,000 sf	15.69	03NE2530	15.91	15.32	14.96

FACILITY ID	Address	Building Type	FFE (ft, NAVD88)	Node	Stage 100YR (ft, NAVD88)	Stage 25YR (ft, NAVD88)	Stage 10YR (ft, NAVD88)
BF_08182016_227375	1558 1ST ST SARASOTA FL, 34236	Financial institutions (Banks, S&L, Mtg co, Credit svcs)	14.96	03NE2530	**15.91**	**15.32**	14.96
BF_08182016_227516	1501 MAIN ST SARASOTA FL, 34236	Strip store-1 story < 10,000 sf	15.74	03NE2530	**15.91**	15.32	14.96
	1507 MAIN ST SARASOTA FL, 34236	Strip store-1 story < 10,000 sf					
	1515 MAIN ST SARASOTA FL, 34236	Community multi story ctr/single tenant/mixed use					
	1519 MAIN ST SARASOTA FL, 34236	Financial institutions (Banks, S&L, Mtg co, Credit svcs)					
	1521 MAIN ST SARASOTA FL, 34236	Strip store-1 story < 10,000 sf					
	1527 MAIN ST SARASOTA FL, 34236	Strip store-1 story < 10,000 sf					
	1529 MAIN ST SARASOTA FL, 34236	Strip store-1 story < 10,000 sf					
	1531 MAIN ST SARASOTA FL, 34236	Strip store-1 story < 10,000 sf					
	1535 MAIN ST SARASOTA FL, 34236	Restaurant -Full service					
	1537 MAIN ST SARASOTA FL, 34236	Restaurant -Full service					
	1547 MAIN ST SARASOTA FL, 34236	Strip store-1 story < 10,000 sf					
	1551 MAIN ST SARASOTA FL, 34236	Restaurant -Full service					
	1553 MAIN ST SARASOTA FL, 34236	Restaurant -Full service					
BF_08182016_228552	1630 RINGLING BLVD SARASOTA FL, 34236	Office /multi story-1 tenant <10,000	12.69	03NE2520	**12.94**	12.02	11.61
BF_08182016_228573	143 S SHADE AVE SARASOTA FL, 34237	Single Family Detached	26.81	03NA2049	**26.83**	26.63	26.52
BF_08182016_228675	201 S TUTTLE AVE SARASOTA FL, 34237	Orphanages/non-profit/charitable services	28.21	03NA2209	**29.04**	**28.92**	**28.82**
BF_08182016_228827	217 S SHADE AVE SARASOTA FL, 34237	Residential vacant site	26.45	03NA2049	**26.83**	**26.63**	**26.52**
BF_08182016_228837	217 S SHADE AVE SARASOTA FL, 34237	Residential vacant site	26.60	03NA2049	**26.83**	**26.63**	26.52
BF_08182016_229028	2875 DAVIS BLVD SARASOTA FL, 34237	Single Family Detached	28.99	03NA2209	**29.04**	28.92	28.82
BF_08182016_229087	301 S SHADE AVE SARASOTA FL, 34237	Single Family Detached	26.62	03NA2049	**26.83**	**26.63**	26.52
BF_08182016_230333	1718 LAUREL ST SARASOTA FL, 34236	Multi-family 10 - 19 units	7.95	03ND2316	**8.02**	7.7	7.48
BF_08182016_230398	1718 LAUREL ST SARASOTA FL, 34236	Multi-family 10 - 19 units	7.98	03ND2316	**8.02**	7.7	7.48

FACILITY ID	Address	Building Type	FFE (ft, NAVD88)	Node	Stage 100YR (ft, NAVD88)	Stage 25YR (ft, NAVD88)	Stage 10YR (ft, NAVD88)
BF_08182016_230484	1718 LAUREL ST SARASOTA FL, 34236	Multi-family 10 - 19 units	7.64	03ND2316	**8.02**	**7.7**	7.48
BF_08182016_230549	390 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.66	03NC2272	**25.92**	**25.75**	25.5
BF_08182016_230647	1718 CHERRY LN SARASOTA FL, 34236	Multiple Single Fam Dwellings	7.50	03ND2316	**8.02**	**7.7**	7.48
BF_08182016_230655	1724 CHERRY LN SARASOTA FL, 34236	Multiple Single Fam Dwellings	7.41	03ND2316	**8.02**	**7.7**	**7.48**
BF_08182016_230691	403 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.88	03NC2272	**25.92**	25.75	25.5
BF_08182016_230810	1718 CHERRY LN SARASOTA FL, 34236	Multiple Single Fam Dwellings	7.81	03ND2316	**8.02**	7.7	7.48
BF_08182016_231060	435 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.78	03NC2272	**25.92**	25.75	25.5
BF_08182016_231083	424 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.42	03NC2272	**25.92**	**25.75**	**25.5**
BF_08182016_231140	443 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.76	03NC2272	**25.92**	25.75	25.5
BF_08182016_231278	440 S PELICAN DR SARASOTA FL, 34237	Residential vacant site	25.79	03NC2272	**25.92**	25.75	25.5
BF_08182016_231292	530 S SHADE AVE SARASOTA FL, 34237	Single Family Detached	25.94	03NC2274	**25.94**	25.75	25.5
BF_08182016_231347	553 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.80	03NC2274	**25.94**	25.75	25.5
BF_08182016_231361	565 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.62	03NC2274	**25.94**	**25.75**	25.5
BF_08182016_231371	446 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.36	03NC2272	**25.92**	**25.75**	**25.5**
BF_08182016_231480	506 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.82	03NC2272	**25.92**	25.75	25.5
BF_08182016_231555	510 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.48	03NC2272	**25.92**	**25.75**	**25.5**
BF_08182016_231639	526 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.52	03NC2268	**25.92**	**25.74**	25.49
BF_08182016_231661	540 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.31	03NC2268	**25.92**	**25.74**	**25.49**
BF_08182016_231667	566 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.83	03NC2274	**25.94**	25.75	25.5
BF_08182016_231670	574 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.90	03NC2274	**25.94**	25.75	25.5
BF_08182016_231687	640 MADISON CT SARASOTA FL, 34236	2-Family Dwelling	11.95	03ND2356	**12.16**	11.82	11.08
BF_08182016_231715	643 OHIO PL SARASOTA FL, 34236	Single Family & Other Bldg	6.88	03ND2351	**6.91**	6.74	6.63
BF_08182016_231827	654 LAFAYETTE CT SARASOTA FL, 34236	Residential vacant site	14.51	03ND2360	**14.52**	13.96	12.93
BF_08182016_231842	642 MADISON CT SARASOTA FL, 34236	2-Family Dwelling	11.90	03ND2356	**12.16**	11.82	11.08
BF_08182016_231893	2774 NANCY ST SARASOTA FL, 34237	Single Family Detached	26.80	03NA2230	**26.88**	26.29	25.78
BF_08182016_232280	2733 NOVUS PL SARASOTA FL, 34237	Single Family Detached	26.20	03NA2199	**26.27**	25.96	25.88
BF_08182016_232311	2745 NOVUS PL SARASOTA FL, 34237	Single Family Detached	26.12	03NA2199	**26.27**	25.96	25.88

FACILITY ID	Address	Building Type	FFE (ft, NAVD88)	Node	Stage 100YR (ft, NAVD88)	Stage 25YR (ft, NAVD88)	Stage 10YR (ft, NAVD88)
BF_08182016_232495	2765 NOVUS PL SARASOTA FL, 34237	Single Family Detached	26.20	03NA2199	**26.27**	25.96	25.88
BF_08182016_232564	2728 NOVUS PL SARASOTA FL, 34237	Single Family Detached	26.26	03NA2199	**26.27**	25.96	25.88
BF_08182016_232575	2742 NOVUS PL SARASOTA FL, 34237	Single Family Detached	26.02	03NA2199	**26.27**	25.96	25.88
BF_08182016_232650	2769 NOVUS PL SARASOTA FL, 34237	Single Family Detached	26.09	03NA2199	**26.27**	25.96	25.88
BF_08182016_232793	2745 WOOD ST SARASOTA FL, 34237	Single Family Detached	26.24	03NA2199	**26.27**	25.96	25.88
BF_08182016_234967	1001 S SCHOOL AVE SARASOTA FL, 34237	Public school (Board of Public Instruction)	14.34	03NA20121	**14.35**	14.1	13.92
BF_08182016_236188	1001 S SCHOOL AVE SARASOTA FL, 34237	Public school (Board of Public Instruction)	4.78	03NB2009	**4.84**	3.82	3.4
BF_08182016_238983	2204 FLOYD ST SARASOTA FL, 34239	Single Family Detached	10.38	03NB2128	**10.47**	10.18	9.95
BF_08182016_239076	2200 FLOYD ST SARASOTA FL, 34239	Single Family Detached	10.23	03NB2128	**10.47**	10.18	9.95
BF_08182016_241871	2374 ARLINGTON ST SARASOTA FL, 34239	Single Family Detached	12.67	03NB2142	**12.84**	12.37	12.1
BF_08182016_241880	2420 ARLINGTON ST SARASOTA FL, 34239	Single Family Detached	12.71	03NB2145	**13.01**	12.66	12.46
BF_08182016_241932	1808 S SHADE AVE SARASOTA FL, 34239	Single Family Detached	12.61	03NB2142	**12.84**	12.37	12.1
BF_08182016_248365	132 HARRISON DR SARASOTA FL, 34236	2-Family Dwelling	4.42	NH1670	**4.44**	**4.43**	4.41
BF_11132023_437953	546 S PELICAN DR SARASOTA FL, 34237	Single Family Detached	25.22	03NC2268	**25.92**	**25.74**	**25.49**

Figure A-1. Location Map of LOS Deficient Buildings



Appendix B

Stormwater LOS Deficient Roadways

Table B-1. Stormwater LOS Deficient Roads

Lengths represent roadway segments as defined by the County's mapping layer, not the lengths of edges of pavement inundated by the specific storm event.

Street ID	Full Street Name	From Address Left	To Address Left	From Address Right	To Address Right	FPLOS_Road_Class	Road Centerline Length (feet)	NODENAME	EOP (feet)	FPLOS Design Storm	Max Stage 100yr/24hr (feet)	Max Stage 25yr/24hr (feet)	Max Stage 10yr/24hr (feet)	FPLOS Depth (feet)	Duration (hours)
*ST_102012_002119	N TAMIAMI TRL	1	49	2	48	Evacuation Route	335.28	NH1100	2.21	100 Year	2.97	2.27	2.05	0.76	1.00
*ST_102012_021092	N TAMIAMI TRL	51	99	50	98	Evacuation Route	202.62	NH1630	3.02	100 Year	3.54	3.30	3.13	0.52	1.25
*ST_102012_001901	N TAMIAMI TRL	101	129	100	128	Evacuation Route	145.30	NH1622	2.93	100 Year	3.51	3.24	3.03	0.58	1.00
*ST_102012_000488	N TAMIAMI TRL	131	199	130	198	Evacuation Route	144.02	NH1622	2.75	100 Year	3.51	3.24	3.03	0.76	1.00
*ST_102012_001125	N TAMIAMI TRL	201	249	200	248	Evacuation Route	145.46	NH1622	2.38	100 Year	3.51	3.24	3.03	1.13	1.50
*ST_102012_022757	N TAMIAMI TRL	251	299	250	298	Evacuation Route	144.74	NH1620	3.05	100 Year	3.51	3.23	2.98	0.46	0.50
*ST_102012_027023	N TAMIAMI TRL	901	999	900	998	Evacuation Route	372.43	03NF2602	4.88	100 Year	5.93	5.82	5.73	1.05	2.75
*ST_102012_001924	N TAMIAMI TRL	1001	1099	1000	1098	Evacuation Route	683.46	03NF2602	4.57	100 Year	5.93	5.82	5.73	1.36	2.75
ST_102012_001721	BAHIA VISTA ST	2001	2099	2000	2098	Arterial	623.36	03NB2120	6.20	100 Year	7.93	7.00	6.59	1.73	2.25
ST_102012_001987	BAHIA VISTA ST	2101	2199	2100	2198	Arterial	644.11	03NB2120	5.57	100 Year	7.93	7.00	6.59	2.36	3.25
ST_102012_000126	BAHIA VISTA ST	2501	2599	2500	2598	Arterial	632.78	03NA2182	25.23	100 Year	26.03	25.74	25.56	0.80	1.50
ST_102012_001575	BAHIA VISTA ST	2601	2699	2600	2698	Arterial	640.11	03NA2182	25.08	100 Year	26.03	25.74	25.56	0.95	2.00
ST_102012_002015	SAINT ARMANDS CIR	0	0	0	0	Arterial	79.89	NH2880	1.81	100 Year	2.46	2.28	2.16	0.65	1.75
ST_102012_027012	SAINT ARMANDS CIR	401	499	0	0	Arterial	252.86	NH2880	1.87	100 Year	2.46	2.28	2.16	0.59	1.25
ST_102012_027003	BAYFRONT DR	1	99	2	98	Evacuation Route	441.34	NH1100	2.36	100 Year	2.97	2.27	2.05	0.61	1.00
ST_102012_023603	BAYFRONT DR	401	799	400	798	Evacuation Route	2009.00	NH0610	5.12	100 Year	5.76	5.15	4.61	0.64	0.50
ST_102012_001697	FRUITVILLE RD	1401	1499	1400	1498	Evacuation Route	671.05	03NF2689	15.44	100 Year	16.23	15.77	15.57	0.79	1.75
ST_102012_001520	FRUITVILLE RD	1501	1599	1500	1598	Evacuation Route	650.35	03NF2681	15.36	100 Year	16.40	15.80	14.80	1.04	1.25
ST_102012_028114	FRUITVILLE RD	2801	2897	0	0	Evacuation Route	627.55	03NA2225	29.51	100 Year	29.85	29.58	29.42	0.34	1.75
ST_102012_028840	FRUITVILLE RD	2899	2949	0	0	Evacuation Route	339.14	03NA2225	29.56	100 Year	29.85	29.58	29.42	0.29	1.50
ST_102012_024587	JOHN RINGLING BLVD	0	0	600	1198	Evacuation Route	1785.82	NH2240	2.41	100 Year	3.47	3.43	3.41	1.06	4.00
ST_102012_000883	JOHN RINGLING BLVD	0	0	500	598	Evacuation Route	375.29	NH1880	1.99	100 Year	2.47	2.28	2.16	0.48	3.50
ST_102012_001492	JOHN RINGLING BLVD	0	0	400	498	Evacuation Route	356.72	NH1880	1.93	100 Year	2.47	2.28	2.16	0.54	3.75
ST_102012_023578	JOHN RINGLING BLVD	401	499	0	0	Evacuation Route	354.35	NH1880	2.02	100 Year	2.47	2.28	2.16	0.45	3.50
ST_102012_025324	JOHN RINGLING BLVD	501	599	0	0	Evacuation Route	365.26	NH1880	2.00	100 Year	2.47	2.28	2.16	0.47	3.50
ST_102012_022812	JOHN RINGLING BLVD	601	1199	0	0	Evacuation Route	2358.36	NH2230	2.42	100 Year	3.47	3.44	3.41	1.05	6.00
ST_102012_030523	JOHN RINGLING CSWY	200	998	201	999	Evacuation Route	5272.49	NH1830	2.17	100 Year	3.23	2.96	2.86	1.06	2.00
ST_102012_024602	N BOULEVARD OF THE PRESIDENTS	0	0	226	298	Evacuation Route	351.63	NH2870	1.64	100 Year	2.46	2.27	2.16	0.82	4.75
ST_102012_021091	N BOULEVARD OF THE PRESIDENTS	0	0	2	98	Evacuation Route	349.30	NH2880	1.61	100 Year	2.46	2.28	2.16	0.85	4.75
ST_102012_025344	N BOULEVARD OF THE PRESIDENTS	0	0	142	224	Evacuation Route	214.53	NH2870	1.29	100 Year	2.46	2.27	2.16	1.17	17.00
ST_102012_025394	N BOULEVARD OF THE PRESIDENTS	0	0	100	140	Evacuation Route	360.26	NH1170	1.60	100 Year	2.46	2.28	2.16	0.86	4.75
ST_102012_000784	N BOULEVARD OF THE PRESIDENTS	1	99	0	0	Evacuation Route	351.94	NH1170	1.71	100 Year	2.46	2.28	2.16	0.75	4.50
ST_102012_002093	N BOULEVARD OF THE PRESIDENTS	101	141	0	0	Evacuation Route	361.43	NH1170	1.75	100 Year	2.46	2.28	2.16	0.71	4.25
ST_102012_027016	N BOULEVARD OF THE PRESIDENTS	143	299	0	0	Evacuation Route	514.37	NH2870	1.72	100 Year	2.46	2.27	2.16	0.74	4.50
ST_102012_001569	N GULFSTREAM AVE	1001	1109	1000	1110	Evacuation Route	661.96	NH1120	2.23	100 Year	2.60	1.52	1.48	0.37	0.50
ST_102012_027006	N GULFSTREAM AVE	1113	1153	1112	1152	Evacuation Route	168.19	NH1100	2.49	100 Year	2.97	2.27	2.05	0.48	0.75
ST_102012_000498	N TAMIAMI TRL	301	399	300	398	Evacuation Route	294.47	NH1605	4.61	100 Year	4.91	4.55	4.23	0.30	0.25
ST_102012_001750	N TAMIAMI TRL	401	427	400	428	Evacuation Route	144.71	NH1605	4.71	100 Year	4.91	4.55	4.23	0.20	0.25
ST_102012_001158	N TAMIAMI TRL	541	599	540	598	Evacuation Route	146.84	NH0471	5.88	100 Year	6.17	6.12	6.05	0.29	0.50
ST_102012_025330	N WASHINGTON BLVD	501	599	500	598	Evacuation Route	283.21	03ND2390	21.51	100 Year	22.98	22.82	22.67	1.47	2.00
ST_102012_001230	N WASHINGTON BLVD	601	699	600	698	Evacuation Route	354.09	03ND2390	20.86	100 Year	22.98	22.82	22.67	2.12	2.25
ST_102012_001984	N WASHINGTON BLVD	701	799	700	798	Evacuation Route	313.37	03ND2390	22.17	100 Year	22.98	22.82	22.67	0.81	1.50
ST_102012_001234	S TAMIAMI TRL	1201	1399	1200	1398	Evacuation Route	678.16	03NC2420	10.70	100 Year	12.16	11.91	11.65	1.46	1.25
ST_102012_000781	S TAMIAMI TRL	1401	1499	1400	1498	Evacuation Route	336.63	03NC2430	13.02	100 Year	13.59	13.43	13.27	0.57	1.00
ST_102012_002117	S TAMIAMI TRL	1501	1599	1500	1598	Evacuation Route	339.42	03NC2440	13.88	100 Year	14.43	14.34	14.24	0.55	1.25

Street ID	Full Street Name	From Address Left	To Address Left	From Address Right	To Address Right	FPLOS_Road_Class	Road Centerline Length (feet)	NODENAME	EOP (feet)	FPLOS Design Storm	Max Stage 100yr/24hr (feet)	Max Stage 25yr/24hr (feet)	Max Stage 10yr/24hr (feet)	FPLOS Depth (feet)	Duration (hours)
ST_102012_000291	S TAMIAMI TRL	1601	1699	1600	1698	Evacuation Route	331.72	03NC2450	15.27	100 Year	15.43	15.34	15.25	0.16	0.50
ST_102012_001854	S TAMIAMI TRL	1701	1799	1700	1798	Evacuation Route	336.10	03NC2465	15.39	100 Year	15.54	15.43	15.33	0.15	0.50
ST_102012_000810	S TAMIAMI TRL	1801	1899	1800	1898	Evacuation Route	336.83	03NC2470	16.19	100 Year	16.42	16.34	16.27	0.23	0.50
ST_102012_026974	S TAMIAMI TRL	1901	1999	1900	1998	Evacuation Route	335.94	03NC2495	16.92	100 Year	17.59	17.46	17.25	0.67	0.75
ST_102012_002132	S TAMIAMI TRL	2001	2099	2000	2098	Evacuation Route	284.87	03NC2495	16.95	100 Year	17.59	17.46	17.25	0.64	0.75
ST_102012_000932	S WASHINGTON BLVD	1	99	2	98	Evacuation Route	314.48	03ND2322	20.82	100 Year	21.34	21.13	21.00	0.52	1.25
ST_102012_001183	S WASHINGTON BLVD	501	599	500	598	Evacuation Route	444.28	03ND2395	15.30	100 Year	16.24	16.08	15.99	0.94	3.75
ST_102012_025331	S WASHINGTON BLVD	601	691	600	690	Evacuation Route	381.39	03ND2395	15.13	100 Year	16.24	16.08	15.99	1.11	3.75
ST_102012_015572	10TH ST	1151	1199	1150	1198	Neighborhood	379.31	NH0420	4.61	10 Year	5.88	5.78	5.71	1.10	1.50
ST_102012_027689	10TH ST	1201	1299	1200	1298	Neighborhood	716.80	03NF2602	4.53	10 Year	5.93	5.82	5.73	1.20	1.50
ST_102012_030544	1ST ST	1101	1175	1100	1174	Neighborhood	321.84	NH2160	1.79	10 Year	3.22	2.95	2.85	1.06	4.75
ST_102012_006463	1ST ST	1501	1599	1500	1598	Neighborhood	661.19	03NE2530	13.79	10 Year	15.91	15.32	14.96	1.17	1.00
ST_102012_015550	3RD ST	2127	2199	2126	2198	Neighborhood	171.85	03NF2663	26.32	10 Year	27.39	27.30	27.24	0.92	2.75
ST_102012_016688	3RD ST	2201	2201	2200	2200	Neighborhood	56.48	03NF2663	26.07	10 Year	27.39	27.30	27.24	1.17	3.50
ST_102012_028543	3RD ST	2203	2299	2202	2298	Neighborhood	727.27	03NF2663	25.87	10 Year	27.39	27.30	27.24	1.37	3.75
ST_102012_013745	5TH ST	1657	1699	1656	1698	Neighborhood	309.38	03NF2627	17.34	10 Year	18.36	18.19	18.05	0.71	1.00
ST_102012_023011	5TH ST	1701	1799	1700	1798	Neighborhood	551.24	03NF2627	17.49	10 Year	18.36	18.19	18.05	0.56	0.25
ST_102012_026410	6TH ST	1647	1689	1646	1688	Neighborhood	327.90	03NF2627	16.63	10 Year	18.36	18.19	18.05	1.42	3.25
ST_102012_010505	6TH ST	1691	1705	1690	1704	Neighborhood	114.92	03NF2627	16.66	10 Year	18.36	18.19	18.05	1.39	3.00
ST_102012_004292	6TH ST	1707	1799	1706	1798	Neighborhood	554.16	03NF2627	16.92	10 Year	18.36	18.19	18.05	1.13	2.75
ST_102012_008784	6TH ST	1905	1999	1900	1998	Neighborhood	439.88	03ND2390	20.85	10 Year	22.98	22.82	22.67	1.82	1.50
ST_102012_027775	6TH ST	2001	2099	2000	2098	Neighborhood	886.64	03ND2390	20.80	10 Year	22.98	22.82	22.67	1.87	1.50
ST_102012_000436	6TH ST	2201	2223	2200	2222	Neighborhood	112.02	03NF2696	27.93	10 Year	29.14	28.98	28.75	0.82	2.75
ST_102012_014385	6TH ST	2225	2249	2224	2248	Neighborhood	117.51	03NF2696	27.82	10 Year	29.14	28.98	28.75	0.93	3.25
ST_102012_023502	6TH ST	2351	2399	2350	2398	Neighborhood	308.54	03NA2066	26.67	10 Year	28.68	28.26	27.93	1.26	4.00
ST_102012_015731	7TH ST	1601	1699	1600	1698	Neighborhood	689.21	03NF2627	17.34	10 Year	18.36	18.19	18.05	0.71	1.00
ST_102012_014756	7TH ST	1901	1999	1900	1998	Neighborhood	536.95	03ND2390	21.36	10 Year	22.98	22.82	22.67	1.31	1.25
ST_102012_021332	7TH ST	2001	2099	2000	2098	Neighborhood	885.60	03ND2390	21.43	10 Year	22.98	22.82	22.67	1.24	1.25
ST_102012_018859	8TH ST	1601	1699	1600	1698	Neighborhood	690.19	03NF2627	16.53	10 Year	18.36	18.19	18.05	1.52	3.25
ST_102012_004114	8TH ST	1701	1799	1700	1798	Neighborhood	665.83	03NF2627	16.76	10 Year	18.36	18.19	18.05	1.29	3.00
ST_102012_015451	8TH ST	2231	2249	2230	2248	Neighborhood	119.78	03NF2696	27.29	10 Year	29.14	28.98	28.75	1.46	4.75
ST_102012_020855	8TH ST	2251	2299	2250	2298	Neighborhood	212.31	03NF2696	27.16	10 Year	29.14	28.98	28.75	1.59	5.25
ST_102012_008763	8TH ST	2301	2349	2300	2348	Neighborhood	323.16	03NF2696	27.32	10 Year	29.14	28.98	28.75	1.43	4.75
ST_102012_021941	9TH ST	1201	1299	1200	1298	Neighborhood	669.41	03NF2602	4.45	10 Year	5.93	5.82	5.73	1.28	1.50
ST_102012_009608	9TH ST	1401	1449	1400	1448	Neighborhood	350.92	03NF2686	12.61	10 Year	14.52	14.31	13.97	1.36	1.00
ST_102012_018816	9TH ST	1451	1499	1450	1498	Neighborhood	315.88	03NF2686	13.01	10 Year	14.52	14.31	13.97	0.96	0.50
ST_102012_023766	ACCESS	0	0	0	0	Neighborhood	792.01	03NF2602	4.87	10 Year	5.93	5.82	5.73	0.86	1.00
ST_102012_020458	ALLEY	0	0	0	0	Neighborhood	662.96	03NE2530	13.50	10 Year	15.91	15.32	14.96	1.46	1.25
ST_102012_010610	APRICOT AVE	601	799	600	798	Neighborhood	701.37	03NF2696	26.72	10 Year	29.14	28.98	28.75	2.03	6.25
ST_102012_007827	APRICOT AVE	801	999	800	998	Neighborhood	659.50	03NF2696	26.96	10 Year	29.14	28.98	28.75	1.79	5.50
ST_102012_007015	ARLINGTON ST	2301	2399	2300	2398	Neighborhood	630.83	03NB2142	10.04	10 Year	12.84	12.37	12.10	2.06	1.75
ST_102012_011300	ARLINGTON ST	2401	2499	2400	2498	Neighborhood	639.27	03NB2142	10.26	10 Year	12.84	12.37	12.10	1.84	1.75
ST_102012_028547	AUDUBON PL	211	299	210	298	Neighborhood	233.20	03NF2663	25.74	10 Year	27.39	27.30	27.24	1.50	4.00
ST_102012_013746	AUDUBON PL	301	399	300	398	Neighborhood	289.03	03NF2663	26.13	10 Year	27.39	27.30	27.24	1.11	3.25
ST_102012_006485	BANANA CT	1	99	2	98	Neighborhood	302.83	NH1630	1.47	10 Year	3.54	3.30	3.13	1.66	4.50
ST_102012_023771	BENJAMIN FRANKLIN DR	401	499	400	498	Neighborhood	450.15	NH0710	3.35	10 Year	4.25	4.18	4.13	0.78	1.25
ST_102012_005582	BENJAMIN FRANKLIN DR	501	599	500	598	Neighborhood	310.67	NH0710	3.46	10 Year	4.25	4.18	4.13	0.67	1.00
ST_102012_020431	BENJAMIN FRANKLIN DR	601	699	600	698	Neighborhood	306.97	NH0710	3.42	10 Year	4.25	4.18	4.13	0.71	1.00

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ST_102012_019588	BENJAMIN FRANKLIN DR	701	799	700	798	Neighborhood	315.42	NH0710	3.05	10 Year	4.25	4.18	4.13	1.08	2.00
ST_102012_025108	CENTER PL	1101	1299	1100	1298	Neighborhood	1111.63	NH2930	4.24	10 Year	5.75	5.66	5.64	1.40	4.25
ST_102012_016057	CHERRY LN	1601	1749	1600	1748	Neighborhood	851.94	03ND2316	5.67	10 Year	8.02	7.70	7.48	1.81	1.00
ST_102012_012814	COCOANUT AVE	1	49	2	48	Neighborhood	320.27	NH1610	2.31	10 Year	3.57	3.31	3.14	0.83	1.50
ST_102012_010231	COCOANUT AVE	1001	1099	1000	1098	Neighborhood	694.33	03NG2750	8.36	10 Year	9.54	9.42	9.31	0.95	1.00
ST_102012_006666	COHEN WAY	801	899	800	898	Neighborhood	308.66	03NF2686	12.84	10 Year	14.52	14.31	13.97	1.13	0.75
ST_102012_017547	COOLIDGE DR	101	299	100	298	Neighborhood	548.77	NH0710	3.05	10 Year	4.25	4.18	4.13	1.08	2.00
ST_102012_017056	DAVIS BLVD	2801	2899	2800	2898	Neighborhood	663.21	03NA2211	28.05	10 Year	29.03	28.91	28.81	0.76	2.75
ST_102012_022258	ERIE CT	401	499	400	498	Neighborhood	328.26	03NA2066	27.11	10 Year	28.68	28.26	27.93	0.82	2.50
ST_102012_022088	ERIE CT	501	599	500	598	Neighborhood	308.35	03NA2066	26.57	10 Year	28.68	28.26	27.93	1.36	4.25
ST_102012_017466	FLOYD ST	2159	2199	2160	2198	Neighborhood	227.62	03NB2125	8.17	10 Year	10.00	9.25	8.79	0.62	0.25
ST_102012_027651	FORD DR	101	199	100	198	Neighborhood	136.64	NH0710	3.27	10 Year	4.25	4.18	4.13	0.86	1.50
ST_102012_016158	GARFIELD DR	101	399	100	398	Neighborhood	721.64	NH0710	2.80	10 Year	4.25	4.18	4.13	1.33	2.25
ST_102012_027924	GOLDEN GATE PT	101	699	100	698	Neighborhood	2677.50	NH1080	2.46	10 Year	3.75	3.68	3.64	1.18	3.25
ST_102012_015582	GOODRICH AVE	401	499	400	498	Neighborhood	290.10	03NF2627	17.01	10 Year	18.36	18.19	18.05	1.04	2.50
ST_102012_024817	GOODRICH AVE	501	599	500	598	Neighborhood	259.59	03NF2627	16.92	10 Year	18.36	18.19	18.05	1.13	2.75
ST_102012_019396	GOODRICH AVE	601	699	600	698	Neighborhood	354.45	03NF2627	16.70	10 Year	18.36	18.19	18.05	1.35	3.00
ST_102012_017829	GOODRICH AVE	701	799	700	798	Neighborhood	349.37	03NF2627	16.65	10 Year	18.36	18.19	18.05	1.40	3.25
ST_102012_020698	GOODRICH AVE	801	899	800	898	Neighborhood	250.10	03NF2627	16.76	10 Year	18.36	18.19	18.05	1.29	3.00
ST_102012_023780	GRANT DR	101	299	100	298	Neighborhood	790.21	NH0710	2.35	10 Year	4.25	4.18	4.13	1.78	2.50
ST_102012_023621	HARBOR DR	1401	1599	1400	1598	Neighborhood	742.81	NH0680	3.27	10 Year	4.70	4.61	4.54	1.27	1.00
ST_102012_012345	HAWTHORNE ST	1601	1799	1600	1798	Neighborhood	1321.45	NH1650	7.40	10 Year	8.76	8.69	8.66	1.26	1.25
ST_102012_005974	HAWTHORNE ST	2301	2399	2300	2398	Neighborhood	626.36	03NB2138	10.94	10 Year	12.56	12.13	11.88	0.94	1.00
ST_102012_013157	HILLVIEW ST	2401	2499	2400	2498	Neighborhood	638.46	03NB2146	11.62	10 Year	13.13	12.86	12.78	1.16	1.75
ST_102012_013420	HILLVIEW ST	2501	2599	2500	2598	Neighborhood	608.45	03NB2157	12.27	10 Year	13.62	13.36	13.17	0.90	1.75
ST_102012_027940	HURON LN	2401	2455	2400	2454	Neighborhood	233.13	03NA2066	27.06	10 Year	28.68	28.26	27.93	0.87	3.00
ST_102012_023456	MADISON CT	601	699	600	698	Neighborhood	381.85	03ND2356	9.92	10 Year	12.16	11.82	11.08	1.16	0.75
ST_102012_018552	MADISON DR	301	399	300	398	Neighborhood	515.68	NH1170	1.07	10 Year	2.46	2.28	2.16	1.09	3.25
ST_102012_023863	MADISON DR	401	499	400	498	Neighborhood	532.86	NH1170	0.90	10 Year	2.46	2.28	2.16	1.26	15.50
ST_102012_002864	MADISON DR	501	599	500	598	Neighborhood	365.28	NH2290	0.45	10 Year	2.46	2.28	2.16	1.71	16.00
ST_102012_018821	MANGO AVE	701	799	700	798	Neighborhood	288.38	03NF2696	26.79	10 Year	29.14	28.98	28.75	1.96	6.00
ST_102012_015724	MCANSH SQ	1201	1299	1200	1298	Neighborhood	283.83	03NE2505	3.01	10 Year	5.02	4.86	4.74	1.73	0.75
ST_102012_003306	MORNINGSIDE DR	101	199	100	198	Neighborhood	300.13	NH0630	4.32	10 Year	5.29	5.09	5.05	0.73	0.75
ST_102012_006332	N ADAMS DR	1	99	2	98	Neighborhood	551.07	NH1880	0.87	10 Year	2.47	2.28	2.16	1.29	15.75
ST_102012_021531	N ADAMS DR	101	299	100	298	Neighborhood	808.50	NH2870	0.86	10 Year	2.46	2.27	2.16	1.30	15.50
ST_102012_007870	N GULFSTREAM AVE	1227	1249	1226	1250	Neighborhood	204.44	NH1630	2.26	10 Year	3.54	3.30	3.13	0.87	1.75
ST_102012_023814	N GULFSTREAM AVE	1251	1299	1252	1298	Neighborhood	509.05	NH1610	2.43	10 Year	3.57	3.31	3.14	0.71	1.00
ST_102012_016921	N LIME AVE	601	799	600	798	Neighborhood	695.81	03NF2696	27.73	10 Year	29.14	28.98	28.75	1.02	3.75
ST_102012_014431	N LIME AVE	801	819	800	818	Neighborhood	175.94	03NF2696	27.74	10 Year	29.14	28.98	28.75	1.01	3.75
ST_102012_005574	N LIME AVE	821	823	820	898	Neighborhood	240.22	03NF2696	28.04	10 Year	29.14	28.98	28.75	0.71	2.25
ST_102012_016197	N ORANGE AVE	801	899	800	898	Neighborhood	249.38	03NF2687	16.07	10 Year	18.02	17.52	17.06	0.99	1.00
ST_102012_008066	N ORANGE AVE	901	999	900	998	Neighborhood	281.37	03NF2620	16.10	10 Year	17.86	17.41	16.93	0.83	0.50
ST_102012_005696	N ORANGE AVE	1101	1199	1100	1198	Neighborhood	786.77	03NG2724	16.93	10 Year	19.15	18.20	17.85	0.92	1.00
ST_102012_025713	N OSPREY AVE	701	799	700	798	Neighborhood	350.47	03NF2690	19.42	10 Year	20.54	20.36	20.24	0.82	1.50
ST_102012_025714	N PALM AVE	1201	1215	1200	1214	Neighborhood	272.51	NH1630	2.04	10 Year	3.54	3.30	3.13	1.09	2.50
ST_102012_009348	N PALM AVE	1217	1249	1216	1248	Neighborhood	244.33	NH1630	2.12	10 Year	3.54	3.30	3.13	1.01	2.00
ST_102012_004221	N WASHINGTON DR	1	113	2	114	Neighborhood	810.96	NH2290	0.73	10 Year	2.46	2.28	2.16	1.43	16.00
ST_102012_025852	N WASHINGTON DR	115	319	116	320	Neighborhood	1097.05	NH2290	1.02	10 Year	2.46	2.28	2.16	1.14	3.00

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ST_102012_017538	NOVUS PL	2601	2799	2600	2798	Neighborhood	1024.34	03NA2199	23.97	10 Year	26.27	25.96	25.88	1.91	4.50
ST_102012_010158	OAK ST	1801	1849	1800	1848	Neighborhood	333.12	03ND2313	11.38	10 Year	12.30	12.19	12.11	0.73	1.00
ST_102012_012022	OAK ST	1901	1929	1900	1928	Neighborhood	240.28	03ND2395	14.97	10 Year	16.24	16.08	15.99	1.02	2.00
ST_102012_003604	OAK ST	1931	1999	1930	1998	Neighborhood	288.63	03ND2395	14.78	10 Year	16.24	16.08	15.99	1.21	2.25
ST_102012_019546	OAK ST	2001	2035	2000	2034	Neighborhood	308.79	03ND2395	14.58	10 Year	16.24	16.08	15.99	1.41	2.50
ST_102012_014167	OAK ST	2801	2999	2800	2998	Neighborhood	814.92	03NA2204	26.17	10 Year	27.05	26.96	26.89	0.72	2.25
ST_102012_025601	OHIO PL	569	699	568	698	Neighborhood	427.16	03ND2351	5.06	10 Year	6.91	6.74	6.63	1.57	2.50
ST_102012_010990	OSPREY CT	0	0	0	0	Neighborhood	198.75	03ND2312	14.01	10 Year	16.27	15.85	15.50	1.49	0.50
ST_102012_021394	PELICAN DR	2279	2399	2278	2398	Neighborhood	540.37	03NC2273	25.48	10 Year	26.82	26.63	26.52	1.04	3.25
ST_102012_011418	PELICAN DR	2401	2451	2400	2450	Neighborhood	311.92	03NC2273	25.50	10 Year	26.82	26.63	26.52	1.02	3.25
ST_102012_019996	PELICAN DR	2453	2483	2452	2482	Neighborhood	193.35	03NC2273	25.81	10 Year	26.82	26.63	26.52	0.71	2.00
ST_102012_011757	PELICAN DR	2485	2509	2484	2508	Neighborhood	148.69	03NC2273	25.89	10 Year	26.82	26.63	26.52	0.63	1.50
ST_102012_003676	POPLAR ST	2801	2999	2800	2998	Neighborhood	828.03	03NA2204	26.16	10 Year	27.05	26.96	26.89	0.73	2.50
ST_102012_012541	RINGLING BLVD	1901	1999	1900	1998	Neighborhood	693.97	03ND2322	20.00	10 Year	21.34	21.13	21.00	1.00	1.00
ST_102012_021476	S BRIGGS AVE	901	1199	900	1198	Neighborhood	831.85	03NA2184	24.07	10 Year	26.20	26.15	26.11	2.04	4.25
ST_102012_028623	S EAST AVE	101	199	100	198	Neighborhood	360.70	03ND2330	23.67	10 Year	24.78	24.71	24.67	1.00	2.25
ST_102012_002517	S EAST AVE	1201	1397	1200	1396	Neighborhood	667.84	03NB2120	5.62	10 Year	7.93	7.00	6.59	0.97	2.00
ST_102012_002524	S EUCLID AVE	931	1131	930	1130	Neighborhood	840.51	03NA2180	24.40	10 Year	26.03	25.73	25.52	1.12	1.50
ST_102012_009691	S EUCLID AVE	1133	1199	1132	1198	Neighborhood	284.34	03NA2182	24.43	10 Year	26.03	25.74	25.56	1.13	2.25
ST_102012_023309	S EUCLID AVE	1201	1299	1200	1298	Neighborhood	270.22	03NA2182	24.49	10 Year	26.03	25.74	25.56	1.07	2.25
ST_102012_021723	S GULFSTREAM AVE	1	199	2	198	Neighborhood	544.88	NH0540	3.87	10 Year	4.99	4.84	4.73	0.86	0.25
ST_102012_026763	S GULFSTREAM AVE	201	399	200	398	Neighborhood	205.18	03NE2505	3.90	10 Year	5.02	4.86	4.74	0.84	0.25
ST_102012_027540	S GULFSTREAM AVE	401	799	400	798	Neighborhood	1685.74	NH0570	3.10	10 Year	5.02	4.86	4.73	1.63	0.75
ST_102012_004940	S JEFFERSON AVE	301	399	300	398	Neighborhood	270.10	03NA2049	25.06	10 Year	26.83	26.63	26.52	1.46	4.00
ST_102012_025284	S ORANGE AVE	1601	1699	1600	1698	Neighborhood	339.74	NH1650	7.48	10 Year	8.76	8.69	8.66	1.18	1.25
ST_102012_022213	S ORANGE AVE	1701	1799	1700	1798	Neighborhood	330.53	NH1650	7.65	10 Year	8.76	8.69	8.66	1.01	1.25
ST_102012_021230	S OSPREY AVE	201	211	200	210	Neighborhood	127.87	03ND2318	15.33	10 Year	16.43	16.26	16.16	0.83	1.00
ST_102012_018273	S OSPREY AVE	213	299	212	298	Neighborhood	337.55	03ND2318	15.43	10 Year	16.43	16.26	16.16	0.73	0.75
ST_102012_026463	S OSPREY AVE	601	699	600	698	Neighborhood	435.16	03ND2355	9.02	10 Year	10.45	10.23	10.12	1.10	2.00
ST_102012_005351	S PELICAN DR	301	599	300	598	Neighborhood	1223.87	03NC2272	24.06	10 Year	25.92	25.75	25.50	1.44	4.00
ST_102012_008902	S SCHOOL AVE	851	955	850	954	Neighborhood	531.06	03NA2018	15.63	10 Year	17.52	17.05	16.72	1.09	2.00
ST_102012_013676	S SHADE AVE	201	399	200	398	Neighborhood	499.36	03NA2049	25.13	10 Year	26.83	26.63	26.52	1.39	4.00
ST_102012_013535	S SHADE AVE	401	449	400	448	Neighborhood	307.13	03NC2273	25.61	10 Year	26.82	26.63	26.52	0.91	3.00
ST_102012_004089	S SHADE AVE	491	549	490	548	Neighborhood	297.71	03NC2274	24.17	10 Year	25.94	25.75	25.50	1.33	3.75
ST_102012_022929	S SHADE AVE	551	719	550	720	Neighborhood	499.67	03NC2270	24.15	10 Year	25.58	24.94	24.71	0.56	0.25
ST_102012_022319	S SHADE AVE	1701	1799	1700	1798	Neighborhood	335.71	03NB2142	10.49	10 Year	12.84	12.37	12.10	1.61	1.75
ST_102012_007085	S SHADE AVE	1801	1899	1800	1898	Neighborhood	335.12	03NB2144	10.33	10 Year	12.88	12.43	12.16	1.83	2.00
ST_102012_006858	SCHOOL LN	0	0	0	0	Neighborhood	124.07	03NB2125	8.16	10 Year	10.00	9.25	8.79	0.63	0.25
ST_102012_006893	SEEDS AVE	401	599	400	598	Neighborhood	456.87	03NA2066	27.29	10 Year	28.68	28.26	27.93	0.64	1.50
ST_102012_008970	SEEDS AVE	601	799	600	798	Neighborhood	511.19	03NA2066	27.12	10 Year	28.68	28.26	27.93	0.81	2.50
ST_102012_017428	SUNSET DR	1	299	2	298	Neighborhood	482.83	NH2160	2.13	10 Year	3.22	2.95	2.85	0.72	1.75
ST_102012_013384	TAMI SOLA ST	2401	2599	2400	2598	Neighborhood	1272.85	03NA2182	21.49	10 Year	26.03	25.74	25.56	4.07	5.00
ST_102012_009136	TYLER DR	101	103	100	104	Neighborhood	149.23	NH0710	3.10	10 Year	4.25	4.18	4.13	1.03	2.00
ST_102012_026811	TYLER DR	105	217	106	198	Neighborhood	654.60	NH0710	3.32	10 Year	4.25	4.18	4.13	0.81	1.25
ST_102012_002604	W MILMAR DR	2401	2479	2400	2478	Neighborhood	592.35	03NC2273	25.96	10 Year	26.82	26.63	26.52	0.56	0.75
ST_102012_003962	W PAULSTAN CT	2401	2499	2400	2498	Neighborhood	631.82	03NC2273	25.81	10 Year	26.82	26.63	26.52	0.71	2.00
ST_102012_027533	WESTWAY DR	1101	1247	1100	1238	Neighborhood	1437.25	NH2890	4.20	10 Year	5.74	5.58	5.39	1.19	1.25
ST_102012_026241	WESTWAY DR	1249	1299	1240	1298	Neighborhood	150.39	NH2890	4.54	10 Year	5.74	5.58	5.39	0.85	0.75

Street ID	Full Street Name	From Address Left	To Address Left	From Address Right	To Address Right	FPLOS_Road_Class	Road Centerline Length (feet)	NODENAME	EOP (feet)	FPLOS Design Storm	Max Stage 100yr/24hr (feet)	Max Stage 25yr/24hr (feet)	Max Stage 10yr/24hr (feet)	FPLOS Depth (feet)	Duration (hours)
ST_102012_010134	WESTWAY DR	1301	1355	1300	1354	Neighborhood	772.63	NH2890	4.71	10 Year	5.74	5.58	5.39	0.68	0.50
ST_102012_027967	WOOD ST	2501	2759	2500	2758	Neighborhood	1594.38	03NA2199	25.02	10 Year	26.27	25.96	25.88	0.86	3.00
ST_102012_026752	WOOD ST	2761	2799	2760	2798	Neighborhood	281.27	03NA2199	25.04	10 Year	26.27	25.96	25.88	0.84	2.75

Figure B-1. Location Map of LOS Deficient Roadways