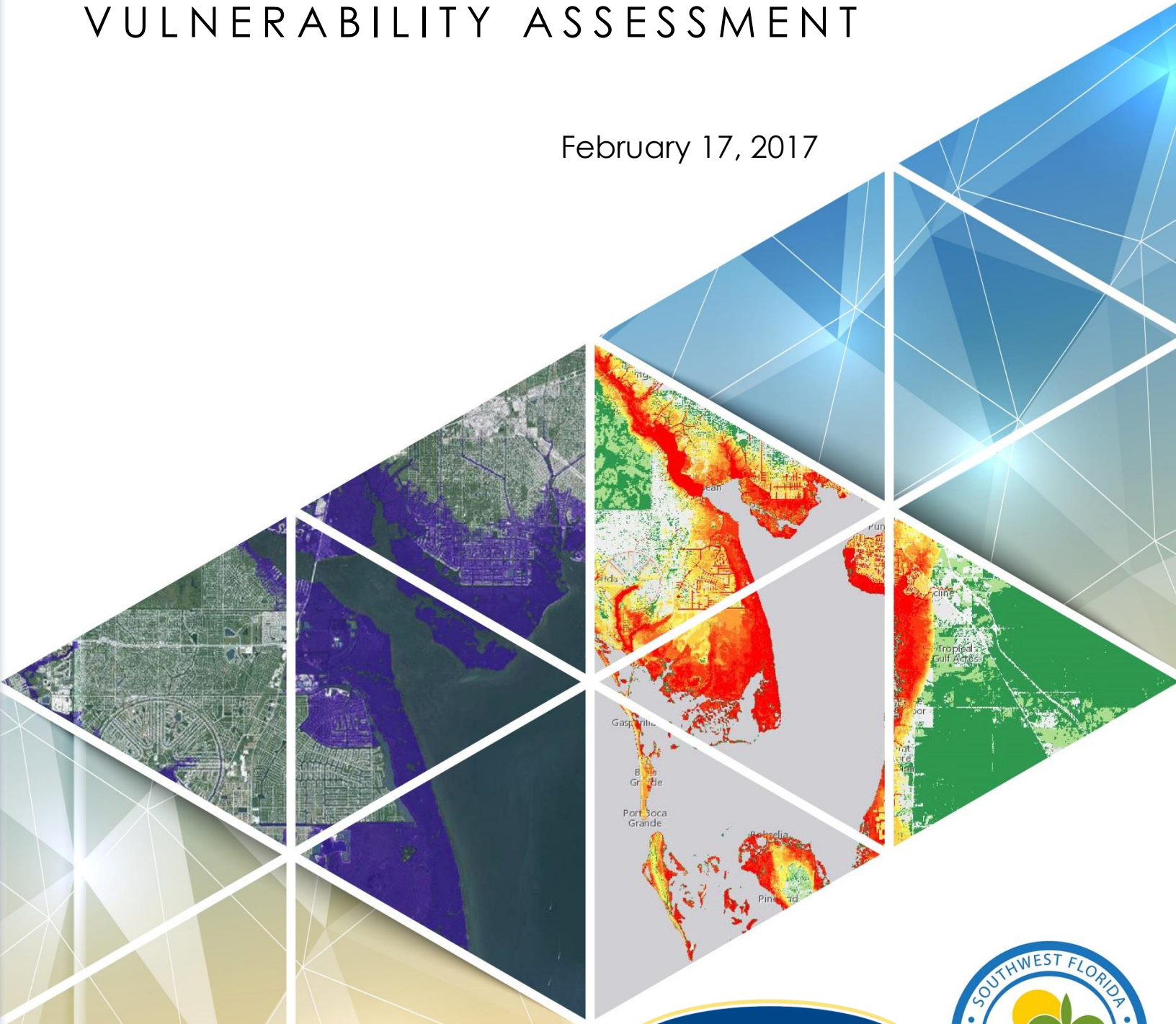
SEA LEVEL RISE IN SARASOTA COUNTY

VULNERABILITY ASSESSMENT

February 17, 2017



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SOUTHWEST FLORIDA REGIONAL PLANNING COUNCIL

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Project Summary

Projected sea level rise impacts threaten to exacerbate the vulnerability of Florida's at-risk coastal resources. Adapting to and mitigating sea level rise impacts will require that it be incorporated into all levels of hazard mitigation and land use planning in Florida.

The Florida Department of Economic Opportunity (DEO), in partnership with the South Florida Regional Planning Council, University of Florida, and NOAA Office for Coastal Management will undertake a Training of Trainers intervention that will increase local capacity to project, assess, and respond to sea-level rise throughout the ten regional planning councils of the state.

The Southwest Florida Regional Planning Council and Central Florida Regional Planning Council have been paired up on this project and facilitated a training event on November 17, 2016 to introduce participants from the Southwest Florida and Central Florida regions to a series of assessment tools for assessing vulnerabilities from projected sea level rise and to create a vulnerability assessment using the tools learned in the training.

Study Area

The study area for this project is Sarasota County. The County includes the City of Sarasota (2015 census population estimate 55,118), City of North Port (62,345), City of Venice (22,211) and Town of Longboat Key (7,266).

An estimated 35% of Sarasota County's population is aged 65 years or older (Census 2015). Located within the County, the City of Venice is 57% age 65+ and the Town of Longboat Key is 67%. The age 65+ population is 15% of the U.S. This high percentage of elderly residents is important to keep in mind when planning for the County.

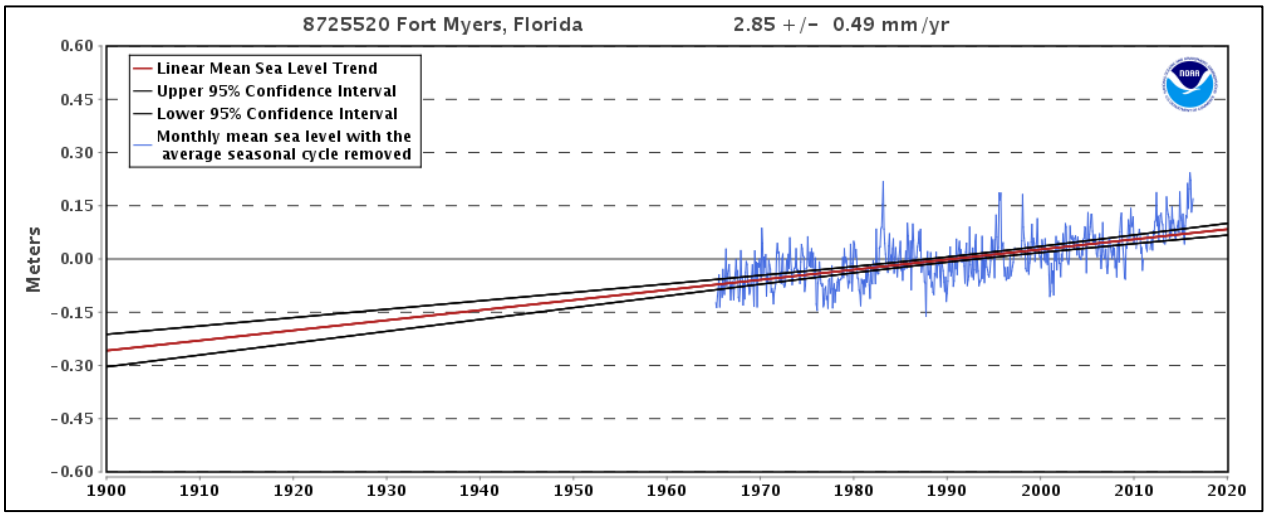
Southwest Florida's Historical Sea Level Rise

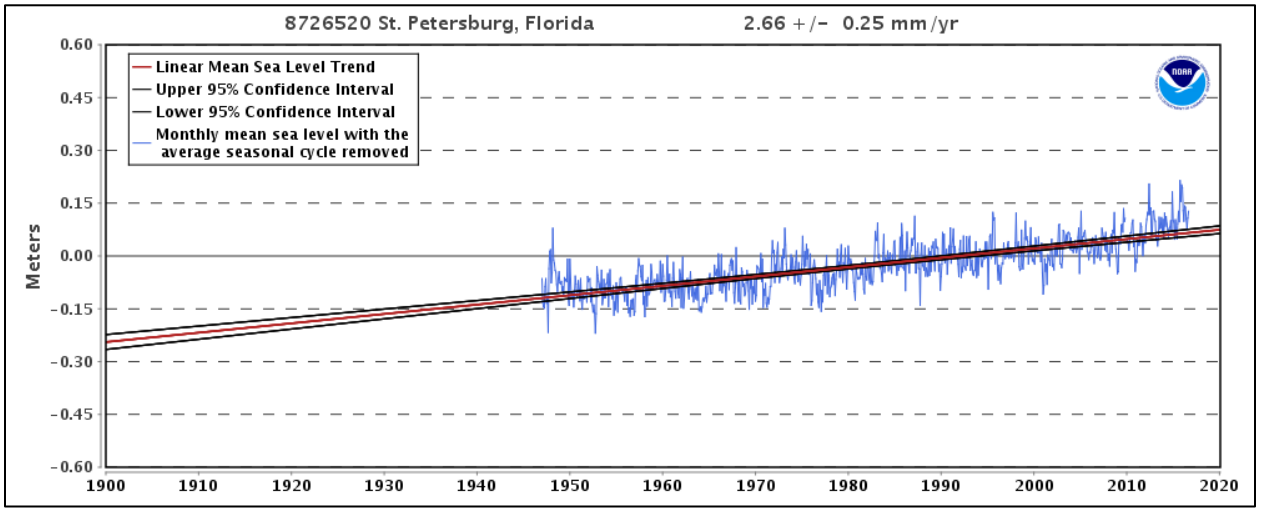
In the last 100 years Southwest Florida has seen a 0.93 foot Sea Level Rise (NOAA). The question for Southwest Floridians is not whether they will be affected by sea level rise, but how much they will be affected and in what ways including the degree to which it will continue, how rapidly change will occur, what type of changes will occur, and what the long-term effects of these changes will be.

Figure 2 shows Sea Level Rise in Fort Myers and St. Petersburg (The two closest NOAA gauges to Sarasota County) since 1900. This data was collected by a NOAA tide gauge. As the graph shows, Fort Myers is experiencing Sea Level Rise at 2.85 (+/- 0.49) mm per year and St. Petersburg is

experiencing a 2.66 (+/- 0.25) mm per year Sea Level Rise. This data is available at: https://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=8725520

Figure 1: Gulf Coast Sea Level Rise Since 1900





Sea Level Rise Projections

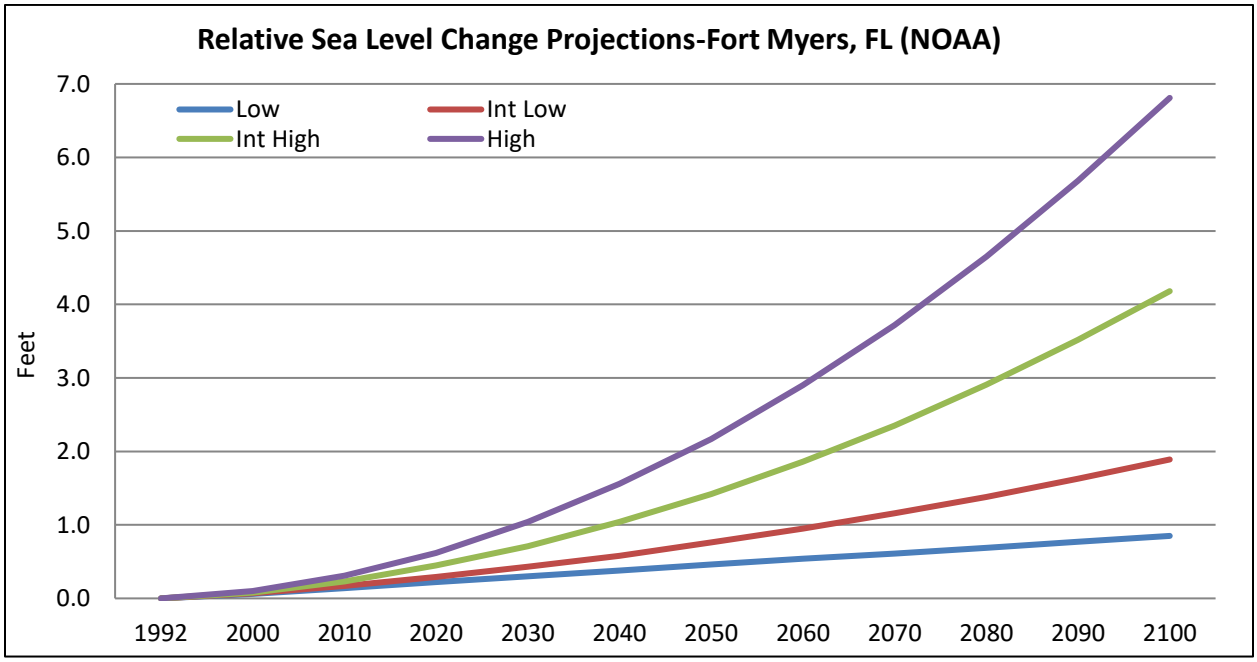
Figures 3 and 4 show predicted relative Sea Level Rise since 1992 based on data from the National Oceanic and Atmospheric Administration (NOAA). This data was collected for Fort Myers and St. Petersburg, the closest gauges to our study area. These projections are consistent with the rest of the gauges along the west coast of Florida (Naples, Clearwater, and Cedar Key). The graph shows that Sea Level Rise along Florida's Gulf Coast is expected to grow at an increased rate over the course of the century. The Sea-Level Change Curve Calculator can be found at: http://www.corpsclimate.us/ccaceslcurves.cfm.

Figure 2: Relative Sea Level Rise Change Projections Table

Relative Sea Level Rise Change Projections in Feet				
Fort Myers, FL (NOAA)				
Year	Low	Int Low	Int High	High
1992	0.00	0.00	0.00	0.00
2000	0.06	0.07	0.08	0.10
2010	0.14	0.17	0.23	0.31
2020	0.22	0.29	0.45	0.62
2030	0.30	0.43	0.71	1.04
2040	0.38	0.58	1.04	1.56
2050	0.46	0.76	1.42	2.17
2060	0.54	0.95	1.86	2.90
2070	0.61	1.16	2.35	3.72
2080	0.69	1.38	2.91	4.65
2090	0.77	1.63	3.52	5.68
2100	0.85	1.89	4.18	6.81

Relative Sea Level Rise Change Projections in Feet				
St. Petersburg, FL (NOAA)				
Year	Low	Int Low	Int High	High
1992	0.00	0.00	0.00	0.00
2000	0.06	0.07	0.08	0.10
2010	0.14	0.17	0.23	0.31
2020	0.22	0.29	0.44	0.62
2030	0.29	0.42	0.71	1.03
2040	0.37	0.58	1.03	1.55
2050	0.45	0.75	1.41	2.17
2060	0.53	0.94	1.85	2.89
2070	0.60	1.15	2.34	3.71
2080	0.68	1.37	2.89	4.64
2090	0.76	1.61	3.50	5.67
2100	0.84	1.87	4.17	6.79

Figure 3: Relative Sea Level Rise Change Projections Graph



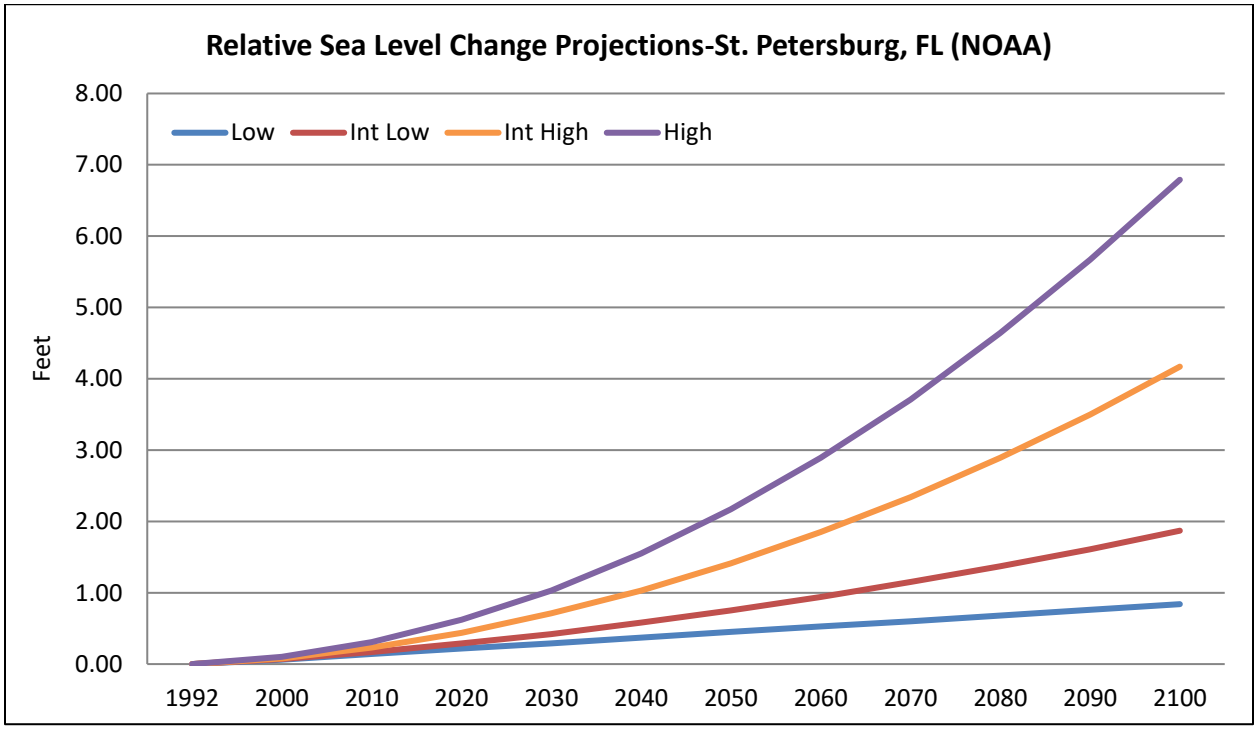


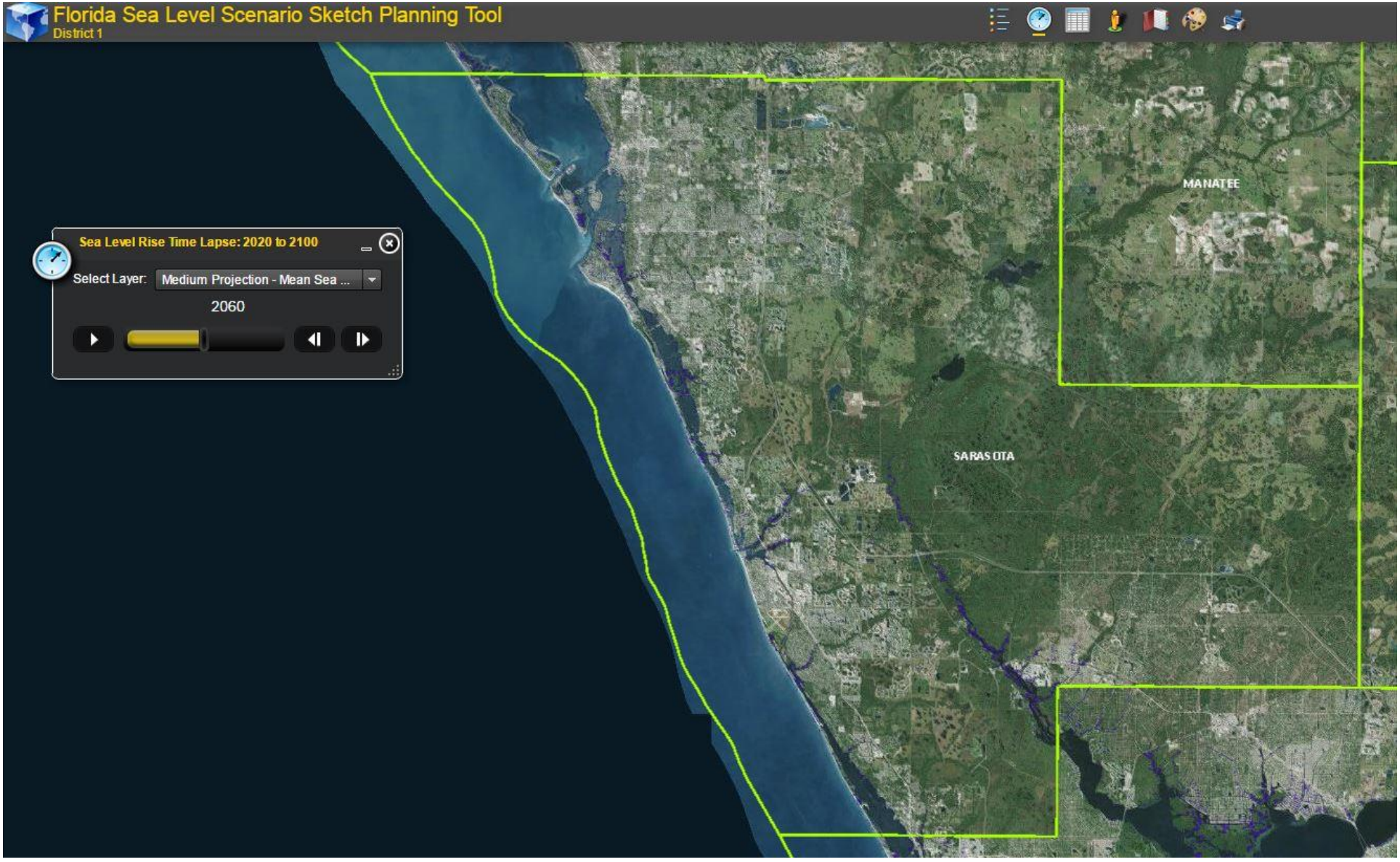
Figure 5 was created by staff at the Southwest Florida Regional Planning Council. It provides estimates on how long it will take to reach various levels of Sea Level Rise for cities along the west coast of Florida. NOAA data was used for these projections as well.

Figure 4: Sea Level Rise Projections by City

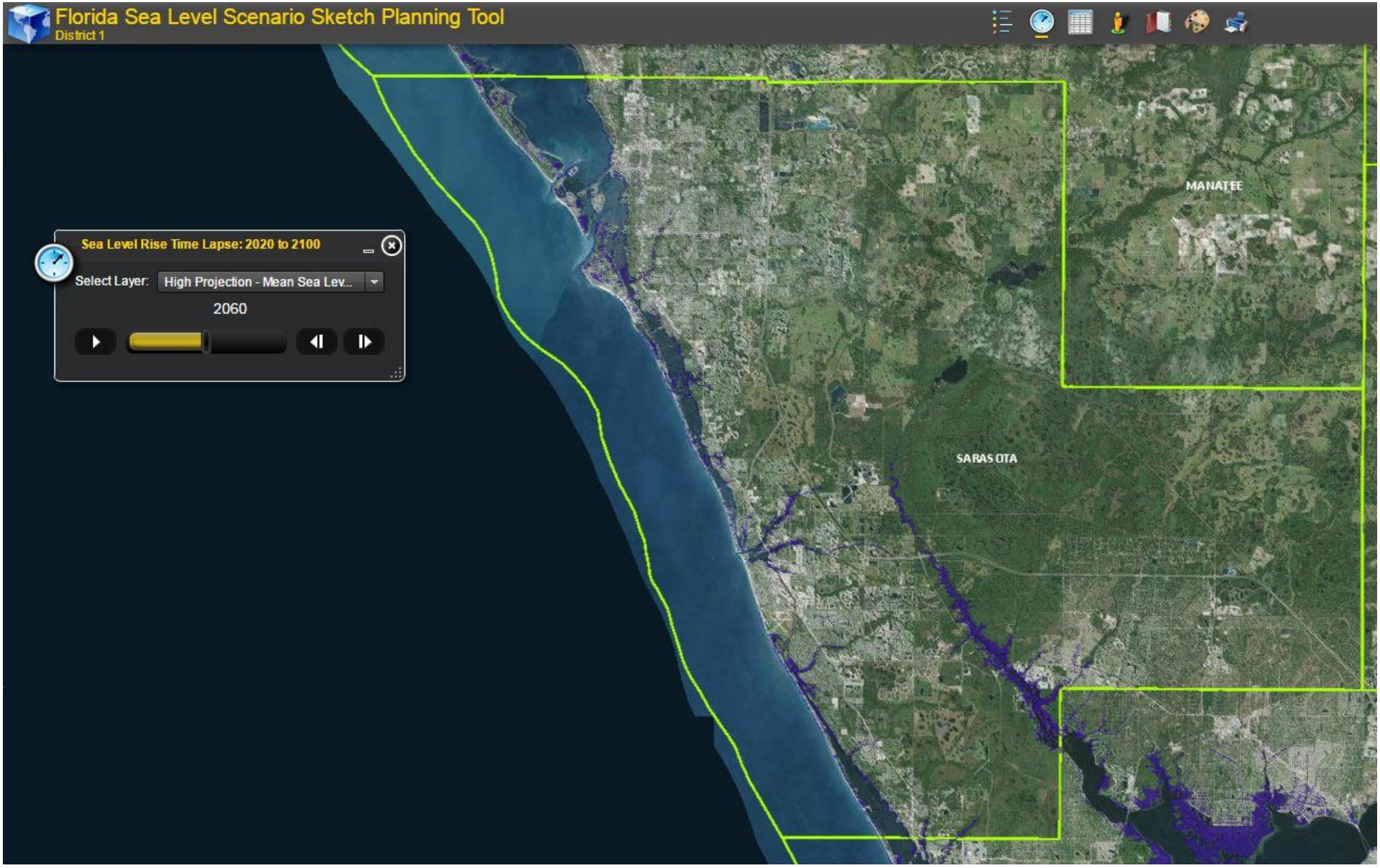
Sea Level Rise Projections by City				
Location	**Rate in mm/YR**	**Years to 1 foot**	**Years to 2 feet**	**Years to 3 feet**
Naples	2.65	115	230	345
Fort Myers	2.73	112	223	335
Sarasota	2.66	115	229	344
St. Petersburg	2.59	118	235	353
Worst Case Scenario	8.80	35	69	104

The Maps 1-4 were created using the University of Florida's GeoPlan Sea Level Scenario Sketch Planning Tool. The maps project Sea Level Rise inundation in 2060 and 2100 under estimated medium and worst case scenarios for Sarasota County. GeoPlan uses U.S. Army Corps of Engineers data for their Sea Level Rise projections.

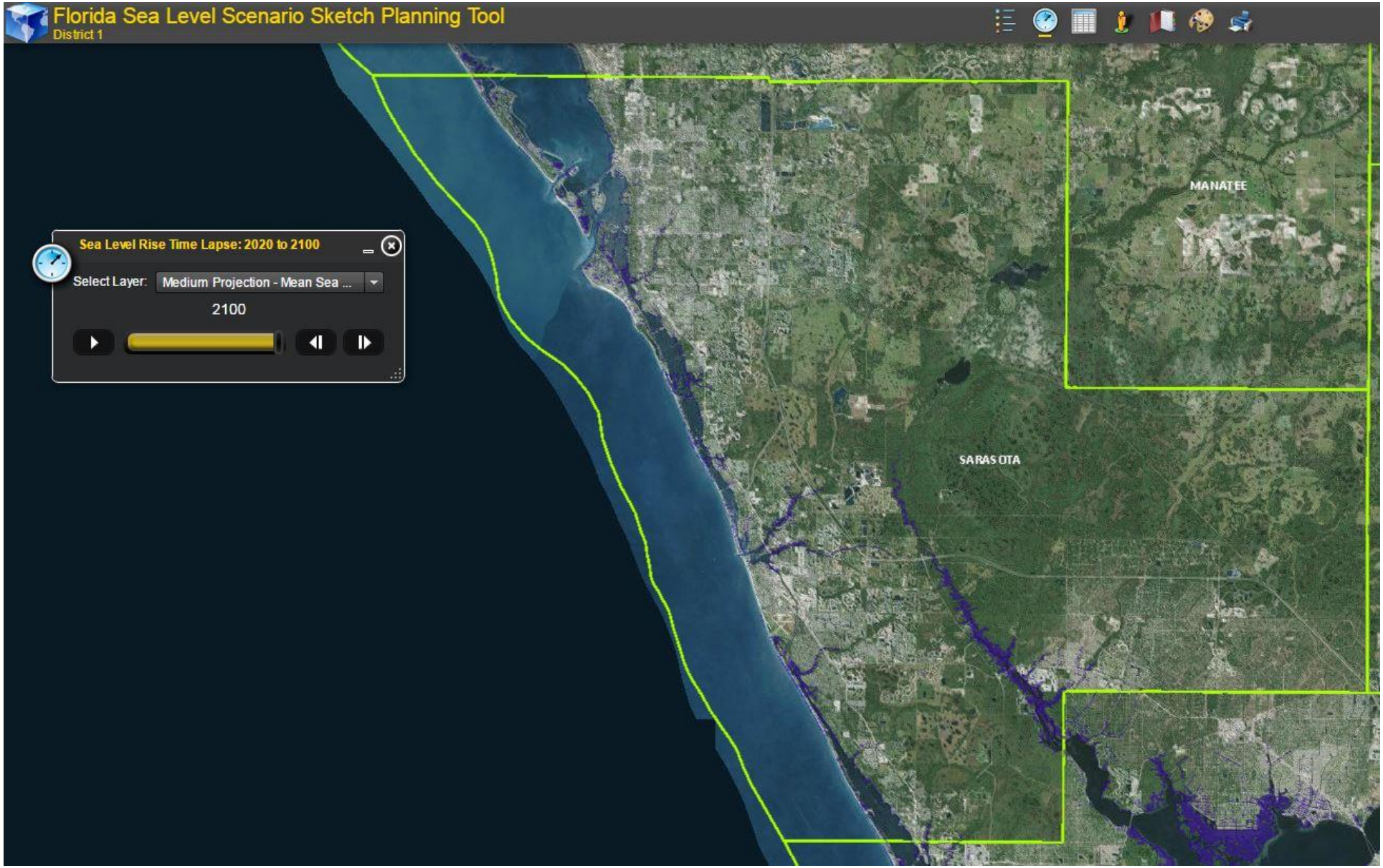
Map 1: 2060 Medium Projection



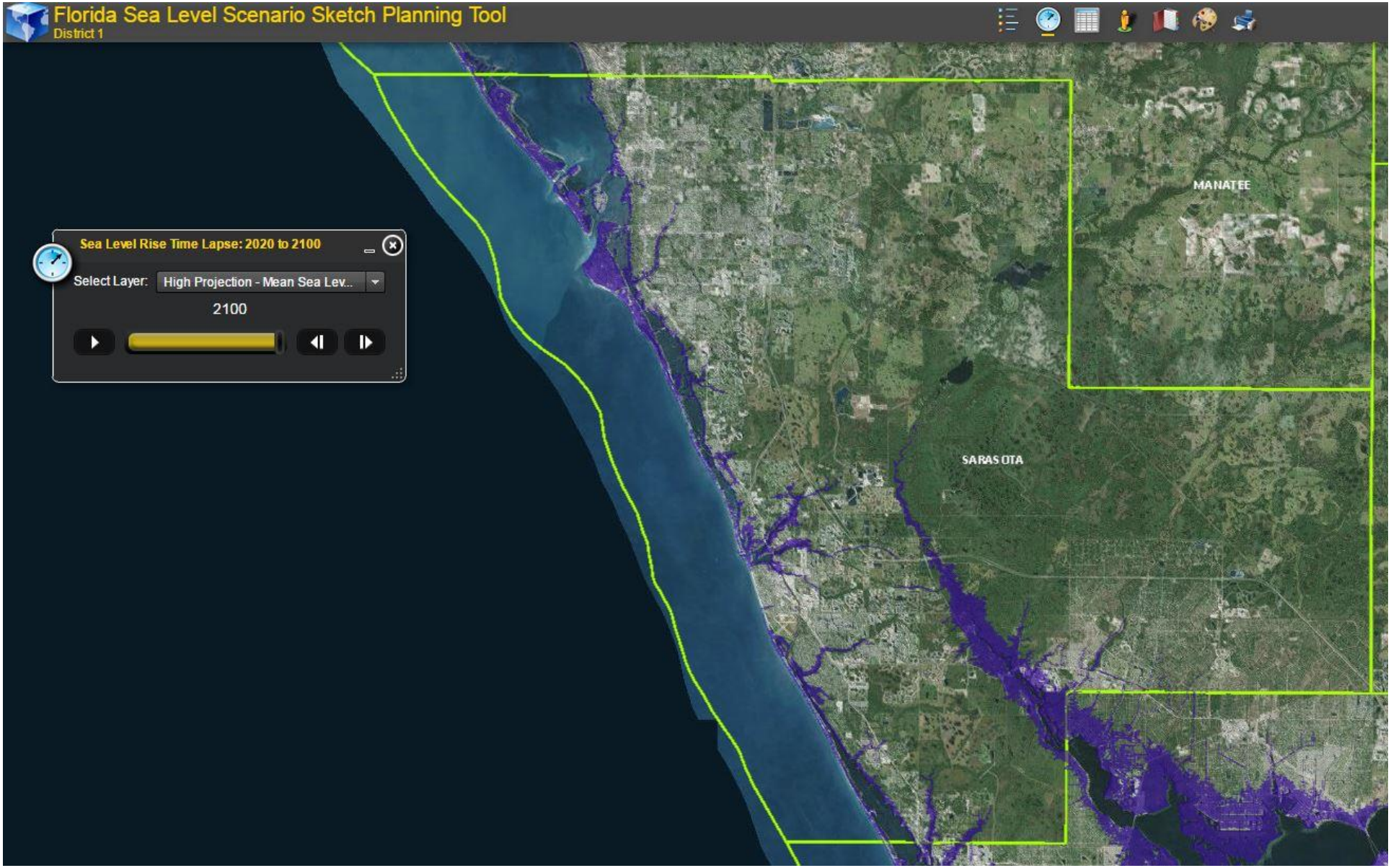
Map 2: 2060 High Projection



Map 3: 2100 Medium Projection



Map 4: 2100 High Projection



Transportation Infrastructure

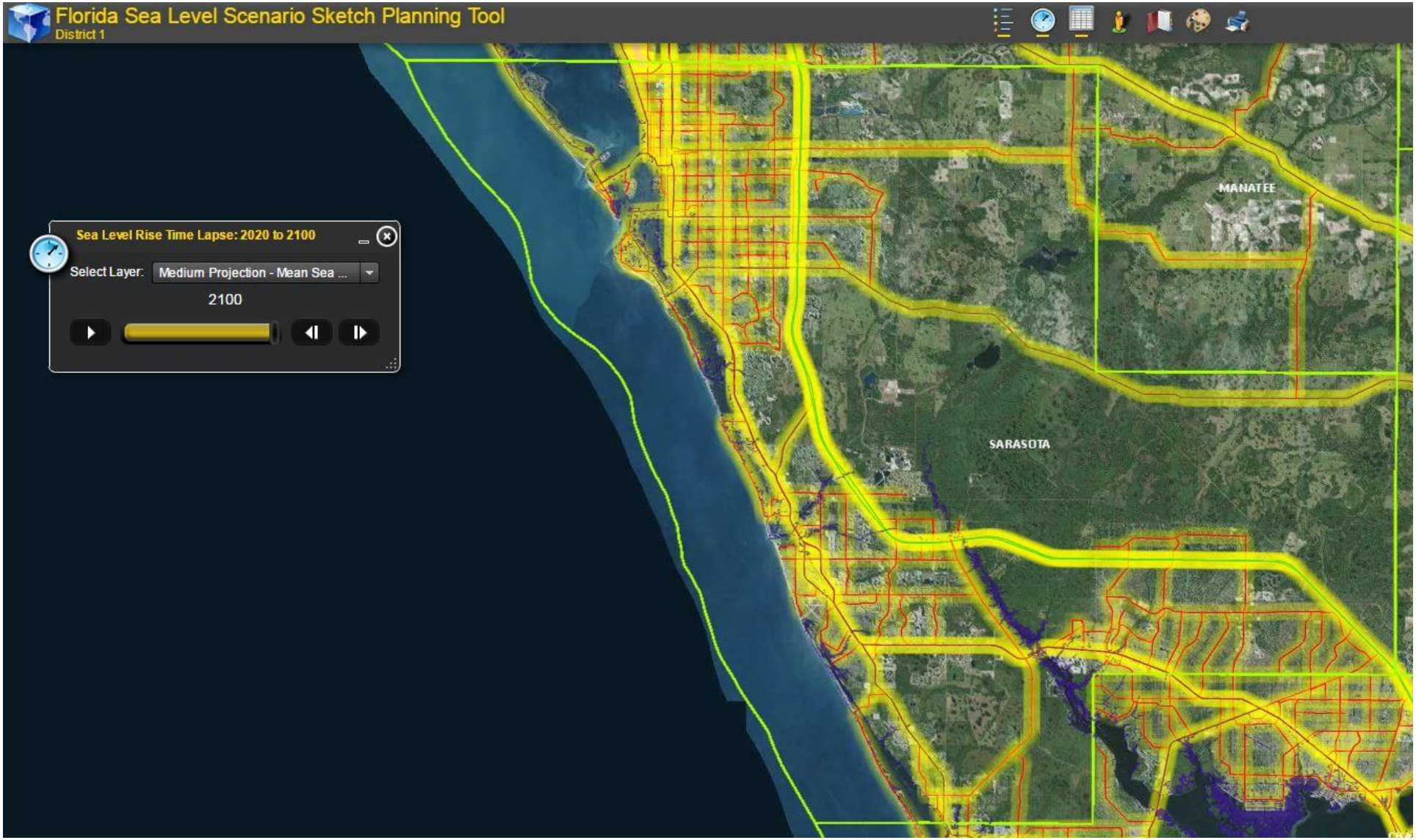
Sea Level Rise is predicted to reach a point where critical roadways will suffer inundation. Several roads in Sarasota County are vulnerable to sea level rise, coastal flooding and storm surge. Bridge approaches and collector and local roads in low-lying areas are also at risk. Even when roads are not inundated, permanent standing water can erode and impair the road base, increasing maintenance costs and reconstruction needs (Charlotte Harbor National Estuary Program, 2009).

For this analysis, we used the University of Florida GeoPlan Sea Level Scenario Sketch Planning Tool to identify road segments that are vulnerable to Sea Level Rise. This tool was developed with funding from the Florida Department of Transportation Office of Policy Planning. The purpose of the tool is to facilitate the identification of transportation infrastructure potentially at risk from projected sea level changes. The tool visualizes various sea level scenarios at future time periods in an effort to inform transportation planners and highlight infrastructure for potential avoidance, minimization, or mitigation. We decided to use the year 2100 worst case scenario for the analysis. Transportation planning is a long term process that must account for many variables. This is why it was determined that the 2100 worst case scenario was the best scenario to determine roadway impacts.

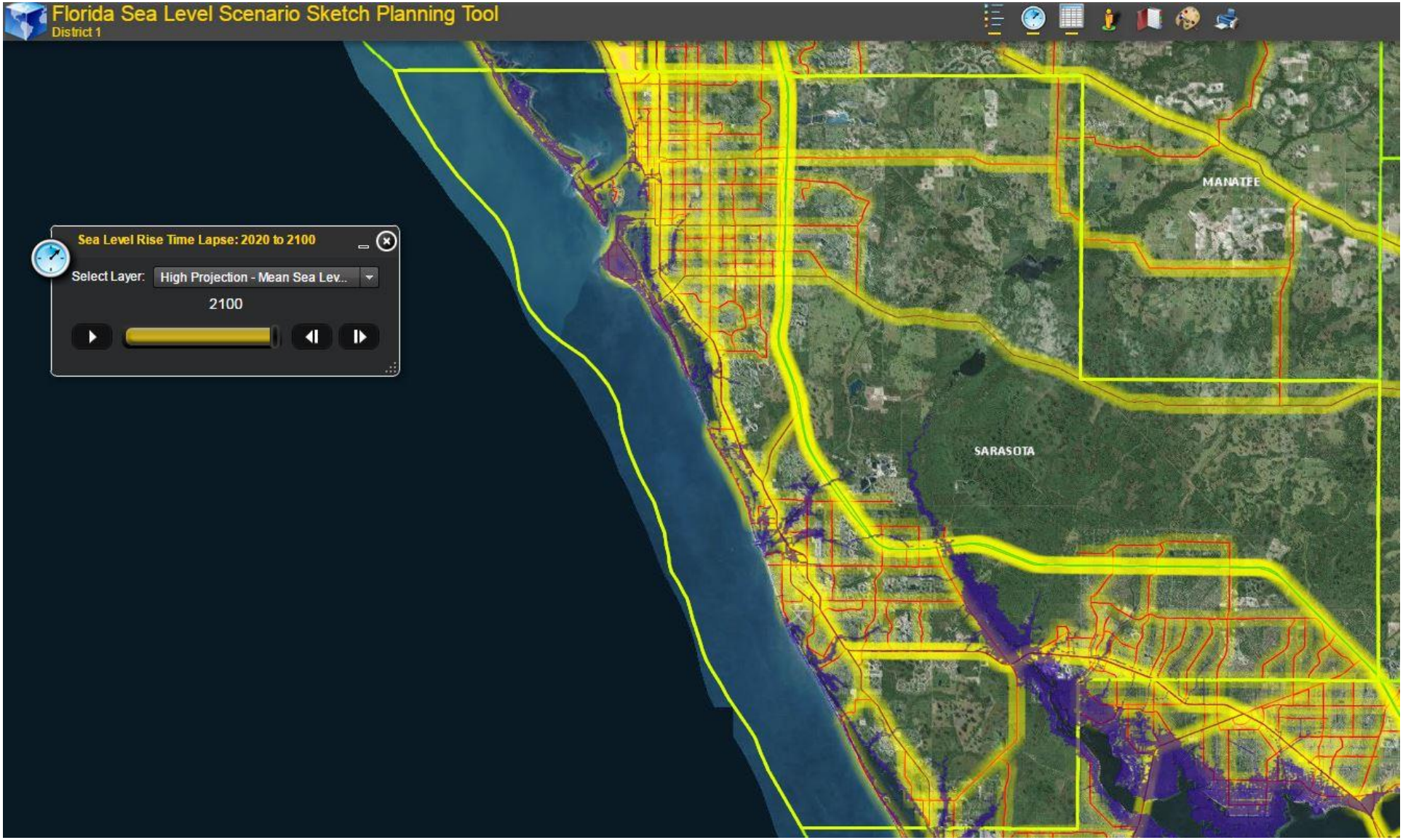
The Maps 5-6 depict the roadway inundation under GeoPlan's 2100 worst and medium scenarios. Map 7 focuses on the inundation of U.S. 41 and I-75 over the Myakka River.

Appendix A consists of a series of tables that identify road and rail way segments within Map 1 that are at risk of inundation under the 2100 worst case scenario. These tables were also created through GeoPlan. The first four tables in Appendix A utilize the NAVTEQ inventory of county roads, interstates, state roads, and US highways. The other four tables are informed by the Florida Department of Transportation (FDOT). Florida's Strategic Intermodal System (SIS) identifies highway corridors, passenger terminals, and railways. FDOT's Roadway Characteristics Inventory (RCI) catalogs "off system roads". These are city or county owned roads that are not maintained by FDOT. Appendix A begins on page 23.

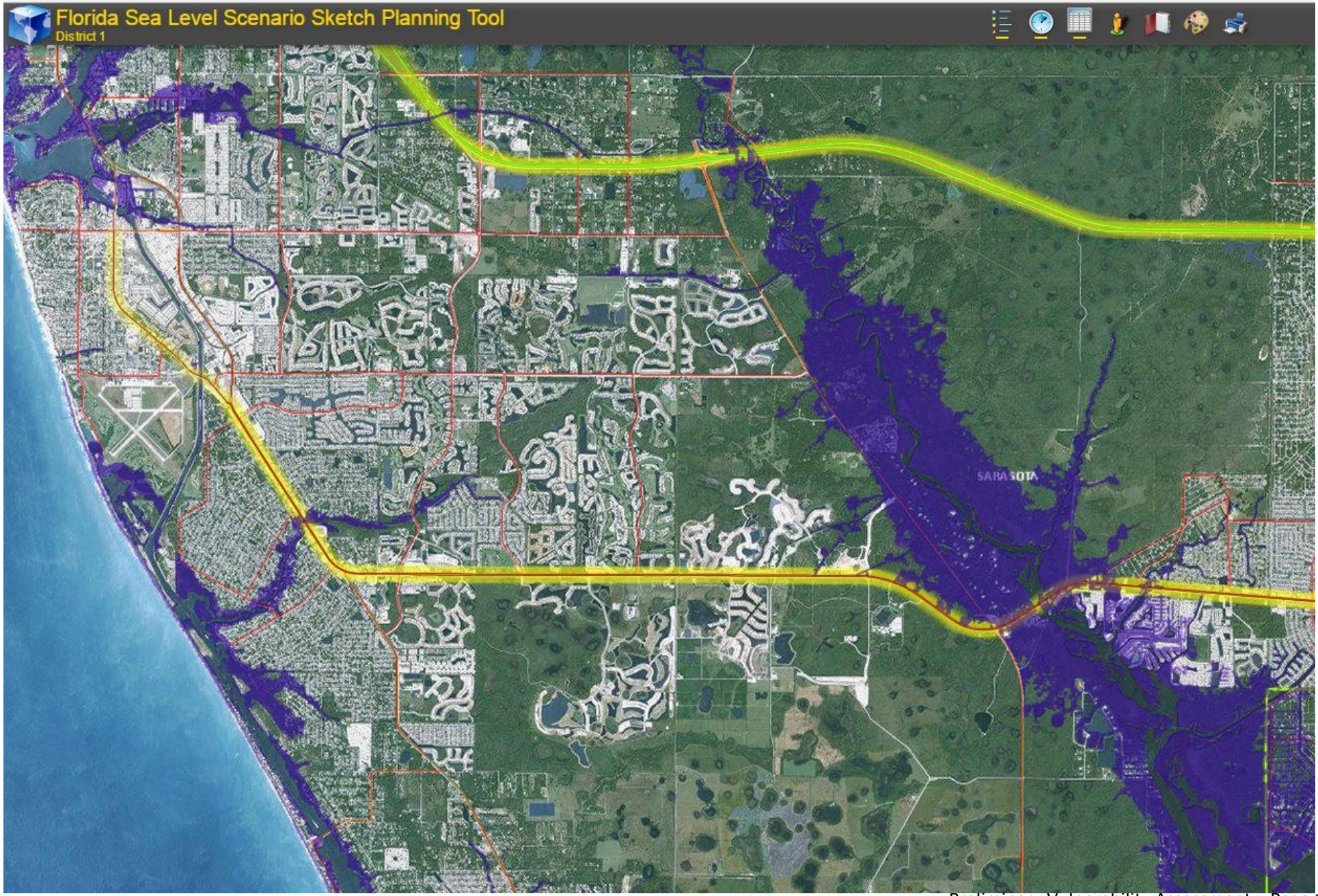
Map 5: Affected Roadways-2100 Medium Projection



Map 6: Affected Roadways-2100 High Projection



Map 7: I-75 and US 41 Bridge Inundation-2100 High Projection



Critical Facilities

Critical facilities were used to further assign protection scenario status and to also bring long-term sea level rise response planning into the more current local mitigation strategy planning. Critical facilities include hospitals, schools, and fire and police departments. This critical facility study focuses on facilities that would be vulnerable to predicted levels of Sea Level Rise for all of Sarasota County.

Figure 6 summarizes the amount of each type of critical facility in Sarasota County that is potentially vulnerable to Sea Level Rise. The highest count of critical facility types in this area is Sewage Treatment Plants with 20. Additionally, Water Treatment Facilities, Fire Stations, Government Buildings, and 302 Facilities (Hazardous Chemicals) round out the top five highest facility counts. The list of critical facilities was pulled from the Florida Division of Emergency Management's (FDEM) critical facility database. The full list of affected facilities is attached as Appendix B starting on page 31.

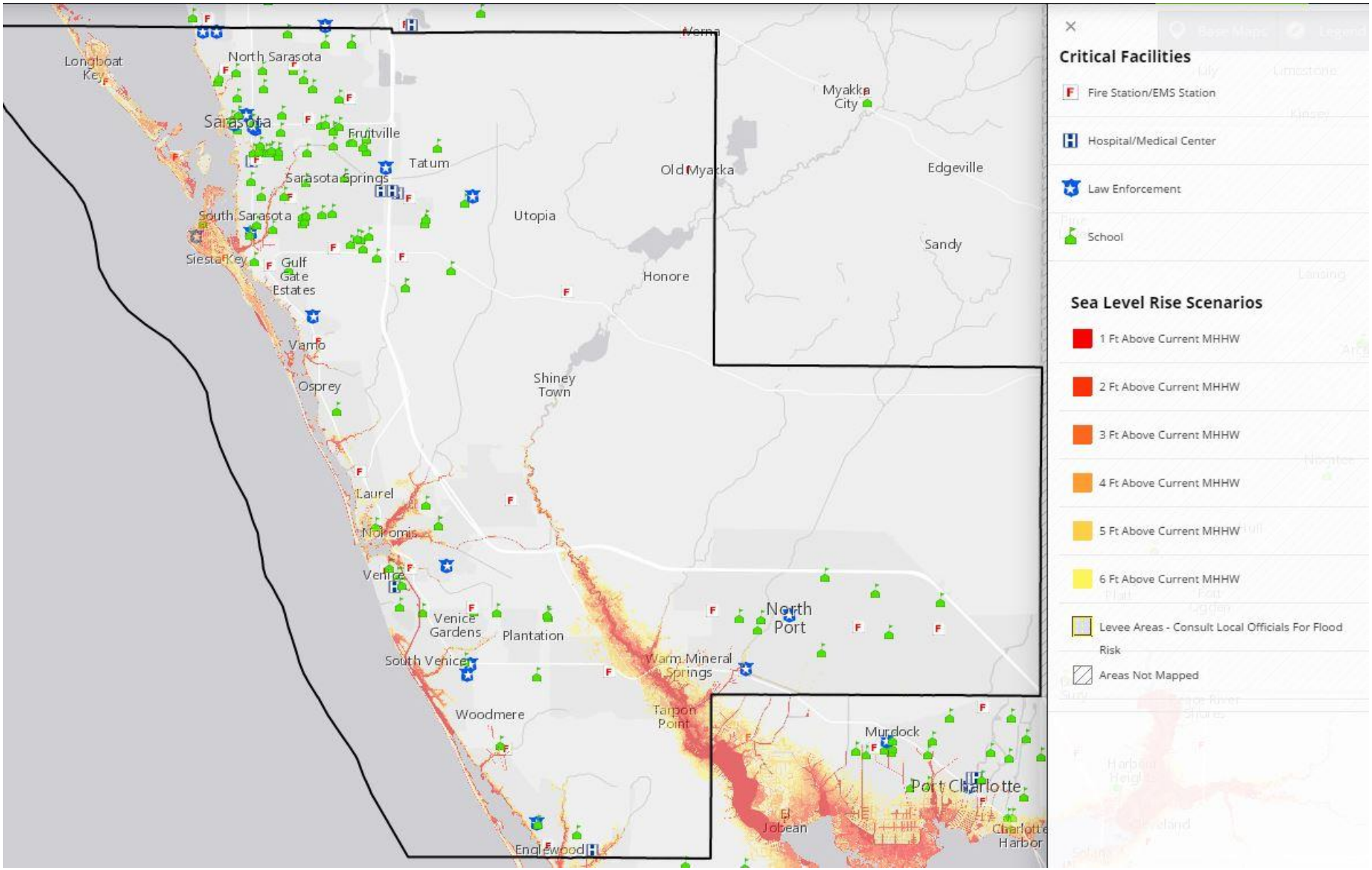
Figure 5: Affected Critical Facilities by Type

Affected Critical Facilities By Type	
Facility Type	**Count**
302 Facility	8
City Building	3
Communications	1
Correctional Facility	1
Emergency Medical Services	1
Fire Station	13
Government Building	9
Heliport	1
Hospital	1
Law Enforcement	4
Maintenance Building	1
Nextel Tower Sites	1
Potable Water	1
Public Buildings & Infrastructure	4
Public Utilities	1
Rep Loss	1
School	2
Sewage Treatment Plant	20
Shelter	1
Telephone And Cellular Facility	1
Water Storage Facility	1
Water Treatment	16

Well	2

Map 8 was created through NOAA's Coastal Flood Exposure Mapper. This map shows the approximate location of hospitals, schools, and other critical facilities located in or near coastal flood-prone areas. Critical facilities are community lifelines and need to be functional before, during, and after an event. In addition to structural damage, potential impacts include inaccessible roads that do not allow food and water to be delivered, or electrical outages, meaning no heat or air conditioning.

Map 8: Critical Facilities



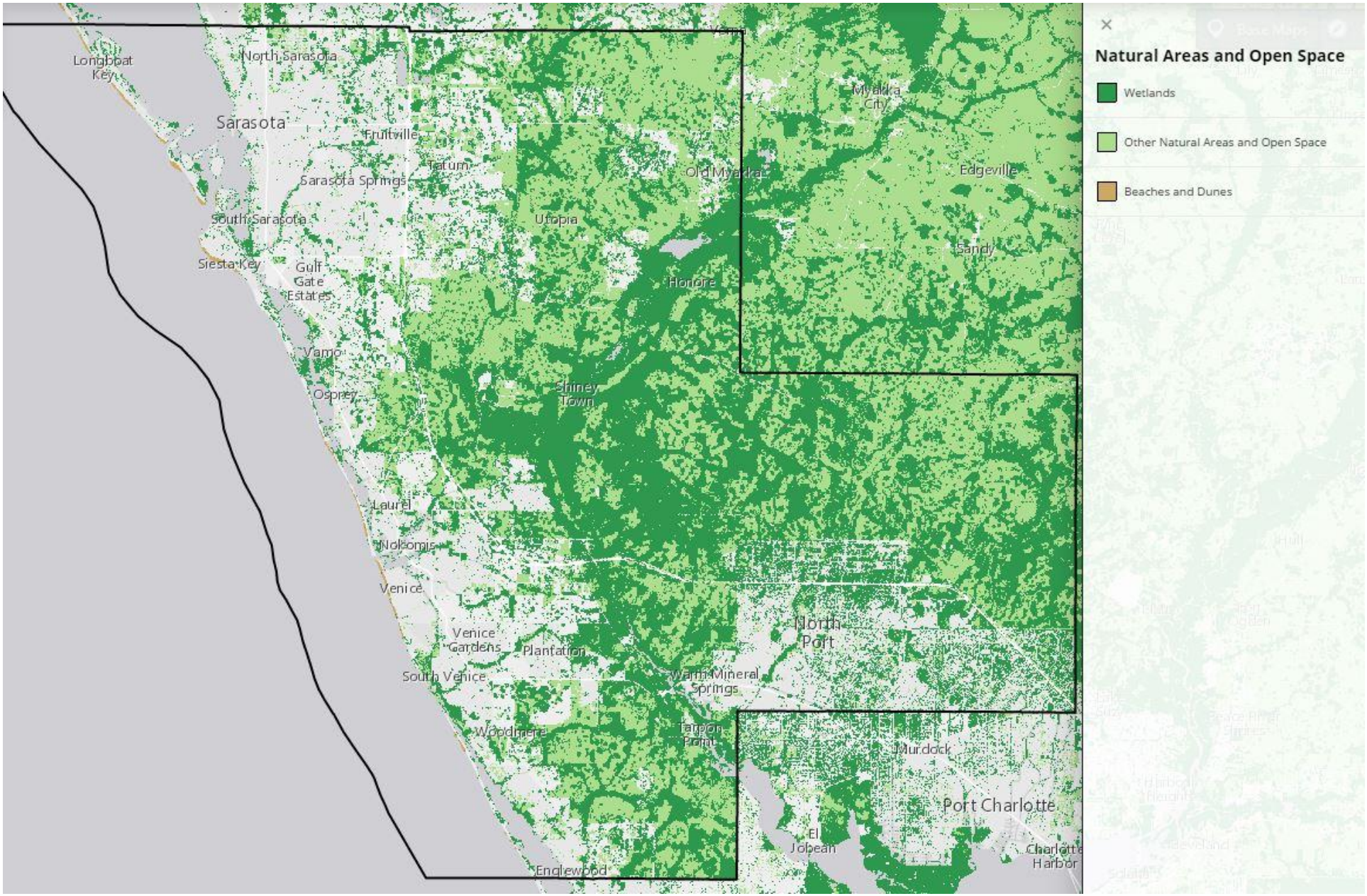
Wetlands

Sea Level Rise poses a threat to our natural wetland environments. Wetlands serve as storm surge buffers, flood storage capacity, erosion control, water quality maintenance, and wildlife habitat. A Florida Sea Grant study estimated that a 15 inch sea level rise in Florida would result in 50% loss of salt marshes, 84% loss of tidal flats, and about 30% of ocean beaches. A one-foot rise in sea level will erode most FL beaches by at least 100-200 feet unless mitigation measures are used (US EPA).

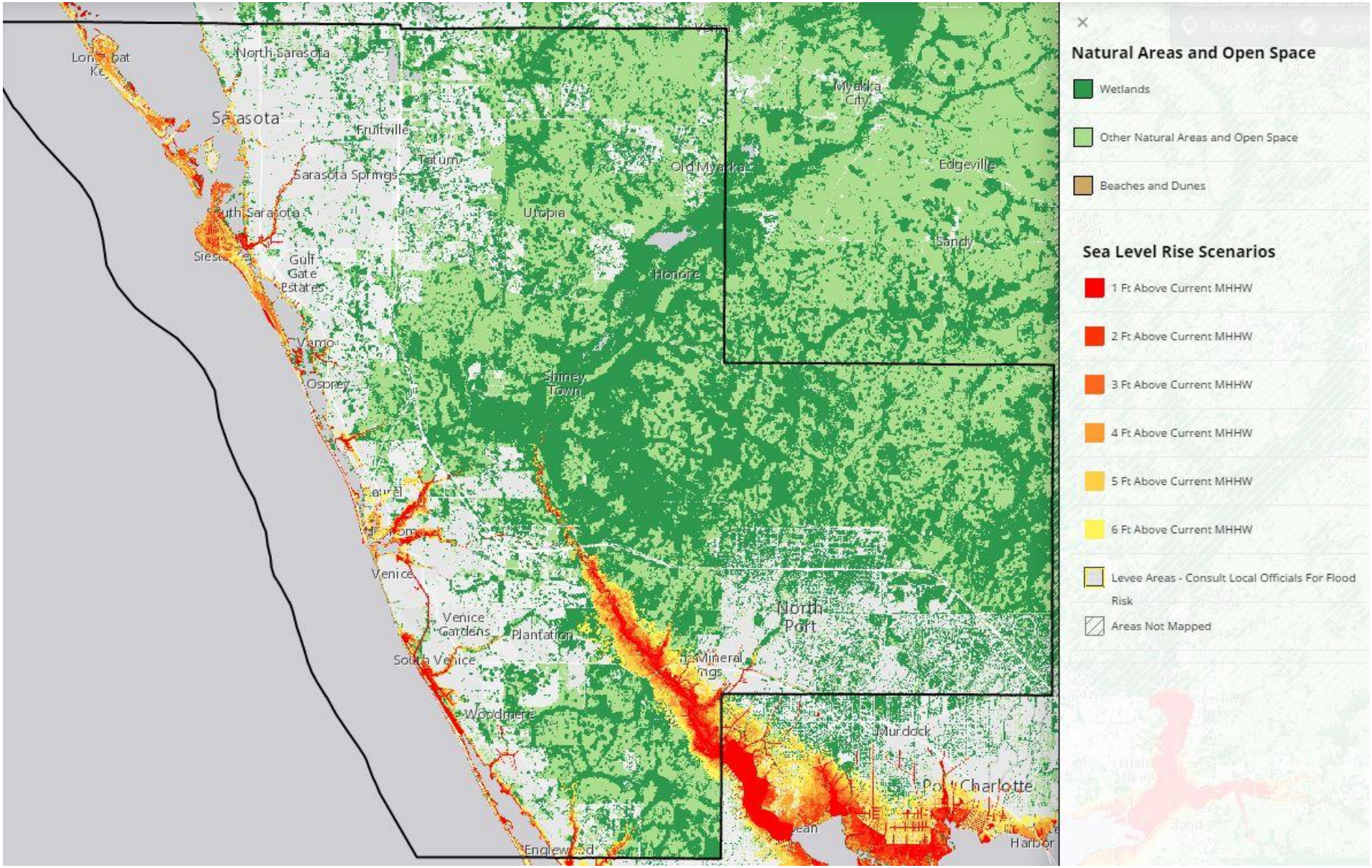
Maps 9 and 10 were created using NOAA's Coastal Flood Exposure Mapper. Map 9 shows wetlands, beaches, dunes, and other natural areas and open space (including agricultural land) exposed to coastal flooding. Map 10 adds NOAA's Sea Level Rise Scenarios as an overlay to Map 9 to show which areas are at higher risk of inundation. Healthy natural areas are able to adapt and recover from short-term coastal flooding, but if floodwaters are too powerful they can damage wetland plants. Waves can erode beaches and dunes if sufficient sand supply and space are not available to rebuild them.

Sea level rise can cause change in habitat types or loss of habitat. Freshwater wetlands may experience dieback from saltwater intrusion, and salt marsh may convert to open water unless sedimentation and growth can keep pace and the natural systems have inland areas in which to migrate. If sea level rise outpaces natural coastal processes, beaches and dunes may eventually become submerged.

Map 9: Wetlands



Map 10: Wetlands Affected by Sea Level Rise



10 Adaptations and Recommended Strategies for Salt Marsh Migration

- Maintain the existing marsh migration corridors that have been established on the Eastern Charlotte Harbor shoreline.
- Identify the highest priority marsh migration corridors so that they can protect these areas from future development. Followed by acquisition of inland buffer zones to provide an opportunity for habitats and wildlife to migrate inland.
- Support restoration of existing salt marshes by removal of exotic vegetation, removal of barriers to tidal connection, and degradation of exotic dominated adjacent uplands
- Discourage or stop shoreline hardening including seawalls, bulkheads, rip-rap, and "living shorelines" backed by rip-rap.
- Re-engineer existing vertical shoreline infrastructure to a sloped soil based shoreline with GeoWeb or other permeable stabilization.
- Restore impaired water flows to enhance sediment supply for marsh deposition
- Elevate roadway berms by bridging and culverting or abandon coastal road corridors with associated beamed road beds.
- Back-fill mosquito control ditches to reduce depth and sediment loss
- Back fill borrow pits, agricultural pits, and spreader waterways to allow salt marsh establishment and establishment of marsh migration corridors
- Sediment-slurry addition to assist in marsh building processes

Source: Beever III, J.W., W. Gray, L. B. Beever, D. Cobb, T. Walker 2011. Climate Change Vulnerability Assessment and Adaptation Opportunities for Salt Marsh Types in Southwest Florida. 379 pp

Poverty

This map layer from the Coastal Flood Exposure Mapper shows the percentage of people living below the poverty line for Census block groups (or geographies) in or near coastal flood-prone areas (e.g., four-person family with annual cash income below $23,283). People in poverty may not have adequate resources to prepare for or respond to hazards. Their limitations may include substandard housing, lack of transportation to evacuate, lack of social support systems, and incomes that limit their ability to afford temporary lodging, relocation, or housing improvements.

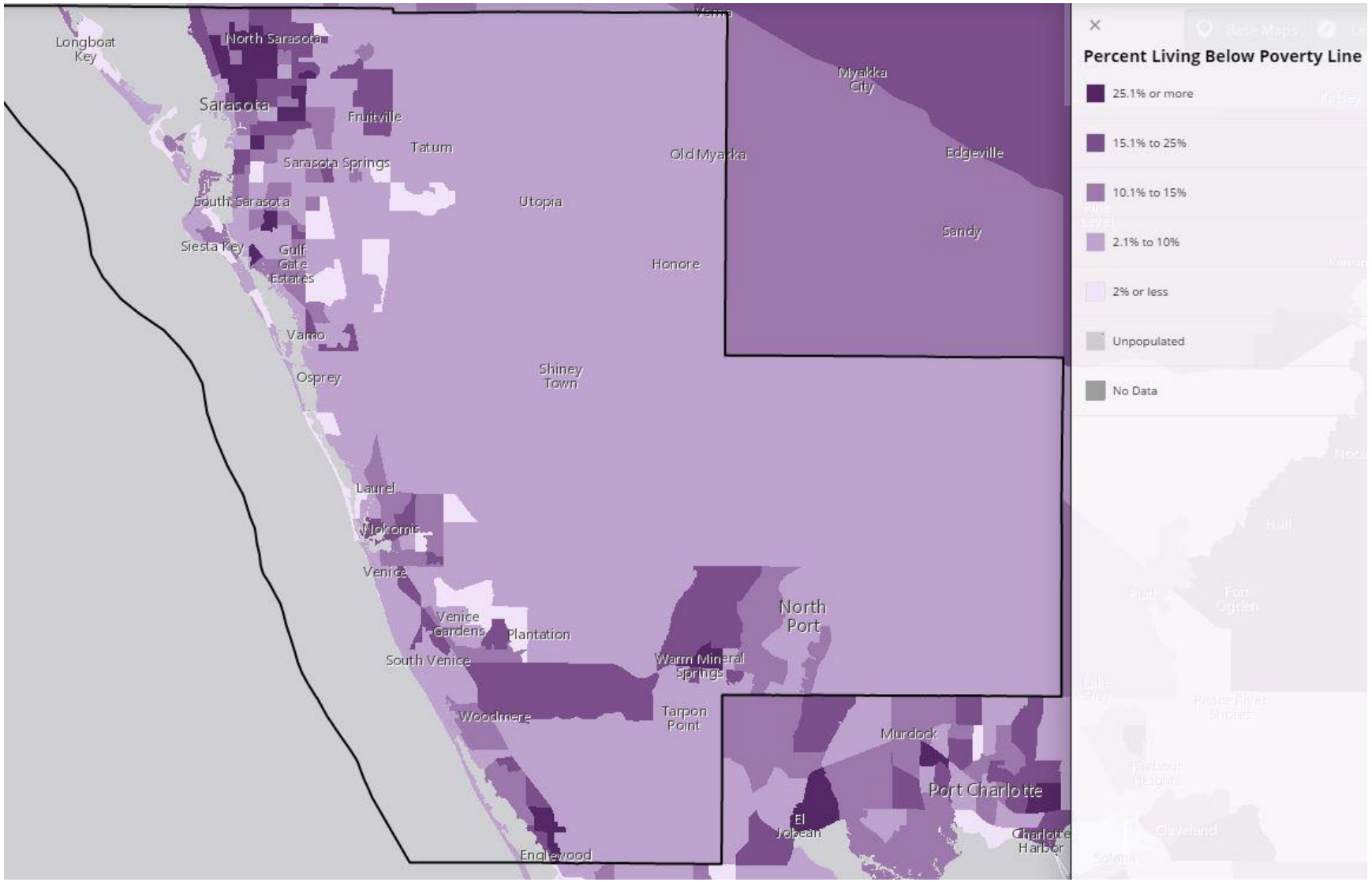
Map 11 shows a high level of poverty in North Sarasota. According to census.gov, the 2015 5-year estimate of persons in poverty in the City of Sarasota is 19.5%. Map 12 focuses on the City of Sarasota and shows high-poverty census blocks that are projected to be impacted by Sea Level Rise. Map 13 shows that there are also high-poverty census blocks in the North Port and Englewood that are vulnerable to Sea Level Rise. North Port lies near the Myakka River and the area surrounding the River is among the most vulnerable areas in the County.

Figure 6 shows the census.gov poverty figures for Sarasota County and its four municipalities, based on 2015 5-year estimates.

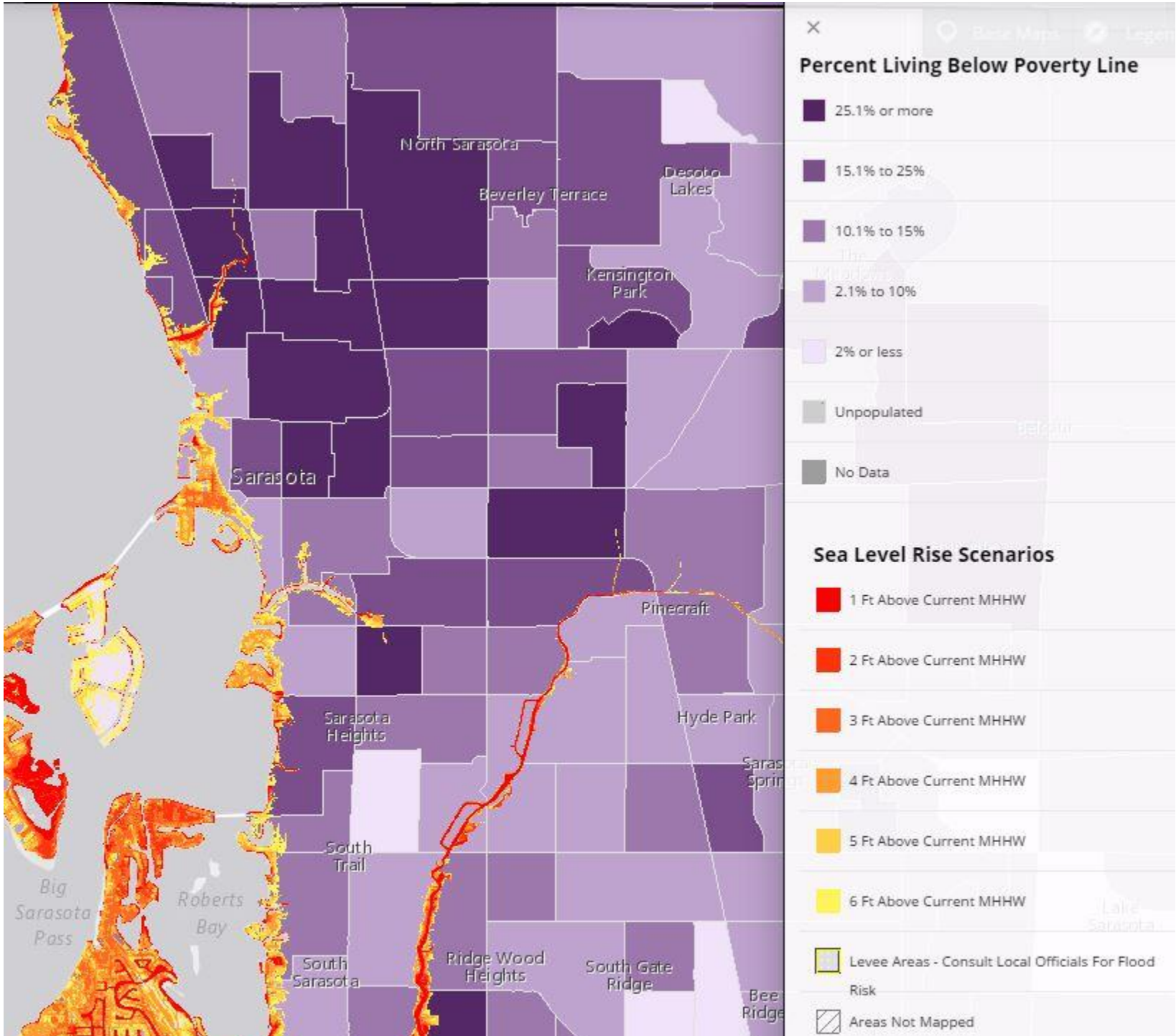
Figure 6: Poverty Percentage in Sarasota County

Persons in Poverty	
Sarasota County	**9.7%**
City of Sarasota	19.5%
City of North Port	12.8%
City of Venice	8.5%
Town of Longboat Key	7.6%

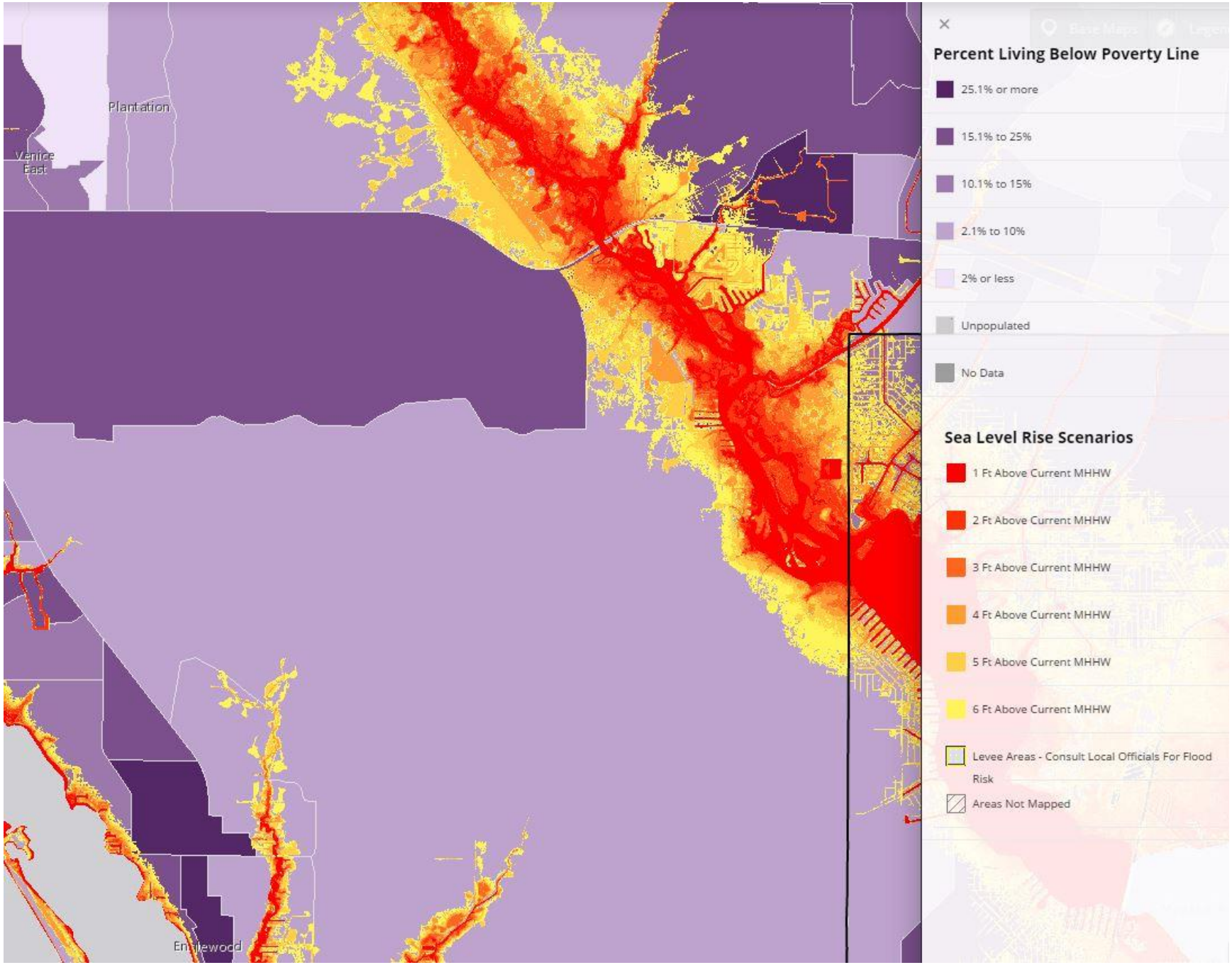
Map 11: Percent Living Below Poverty



Map 12: Poverty and Sea Level Rise in Northern Sarasota



Map 13: Poverty and Sea Level Rise in Southern Sarasota



Elderly Population

This map shows the percentage of people age 65 and older for Census block groups (or geographies) that live in or near coastal flood-prone areas. Elderly people may be more susceptible to hazard impacts because they often have limited mobility and access to transportation, continual medical and care needs, limited incomes, and a need for special care facilities.

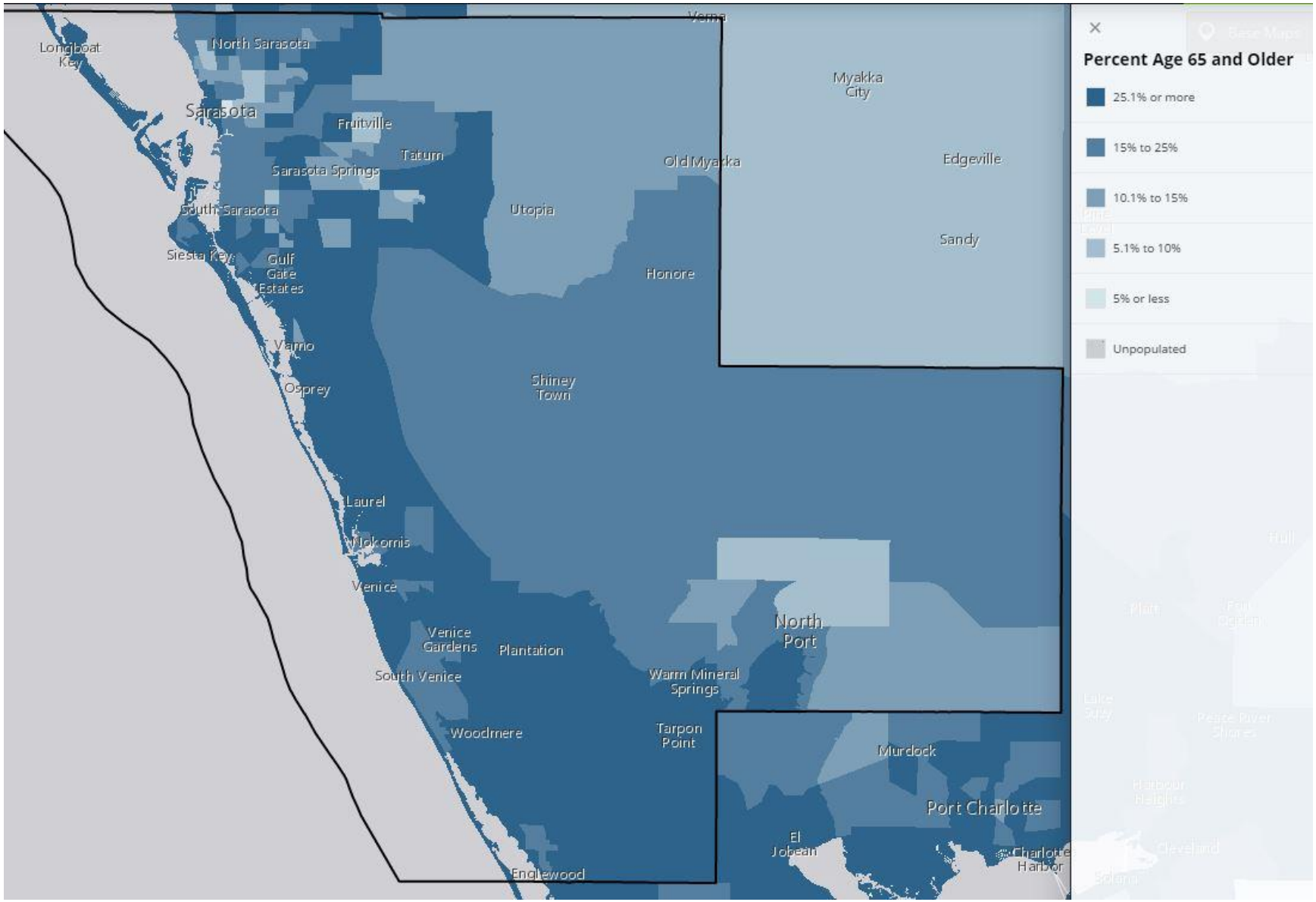
As the following maps show, a large percentage of the population of Sarasota County is over 65 years in age. Map 15 indicates that Longboat Key and Siesta Key are two communities that have an incredibly high percentage of elderly residents that are also highly vulnerable to Sea Level Rise. It also shows several census blocks along the coast that have a high percentage of elderly residents that are projected to be impacted by Sea Level Rise. Map 16 shows that same impacts in areas of Venice and North Port.

Figure 7 shows the census.gov estimates for the elderly population throughout Sarasota County. The County estimate is from 2015. However, age demographics for the municipalities have not been updated by the Census Bureau since 2010.

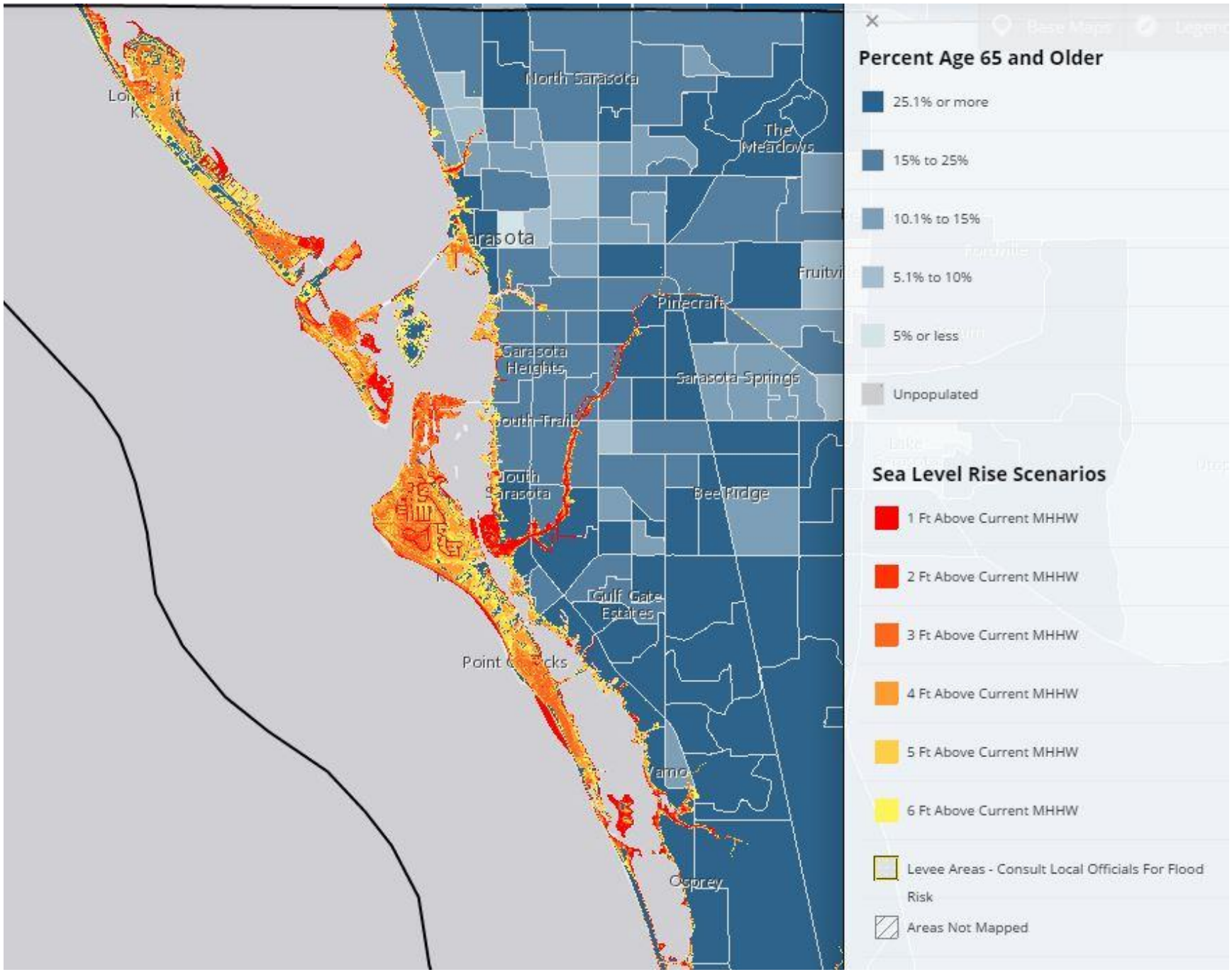
Figure 7: Elderly Population Percentage in Sarasota County

Persons Age 65 and Over	
Sarasota County	**34.6%**
Town of Longboat Key	67.3%
City of Venice	57.0%
City of Sarasota	22.4%
City of North Port	17.9%

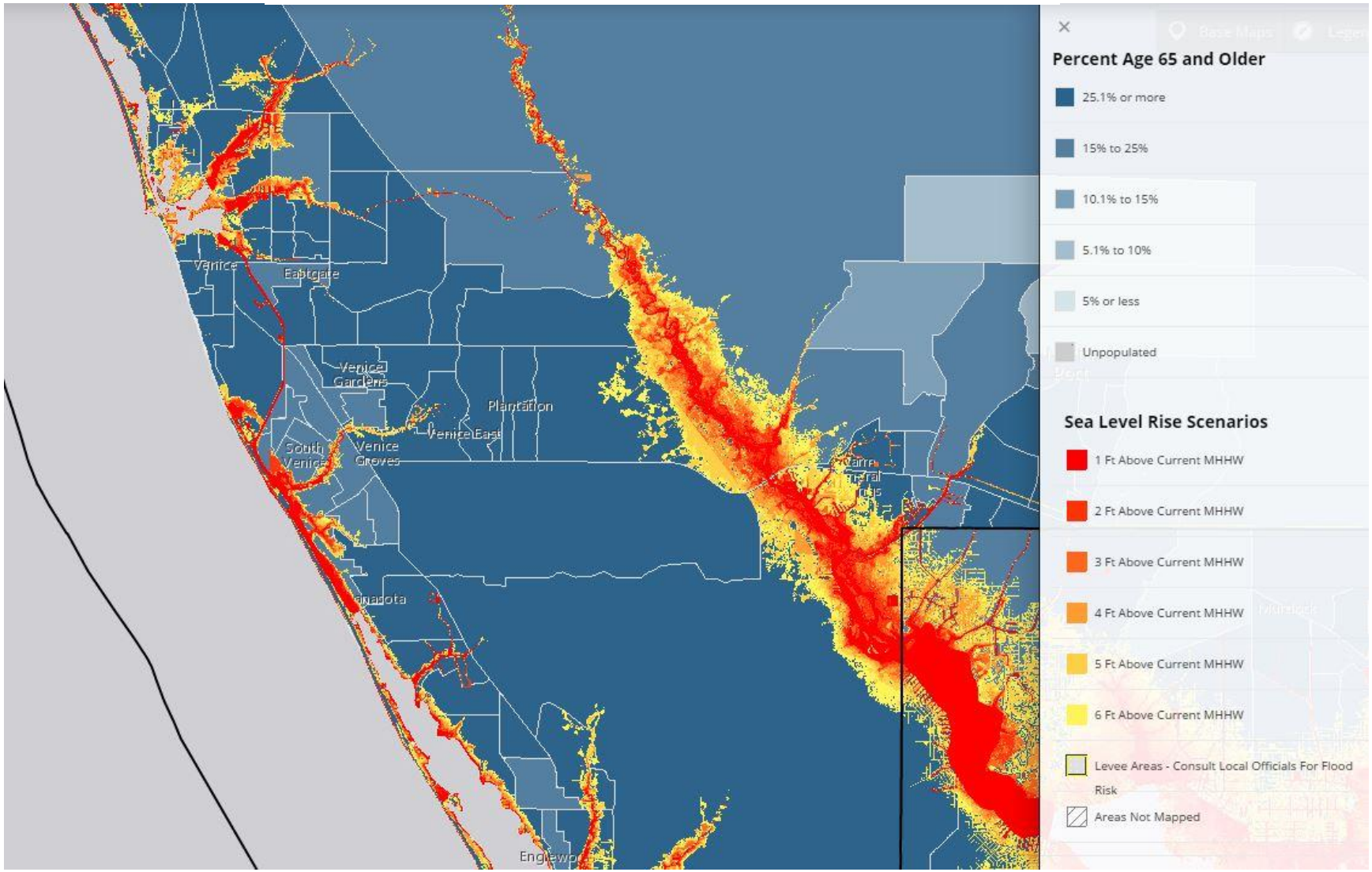
Map 14: Population Percentage Age 65 and Older



Map 15: Elderly Percentage and Sea Level Rise in Northern Sarasota



Map 16: Elderly Percentage and Sea Level Rise in Southern Sarasota



Appendix A- Affected Transportation Infrastructure

NAVTEQ County Roads			
Route	Roadway	Auto ID	Shape Length
CR 610	17192000	1504	23,252.67
CR 683	13120000	1303	11,270.23
CR 683	17540000	1511	2,779.37
CR 683A	17507000	1509	481.93
CR 772	17502000	1506	1,657.68
CR 773	17503000	1507	14,393.93
CR 774	17504000	1508	3,341.17
CR 775A	17501000	1505	6,700.27
CR 777	17000064	1499	11,464.13
CR 777	17550000	1512	15,582.81
CR 778	17130000	1503	2,712.43
CR 780	17040000	1500	699.31
CR 780	17040000	1501	29,643.01
CR 789	17100000	1502	11,702.21
CR 789A	17510000	1510	4,443.19

NAVTEQ Interstates			
Route	Roadway	Auto ID	Shape Length
I-75	17075000	27	154,627.27

NAVTEQ State Roads			
Route	Roadway	Auto ID	Shape Length
SR 45	17010000	1507	58,106.86
SR 45	17020000	1508	65,713.01
SR 45A	17180000	1522	10,947.53
SR 681	17005000	1503	717.46
SR 681	17005000	1504	10,170.48
SR 681	17005000	1505	2,653.60
SR 683	17120000	1521	13,342.07
SR 72	17070000	1517	60,624.92
SR 72	17110000	1520	1,762.13
SR 758	17008000	1506	13,804.51
SR 758	17080000	1519	10,514.77
SR 776	17050000	1516	25,940.37
SR 780	17040000	1514	12,362.98
SR 780	17040401	1515	586.53
SR 789	17030000	1509	357.34
SR 789	17030000	1510	6,428.85

SR 789	17030000	1511	9,243.00
SR 789	17030201	1512	1,826.61
SR 789	17030401	1513	1,176.05
SR 93	17075000	1518	154,627.27

NAVTEQ US Highways			
Route	Roadway	Auto ID	Shape Length
US 301	17120000	202	13,342.07
US 41	17010000	198	53,795.45
US 41	17020000	200	64,231.38
US 41	17180000	203	10,947.53
USB 41	17010000	199	4,311.41
USB 41	17020000	201	1,481.63

SIS Airport Boundaries				
SIS Name	Facility SQ	Auto ID	Shape Length	Shape Area
Sarasota/Bradenton International Airport	100015	13	19,593.80	5,742,590.88

SIS Highway Connectors/Corridors				
SIS Name	Facility SQ	Roadway	Auto ID	Shape Area
Sarasota/Bradenton International Airport to I-75	100901	17192000	76	11,898.49
I-75 from US 17 to SR 70	100514	17075000	309	77,267.68

SIS Passenger Terminals			
SIS Name	Facility ID	Facility SQ	Auto ID
Sarasota Greyhound	P147	100358	57

RCI On System Roads				
Name	Description	Roadway	Auto ID	Shape Length
Bay Rd	Urban: Collector	17080000	1050	351.44
Bayfront Dr	Urban: Principal Arterial - Other	17020000	1008	574.32
Bee Ridge Road	Urban: Minor Arterial	17008000	1155	9,875.32
Clark Rd	Urban: Minor Arterial	17070000	919	10,813.56
Englewood Rd	Urban: Minor Arterial	17050000	794	8,501.68
Fruitville Rd	Urban: Principal Arterial - Other	17040401	1086	588.30
Fruitville Rd/SR 780	Urban: Collector	17040000	665	613.20
Fruitville Rd/SR 780	Urban: Principal Arterial - Other	17040000	1191	9,004.11
Gulf Of Mexico Dr	Urban: Collector	17030000	1121	9,237.94
Gulf Stream Ave	Urban: Minor Arterial	17030201	963	1,825.86
Gulf Stream Ave	Urban: Minor Arterial	17030000	1085	351.18
Higel Ave	Urban: Collector	17080000	1266	1,510.05
I-75	Rural: Principal Arterial - Interstate	17075000	622	61,736.98

I-75	Urban: Principal Arterial - Interstate	17075000	1156	15,530.79
Indiana Ave N	Urban: Minor Arterial	17050000	621	4,423.42
Indiana Ave S	Urban: Minor Arterial	17050000	918	2,014.92
John Ringling Blvd	Urban: Minor Arterial	17030000	709	1,132.72
John Ringling Blvd	Urban: Collector	17030000	834	3.63
John Ringling Cswy	Urban: Minor Arterial	17030000	1229	758.88
John Ringling Pkwy	Urban: Collector	17030000	664	1,194.38
John Ringling Pkwy	Urban: Collector	17030401	793	1,160.80
Midnight Pass Rd	Urban: Collector	17080000	1157	5,559.50
Mound St	Urban: Principal Arterial - Other	17020000	1120	1,696.26
N Blvd Of Presidents	Urban: Collector	17030000	962	383.17
N Tamiami Trl	Urban: Principal Arterial - Other	17020000	1265	6,863.00
Osprey Ave	Urban: Collector	17080000	876	473.24
Siesta Dr	Urban: Collector	17080000	752	2,612.85
SR 72	Rural: Minor Arterial	17070000	751	42,473.09
SR 72	Urban: Minor Arterial	17070000	1192	532.46
St Armands Circle	Urban: Collector	17030000	1230	92.45
Stickney Point Rd	Urban: Collector	17110000	1009	1,770.01
Stickney Point Rd	Urban: Minor Arterial	17070000	1049	1,457.84
Tamiami Trl	Urban: Principal Arterial - Other	17010000	708	11,122.84
Tamiami Trl	Urban: Principal Arterial - Other	17010000	875	13,855.47
Tamiami Trl	Rural: Principal Arterial - Other	17010000	1007	6,074.69
US-301/Washington B	Urban: Principal Arterial - Other	17120000	877	7,546.61
US-41/Tamiami Trail	Urban: Principal Arterial - Other	17020000	833	31,594.08
Venice Bypass	Urban: Principal Arterial - Other	17180000	710	5,214.55
Venice Connector	Rural: Principal Arterial - Other	17005000	750	4,750.85
Venice Connector	Urban: Principal Arterial - Other	17005000	1264	2,786.22

RCI Off System Roads				
Name	**Description**	**Roadway**	**Auto ID**	**Shape Length**
10th St	Urban: Collector	17000142	3228	926.68
12th St	Urban: Collector	17000038	3537	4,602.06
17th St	Urban: Collector	17000143	3226	904.94
17th St	Urban: Collector	17000143	3227	676.23
17th St	Urban: Collector	17000040	3515	2,745.58
17th St E	Urban: Collector	17000039	3519	4,613.44
27th Pkwy/Prudence	Urban: Local	17000041	3513	2,737.17
2nd St	Urban: Local	17000013	3158	221.30
Airport Ave	Urban: Collector	17000088	3381	1,135.77
Albee Farm Rd	Urban: Collector	17000074	3408	2,196.76
Albee Farm Road	Urban: Collector	17000075	3389	1,951.46

Albee Rd	Urban: Collector	17100000	3898	1,973.27
Antoinette/Honore	Urban: Local	17000703	3931	110.63
Appomattox Dr	Urban: Collector	17000566	4003	2,818.62
Ashton Rd	Urban: Local	17000544	3173	3,675.65
Atwater Dr	Rural: Major Collector	17000576	3953	4,891.58
Avenida Del Circo	Urban: Collector	17000088	3382	641.70
Bahia Vista St	Urban: Collector	17000036	3538	5,134.85
Bahia Vista St	Urban: Collector	17000031	3542	3,583.04
Bahia Vista St	Urban: Local	17000031	3543	460.32
Bayshore Drive	Urban: Collector	17000081	3385	971.20
Beach Rd	Urban: Collector	17000088	3380	330.76
Beach Rd	Urban: Collector	17510000	3848	2,220.53
Bee Ridge Rd	Urban: Collector	17000046	3493	4,583.53
Bee Ridge Rd Ext	Urban: Collector	17000046	3492	5,164.12
Ben Franklin Dr	Urban: Collector	17000020	3573	2,766.14
Beneva Rd	Urban: Minor Arterial	17503000	3871	13,063.14
Bird Key Dr	Urban: Local	17000018	3151	1,978.50
Blackburn Point Rd	Urban: Collector	17100000	3900	1,665.66
Blvd Of Presidents	Urban: Local	17000019	3575	1,598.53
Border Rd	Rural: Minor Collector	17000556	3150	2,733.76
Border Rd	Rural: Local	17000535	3202	1,825.00
Bradenton Rd	Urban: Collector	17000003	3206	2,759.65
Brookmeade Dr/Honore	Urban: Local	17000704	3930	105.42
Casey Key Rd	Urban: Collector	17100000	3899	7,919.56
Cattleman Rd	Urban: Collector	17000106	3331	1,702.06
Cattleman Rd	Urban: Collector	17000045	3494	1,875.35
Cattlemen Road	Urban: Collector	17000047	3491	3,509.53
Center Rd	Urban: Minor Arterial	17000124	3278	500.34
Center Rd	Urban: Minor Arterial	17000119	3306	4,951.20
Center Rd	Urban: Minor Arterial	17000073	3410	5,544.24
Central Ave	Urban: Local	17000010	3179	1,895.93
Central Ave	Urban: Collector	17000010	3180	1,040.31
Central Sarasota Pkw	Urban: Collector	17000543	3174	3,805.41
Choctaw Blvd	Urban: Collector	17000133	3272	1,785.97
Cocoanut Ave	Urban: Collector	17000009	3181	3,045.22
Colonia Ln	Urban: Collector	17000075	3388	1,973.23
Colonial Oaks/Honore	Urban: Collector	17000706	3928	109.40
Cr-772/Venice Ave	Urban: Principal Arterial - Other	17502000	3872	1,194.61
Cranberry Blvd	Urban: Collector	17000573	3974	5,119.04
De Leon Dr	Urban: Collector	17000542	3195	2,245.99
Dearborn St	Urban: Collector	17501001	3873	453.39

Dearborn St E	Urban: Collector	17550000	3821	1,756.54
Dearborn St W	Urban: Collector	17501000	3894	742.40
Desoto Rd	Urban: Collector	17000144	3225	2,524.56
Desoto Rd	Urban: Collector	17130000	3896	2,499.10
Desoto Rd	Urban: Minor Arterial	17130000	3897	1,798.98
Dr. MLK Jr Way	Urban: Collector	17000008	3182	252.22
Dr. MLK Jr Way	Urban: Local	17000008	3183	229.83
Dr. MLK Jr Way	Urban: Local	17000008	3184	1,584.14
Dr. MLK Jr Way/27th	Urban: Collector	17540000	3845	2,779.73
E Price Blvd	Rural: Major Collector	17000572	3975	10,604.31
E Price Blvd	Urban: Collector	17000572	3976	530.02
E Venice Ave	Urban: Principal Arterial - Other	17000118	3308	1,799.69
Elyton Dr	Urban: Collector	17000567	4002	626.23
Fruitville Rd/SR 780	Urban: Collector	17040000	3902	4,083.44
Fruitville Rd/SR 780	Rural: Major Collector	17040000	3922	14,985.45
Fruitville Rd/SR 780	Rural: Minor Collector	17040000	3925	18.18
Fruitville Road	Urban: Minor Arterial	17000011	3177	1,756.10
Gantt Rd	Urban: Collector	17000533	3204	1,853.08
Gulf Gate Dr	Urban: Collector	17000059	3463	2,905.05
Gulf Stream Ave	Urban: Collector	17000016	3153	148.81
Gulf Stream Ave	Urban: Collector	17000016	3154	502.50
Gulf Stream Ave	Urban: Local	17000016	3155	458.51
Harbor Drive N	Urban: Collector	17000081	3383	360.66
Harbor Drive S	Urban: Collector	17000081	3384	4,329.75
Havana Rd	Rural: Local	17000537	3201	1,535.76
Higel Ave	Urban: Local	17000055	3465	894.67
Honore Ave	Urban: Collector	17000538	3200	798.03
Honore Ave	Urban: Collector	17000135	3252	6,115.03
Honore Ave	Urban: Local	17000121	3281	592.93
Honore Ave	Urban: Local	17000121	3303	115.85
Honore Ave	Urban: Local	17000121	3304	256.18
Honore Ave	Urban: Collector	17000121	3305	262.19
Honore Ave	Urban: Collector	17000095	3334	3,711.34
Honore Ave	Urban: Collector	17000095	3352	1,825.22
Honore Ave	Urban: Collector	17000040	3514	956.77
Honore Ave	Urban: Local	17000040	3516	63.12
Honore Ave	Urban: Collector	17000021	3572	5,141.33
Iona Rd	Urban: Collector	17000137	3250	1,987.29
Jacaranda Blvd	Urban: Collector	17000555	3167	759.91
Jacaranda Blvd	Rural: Minor Collector	17000555	3168	697.89
Jacaranda Blvd	Urban: Minor Arterial	17000025	3569	7,912.88

Jacaranda Blvd	Urban: Principal Arterial - Other	17000025	3570	1,435.29
Jacaranda Blvd Ra	No Descript Available	17000707	3927	284.89
John Ringling Blvd	Urban: Collector	17000020	3574	324.66
La Guna Dr	Urban: Collector	17000116	3310	907.24
Laurel Rd	Urban: Collector	17000541	3197	397.93
Laurel Rd	Urban: Minor Arterial	17000094	3353	6,249.54
Laurel Rd	Urban: Minor Arterial	17000074	3407	2,788.21
Laurel Rd	Urban: Collector	17000074	3409	42.94
Lockwood Ridge Rd	Urban: Collector	17000001	3208	3,657.54
Lockwood Ridge Rd	Urban: Local	17540000	3844	2,770.10
Longwood Run Blvd	Urban: Collector	17000534	3203	1,212.73
Main St	Urban: Local	17000010	3178	251.85
Main St	Urban: Local	17040000	3923	530.19
Manasota Beach Rd	Urban: Collector	17504000	3870	3,334.96
Manasota Key Rd	Urban: Collector	17000072	3411	9,277.15
McCall Rd S	Urban: Local	17501000	3874	2,141.98
McClellan Pkwy	Urban: Local	17000032	3540	687.72
McIntosh Rd	Urban: Collector	17000554	3169	1,210.47
McIntosh Rd	Urban: Collector	17000109	3328	3,429.89
McIntosh Rd	Urban: Collector	17000108	3329	1,872.74
McIntosh Rd	Urban: Collector	17000054	3466	3,713.38
McIntosh Rd	Urban: Collector	17000048	3490	3,083.32
McIntosh Rd	Urban: Collector	17000044	3495	1,961.41
Meridian Rd	Urban: Collector	17000125	3277	236.37
Midnight Pass Rd	Urban: Collector	17080500	3901	5,787.87
Muscogee Rd	Urban: Collector	17000542	3175	136.74
Myakka Rd	Rural: Minor Collector	17040000	3926	6,762.52
Myrtle Street	Urban: Collector	17000545	3172	1,939.64
Myrtle Street	Urban: Collector	17000007	3205	2,324.48
N Beneva Rd	Urban: Collector	17000043	3512	1,871.72
N Biscayne	Urban: Minor Arterial	17000065	3434	796.25
N Biscayne Blvd	Urban: Collector	17000564	4004	452.83
N Biscayne Blvd	Urban: Minor Arterial	17000564	4005	7.29
N Cattleman Rd	Urban: Collector	17000531	3223	888.47
N Jackson Road	Rural: Minor Collector	17000063	3459	1,767.82
N Jackson Road	Urban: Collector	17000063	3460	1,176.83
N Lime Ave	Urban: Collector	17000141	3230	128.35
N River Rd	Rural: Principal Arterial - Other	17000064	3458	10,554.05
N Sumter Blvd	Urban: Minor Arterial	17000561	4008	3,871.65
N Sumter Blvd	Rural: Major Collector	17000561	4009	1,346.57
N Sumter Blvd	Urban: Collector	17000561	4010	445.46

North Port Blvd	Urban: Collector	17000568	3981	2,689.31
Ocean Blvd	Urban: Collector	17510000	3849	2,215.86
Old Bradenton Rd	Urban: Local	17507000	3869	407.78
Old Englewood Dr	Urban: Collector	17501000	3875	3,802.81
Orange Ave N	Urban: Collector	17000030	3545	3,975.52
Orange Ave S	Urban: Collector	17000030	3544	995.33
Orange Ave.	Urban: Local	17000032	3541	1,669.70
Ortiz Blvd	Urban: Collector	17000067	3413	1,333.21
Ortiz Blvd.	Urban: Local	17000065	3431	1,835.89
Ortiz Blvd.	Rural: Local	17000065	3432	77.79
Ortiz Blvd.	Urban: Collector	17000065	3433	384.01
Ortiz Blvd.	Urban: Local	17000065	3436	2,097.90
Ortiz Blvd.	Urban: Local	17000065	3437	606.25
Osprey Ave	Urban: Local	17000029	3546	4,538.25
Palmer Bl/Honore Ave	Urban: Collector	17000701	3950	126.56
Palmer Blvd	Urban: Collector	17000121	3279	1,231.44
Palmer Blvd	Urban: Local	17000121	3280	309.87
Palmer Blvd	Urban: Local	17000121	3302	75.92
Palmer Blvd	Urban: Collector	17520000	3847	5,189.15
Palmer Ranch Pkwy	Urban: Collector	17000108	3330	2,007.31
Palmer Ranch Pkwy E	Urban: Collector	17000136	3251	1,191.29
Palmer Rd	Urban: Collector	17000138	3249	1,624.40
Pan American Blvd	Urban: Collector	17000559	4028	2,151.62
Pan American Blvd	Urban: Local	17000559	4029	1,152.01
Pan American Blvd	Urban: Local	17000558	4030	304.11
Pan American Blvd	Urban: Collector	17000558	4031	706.16
Pine St	Urban: Collector	17000026	3568	2,006.59
Pineapple Ave	Urban: Local	17000013	3157	325.58
Pineapple Ave	Urban: Collector	17000013	3176	375.45
Pinebrook Rd	Urban: Collector	17000134	3253	2,620.33
Pinebrook Rd	Urban: Minor Arterial	17000134	3254	4,758.21
Ponce De Leon Blvd	Urban: Collector	17000570	3978	2,073.89
Ponce De Leon Blvd	Rural: Major Collector	17000570	3979	2,103.28
Proctor Rd	Urban: Collector	17530000	3846	8,604.86
Proctor Rd	Urban: Collector	17509000	3851	4,615.01
Raintree Blvd	Rural: Major Collector	17000578	3952	2,969.60
Raymond Rd	Urban: Local	17000024	3571	1,857.52
Richardson Rd	Urban: Local	17000538	3199	1,823.16
Richardson Rd	Urban: Local	17000040	3518	586.08
Richardson Way	Urban: Local	17000040	3517	434.90
Ringling Blvd	Urban: Collector	17000014	3156	475.28

Ringling Blvd	Urban: Collector	17000160	3224	273.34
Ringling Blvd	Urban: Collector	17000140	3247	53.78
Ringling Blvd	Urban: Local	17000027	3567	2,042.84
Rockley Blvd	Urban: Collector	17000547	3171	3,745.70
S Biscayne Dr	Urban: Collector	17000066	3414	2,953.48
S Biscayne Dr	Urban: Minor Arterial	17000564	4006	2,788.42
S Chamberlain Blvd	Urban: Collector	17000579	3951	5,050.28
S Lime Ave	Urban: Collector	17000141	3229	112.07
S River Rd	Urban: Collector	17550000	3822	884.69
S River Rd	Rural: Minor Arterial	17550000	3823	7,587.47
S River Rd	Rural: Major Collector	17550000	3824	3,643.04
S Salford Blvd	Urban: Collector	17000569	3980	4,574.67
S San Mateo Dr	Rural: Major Collector	17000575	3954	5,583.72
S Sumter Blvd	Urban: Collector	17000132	3273	693.70
S Sumter Blvd	Urban: Minor Arterial	17000560	4011	4,449.82
S Venice Blvd	Urban: Local	17000093	3354	1,050.61
S Venice Blvd	Urban: Collector	17000093	3355	1,396.92
S Yorkshire St	Rural: Major Collector	17000562	4007	4,322.39
Sarasota Square Blvd	Urban: Collector	17000109	3327	1,660.92
Sawgrass Rd/Honore	Urban: Local	17000702	3949	109.73
Sawyer Rd	Urban: Local	17509501	3850	1,854.68
School Ave	Urban: Local	17040000	3924	174.73
Shade Ave.	Urban: Local	17000052	3488	4,852.12
Shamrock Blvd	Urban: Collector	17000089	3359	3,650.75
Shamrock Dr	Urban: Collector	17000125	3276	489.25
Shamrock Dr	Urban: Collector	17000092	3356	1,530.06
Shamrock Rd	Urban: Collector	17000090	3358	3,066.97
Shore Rd	Urban: Collector	17000541	3196	2,123.35
Sidell Rd	Rural: Minor Collector	17000070	3412	1,846.22
Siesta Dr	Urban: Local	17000053	3467	1,872.98
Siesta Dr	Urban: Collector	17000053	3487	373.84
Singletary Rd	Rural: Minor Collector	17000139	3248	1,799.51
South Gate Cir	Urban: Collector	17000553	3170	467.07
South Moon Rd	Rural: Local	17000096	3333	1,980.72
Swift Rd	Urban: Collector	17542000	3843	3,736.33
Toledo Blade Blvd	Urban: Principal Arterial - Other	17000017	3152	8,429.85
Treasure Boat Way	Urban: Local	17000055	3464	578.13
Trionfo Ave	Urban: Minor Arterial	17000065	3435	659.69
Trionfo Ave	Urban: Local	17000065	3438	1,202.26
Tropicaire Blvd	Rural: Major Collector	17000574	3955	6,852.52
Tropicaire Blvd	Urban: Collector	17000574	3956	4,444.50

Tuttle Ave	Urban: Collector	17000002	3207	4,596.51
Tuttle Ave	Urban: Collector	17000130	3275	4,793.26
Tuttle Ave	Urban: Collector	17000117	3309	1,985.93
University Pkwy	Urban: Principal Arterial - Other	17192000	3895	12,573.66
Venice Ave E	Urban: Principal Arterial - Other	17000118	3307	1,823.65
Venice Ave E	Urban: Collector	17000062	3461	4,450.19
Venice Ave E	Urban: Principal Arterial - Other	17000062	3462	1,810.55
Venice Ave W	Urban: Local	17000080	3386	1,029.93
Venice Ave W	Urban: Collector	17000080	3387	655.77
Venice East Blvd	Urban: Collector	17000540	3198	4,001.18
Verna Rd	Rural: Major Collector	17508000	3868	6,498.06
W Baffin Rd	Urban: Local	17000092	3357	1,867.24
W Price Blvd	Urban: Minor Arterial	17000571	3977	4,512.52
W Price Blvd	Urban: Minor Arterial	17000557	4032	5,984.45
Webber St	Urban: Collector	17000105	3332	1,985.99
Webber St	Urban: Collector	17000034	3539	5,325.43
Webber St/Honore Ave	Urban: Local	17000705	3929	121.83
Wilkinson Rd	Urban: Local	17000049	3489	3,691.26
Winchester Blvd	Rural: Minor Arterial	17000131	3274	5,667.19

Appendix B-Affected Critical Facilities

Sarasota County Critical Facilities Subject To Sea Level Rise			
Facility Type	**Facility Name**	**Address**	**Elevation/Protection**
302 Facility	Englewood Water Osmosis Plant	Selma Avenue	5'-10' Protection Definite
302 Facility	Florentine Marble Manufacturing	University Parkway	5'-10' Protection Definite
302 Facility	Midco Petroleum- Sarasota	6th Street	5'-10' Protection Definite
302 Facility	GTE of Florida- North Port EAX Co	Tamiami Trail	5'-10' Protection Definite
302 Facility	GTE of Florida- Siesta Key EAX Co	Midnight Pass Rd.	0' To 5' Protection Not Recommended
302 Facility	Midco Petroleum- Venice	Warfield Ave.	5'-10' Protection Definite
302 Facility	City Of Venice- Island Beach WWTP	South Harbor Dr.	5'-10' Protection Definite
302 Facility	North Port Water Treatment Plant	North Port Blvd.	5'-10' Protection Definite
City Building	North Port- City Hall		5'-10' Protection Definite
City Building	North Port- Planning Department		5'-10' Protection Definite
City Building	North Port- Police Department	North Port Blvd.	5'-10' Protection Definite
Communications	North Port- Police Department	North Port Blvd.	5'-10' Protection Definite

Correctional Facility	North Port Police Department Holding Cell	North Port Blvd.	5'-10' Protection Definite
Emergency Medical Services	North Port- Fire Rescue Station 82	North Port Blvd.	5'-10' Protection Definite
Fire Station	City Of Venice Station #2-(#52)	Grove Street	5'-10' Protection Definite
Fire Station	SCFD-Station 4	Old Bradenton Rd.	5'-10' Protection Definite
Fire Station	Longboat Key Fire Department	Gulf Of Mexico Dr.	0' To 5' Protection Not Recommended
Fire Station	North Port- Fire Rescue Station 82	North Port Blvd.	5'-10' Protection Definite
Fire Station	SCFD-Station 3	N Adams Dr.	5'-10' Protection Definite
Fire Station	SCFD-Station 37-Vfd #2-(#52)	Grove Street	5'-10' Protection Definite
Fire Station	Englewood Fire Station #3-(#73)	Old Englewood Rd.	5'-10' Protection Definite
Fire Station	Longboat Key Fire Department		0' To 5' Protection Not Recommended
Fire Station	SCFD-Station 36	Tamiami Trail	5'-10' Protection Definite
Fire Station	SCFD-Station 2	Waldemere St.	5'-10' Protection Definite
Fire Station	Englewood Station #2	Placida Rd.	5'-10' Protection Definite
Fire Station	North Port- Fire Rescue Station 82	North Port Blvd.	5'-10' Protection Definite
Fire Station	SCFD-Station 36	Tamiami Trail	5'-10' Protection Definite
Government Building	Criminal Justice Center	Ringling Blvd.	0' To 5' Protection Not Recommended
Government Building	Criminal Justice Center Services Bureau	Ringling Blvd.	0' To 5' Protection Not Recommended
Government Building	Historical Resources/Chidsey Building	Plaza De Santo Domingo	0' To 5' Protection Not Recommended
Government Building	Cattlemen Road Complex, Bldg. C	Cattlemen Rd.	0' To 5' Protection Not Recommended
Government Building	Cattlemen Road Complex, Bldg. E	Cattlemen Rd.	5'-10' Protection Definite
Government Building	Central Stores	Ashton Rd.	5'-10' Protection Definite
Government Building	Knights Trail Criminal Justice Bldg	Rustic Rd.	0' To 5' Protection Not Recommended
Government Building	Medical Examiner	Hawthorne Blvd.	5'-10' Protection Definite
Government Building	Police Dept./ Town Commission Chambers	Bay Isles Rd.	0' To 5' Protection Not Recommended
Heliport	North Port- Heliport	North Port Blvd.	5'-10' Protection Definite
Hospital	Englewood Community Hospital	Medical Blvd.	5'-10' Protection Definite
Law Enforcement	Longboat Key Police Department	Bay Isles	0' To 5' Protection Not Recommended

Law Enforcement	Community Policing 2- Siesta Key	Ocean Blvd.	5'-10' Protection Definite
Law Enforcement	Community Policing 4	N Tamiami Trail	5'-10' Protection Definite
Law Enforcement	North Port- Police Department	North Port Blvd.	5'-10' Protection Definite
Maintenance Building	Facilities Maintenance- Bldg. 'A'	17th St.	5'-10' Protection Definite
Nextel Tower Sites	F0439	Midnight Pass Rd.	5'-10' Protection Definite
Potable Water	North Port Water Treatment Plant	North Port Blvd.	5'-10' Protection Definite
Public Buildings & Infrastructure	Deep Injection Well (At Ludlow Avenue)	Campbell Dr.	0' To 5' Protection Not Recommended
Public Buildings & Infrastructure	Flood Prone Area (At Eager Street)	Us 41	5'-10' Protection Definite
Public Buildings & Infrastructure	Flood Prone Area (At Grobe Street)	Us 41	5'-10' Protection Definite
Public Buildings & Infrastructure	North Port City Hall	North Port Blvd.	5'-10' Protection Definite
Public Utilities	Island Beach WWTP	1800 Harbor Dr S	5'-10' Protection Definite
Rep Loss	Historically Damaged Section Of S. R. 789	Gulf Of Mexico Dr.	0' To 5' Protection Not Recommended
School	Manatee Community College	S. Tamiami Trail	5'-10' Protection Definite
School	Ringling School Of Art And Design	Tamiami Trail	5'-10' Protection Definite
Sewage Treatment Plant	Carriage House Restaurant	N Indiana Ave.	5'-10' Protection Definite
Sewage Treatment Plant	Deer Creek MHP- And Michigan Ave	Horton Ave.	5'-10' Protection Definite
Sewage Treatment Plant	Fair Winds Condominium	Albee Rd.	0' To 5' Protection Not Recommended
Sewage Treatment Plant	Field Club	Field Rd.	5'-10' Protection Definite
Sewage Treatment Plant	Flight Deck Restaurant- At U.S. 41	Vamo Way	5'-10' Protection Definite
Sewage Treatment Plant	Lake Village Mobile Home Park	Lake N. Dr.	5'-10' Protection Definite
Sewage Treatment Plant	Lyons Cove Condo	Louella Lane	0' To 5' Protection Not Recommended
Sewage Treatment Plant	Oak Hammock Prof.Ctr.(Beneva Creek)	Bee Ridge Rd.	5'-10' Protection Definite
Sewage Treatment Plant	Our Lady Of Perpetual Help WWTP	South Moon Dr.	5'-10' Protection Definite
Sewage Treatment Plant	Palm & Pines MHP WWTP	N. Tamiami Trail	5'-10' Protection Definite

Sewage Treatment Plant	Ramblers Rest Resort WWTP	North River Rd.	0' To 5' Protection Not Recommended
Sewage Treatment Plant	Sarasota Bay MHP - R/O Plant	West Oak	5'-10' Protection Definite
Sewage Treatment Plant	Sara Mem. Hosp. 1 1/2 Mi. West Of River Rd	U.S. 41	5'-10' Protection Definite
Sewage Treatment Plant	Siesta Key Utilities Authority	Oakmont Place	5'-10' Protection Definite
Sewage Treatment Plant	Sorrento Utilities - R/O & EDR	Montana Dr.	5'-10' Protection Definite
Sewage Treatment Plant	South Gate AWWTP	Pine Valley Dr.	5'-10' Protection Definite
Sewage Treatment Plant	Southbay Utilities	Yacht Harbor Dr.	0' To 5' Protection Not Recommended
Sewage Treatment Plant	Venice Campground WWTP	East Venice Ave.	5'-10' Protection Definite
Sewage Treatment Plant	Fl0020508	Harbor Dr.	5'-10' Protection Definite
Sewage Treatment Plant	Fl0025755	Oakmont Place	5'-10' Protection Definite
Shelter	Sarasota Jewish Federation	South McIntosh Rd.	5'-10' Protection Definite
Telephone And Cellular Facility	GTE Building	Biscayne @ 41	5'-10' Protection Definite
Water Storage Facility	South Key Water Storage Facility	Gulf Of Mexico Dr.	5'-10' Protection Definite
Water Treatment	Disabled American VE		5'-10' Protection Definite
Water Treatment	Englewood Water District		5'-10' Protection Definite
Water Treatment	Kings Gate RV Park		5'-10' Protection Definite
Water Treatment	North Port Utilities		0' To 5' Protection Not Recommended
Water Treatment	Ramblers Rest Resort		5'-10' Protection Definite
Water Treatment	Spanish Lakes MHP		5'-10' Protection Definite
Water Treatment	Caspersen Beach		5'-10' Protection Definite
Water Treatment	Englewood Water District		5'-10' Protection Definite
Water Treatment	Kings Gate RV Park		5'-10' Protection Definite
Water Treatment	North Port Utilities		0' To 5' Protection Not Recommended
Water Treatment	Sarasota Co Special		5'-10' Protection Definite
Water Treatment	North Port Water Treatment Plant	North Port Blvd.	5'-10' Protection Definite
Water Treatment	North Port- City Water Plant	North Port Blvd.	5'-10' Protection Definite
Water Treatment	Siesta Key Utilities	Midnight Pass Rd.	5'-10' Protection Definite
Water Treatment	Venice Gardens Utilities		5'-10' Protection Definite

Water Treatment	Woodbridge Dr 921		5'-10' Protection Definite
Well	Well No 1	22nd St.	5'-10' Protection Definite
Well	Well No 7	12th St.	5'-10' Protection Definite