

# **Appendix I**

## **Resiliency Assessment**

## Purpose

The Districts conducted a planning level assessment to determine if fresh water supplies in the NFRWSP area are constrained or likely to become constrained due to flooding from sea level rise (SLR) throughout the planning horizon.

## Methodology

Based on guidance established by the Resilient Florida Grant Program (section 380.093, F.S.), this assessment evaluated the effects of both intermediate-low and intermediate-high SLR projections reported by the National Oceanic and Atmospheric Administration (NOAA) for the year 2050 (Sweet et al. 2017). The University of Florida (UF) GeoPlan Center developed a model to map NOAA's SLR projections by county in the state of Florida, which added the projected increase in sea levels for a range of scenarios to mean higher-high water (MHHW) conditions (UF GeoPlan Center 2020). Only coastal counties or counties with tidally influenced surface waterbodies were represented by the model, which included Clay, Duval, Flagler, Nassau, Putnam, and St. Johns counties in the NFRWSP area. The GeoPlan Center's model indicated that across the NFRWSP area, SLR projections range from 0.8 to 1.0 ft and 1.9 to 2.1 ft for the intermediate-low and intermediate-high projections, respectively. In the NFRWSP area, the intermediate-low projection represents an average of 1.0 ft of SLR, and the intermediate-high projection represents an average of 2.1 ft of SLR. This assessment used the GeoPlan Center's hydro-connectivity inundation model and excluded isolated inundated areas that were not hydrologically connected to an ocean or bay via a major waterway.

Using geographic information systems (GIS) software, the spatial extent of surface inundation for the intermediate-low and intermediate-high SLR scenarios was intersected with the locations of current water treatment plants (WTP), wastewater treatment plants (WWTP), and permitted consumptive use permit (CUP) wells to determine potential constraints posed by SLR. For any infrastructure that directly intersected with the inundation surfaces, site-specific information was gathered and summarized to assist with the development of any necessary water supply development (WSD) or water resource development (WRD) project. It should be noted, each county in the region is developing a vulnerability assessment (VA) of critical infrastructure that includes WTPs and WWTPs. These VA's will be completed in the coming years and will provide a more detailed analysis of each facility.

## Results

In the NFRWSP area, eight CUP wells may be affected by flooding due to SLR based on the intermediate-low projection of SLR. This includes one Commercial/Industrial/Institutional (CII) well in Nassau County, three Public Supply (PS) wells and one Agricultural (AG) well in Putnam County, and two CII wells and one Environmental (ENV) well in St. Johns County (Tables I1-I3; Figure I1).

Eleven additional CUP wells (for a total of 19 CUP wells) one WWTP, and two WTPs are likely to be flooded based on the intermediate-high projection of SLR. This includes one PS and one Landscape/Recreational (LR) well in Duval County, three additional CII wells in Nassau County, one additional PS well and three AG wells in Putnam County, and two LR wells in St. Johns County. Two WTPs, one in Flagler County and the other in Nassau County, and one WWTP located in Putnam County may also be flooded (Tables I1-I3; Figures I2-I7). No water supply infrastructure is potentially affected in Clay County. Site-specific information will be used to determine the need for WSD or WRD projects to mitigate or prevent adverse impacts caused by projected SLR.

Table I1. Potentially impacted wells at the intermediate-low and intermediate-high projections of SLR

County	Use Type	Status	Permit ID	Station ID
Nassau	CII	Active	50077	11379
Putnam	PS	Active	1627	13928
Putnam	PS	Active	1627	23227
Putnam	PS	Active	1627	23228
Putnam	AG	Active	7903	13557
St. Johns	CII	Active	1236	14863
St. Johns	CII	Active	1236	14862
St. Johns	ENV	Active	1358	33638

Table I2. Potentially impacted wells at the intermediate-high projection of SLR

County	Use Type	Status	Permit ID	Station ID
Duval	PS	Active	88271	6105
Duval	LR	Active	622	35357
Nassau	CII	Active	915	11393
Nassau	CII	Active	50077	11379
Nassau	CII	Active	955	34766
Nassau	CII	Active	955	11483
Putnam	PS	Active	1627	13928
Putnam	PS	Active	1627	23227
Putnam	PS	Active	1627	23228
Putnam	PS	Active	1627	23226
Putnam	AG	Active	7903	13557
Putnam	AG	Inactive	7963	13706
Putnam	AG	Inactive	7963	13705
Putnam	AG	Inactive	7963	13701
St. Johns	CII	Active	1236	14863
St. Johns	CII	Active	1236	14862
St. Johns	LR	Proposed	83274	34541
St. Johns	ENV	Active	1358	33638
St. Johns	LR	Active	38	5984

Table I3. Potentially impacted water and wastewater treatment infrastructure at the intermediate-high projections of SLR

County	Facility Type	Status	Facility ID
Flagler	WTP	Active	2184250
Nassau	WTP	Active	2454319
Putnam	WWTP	Active	FL0043176

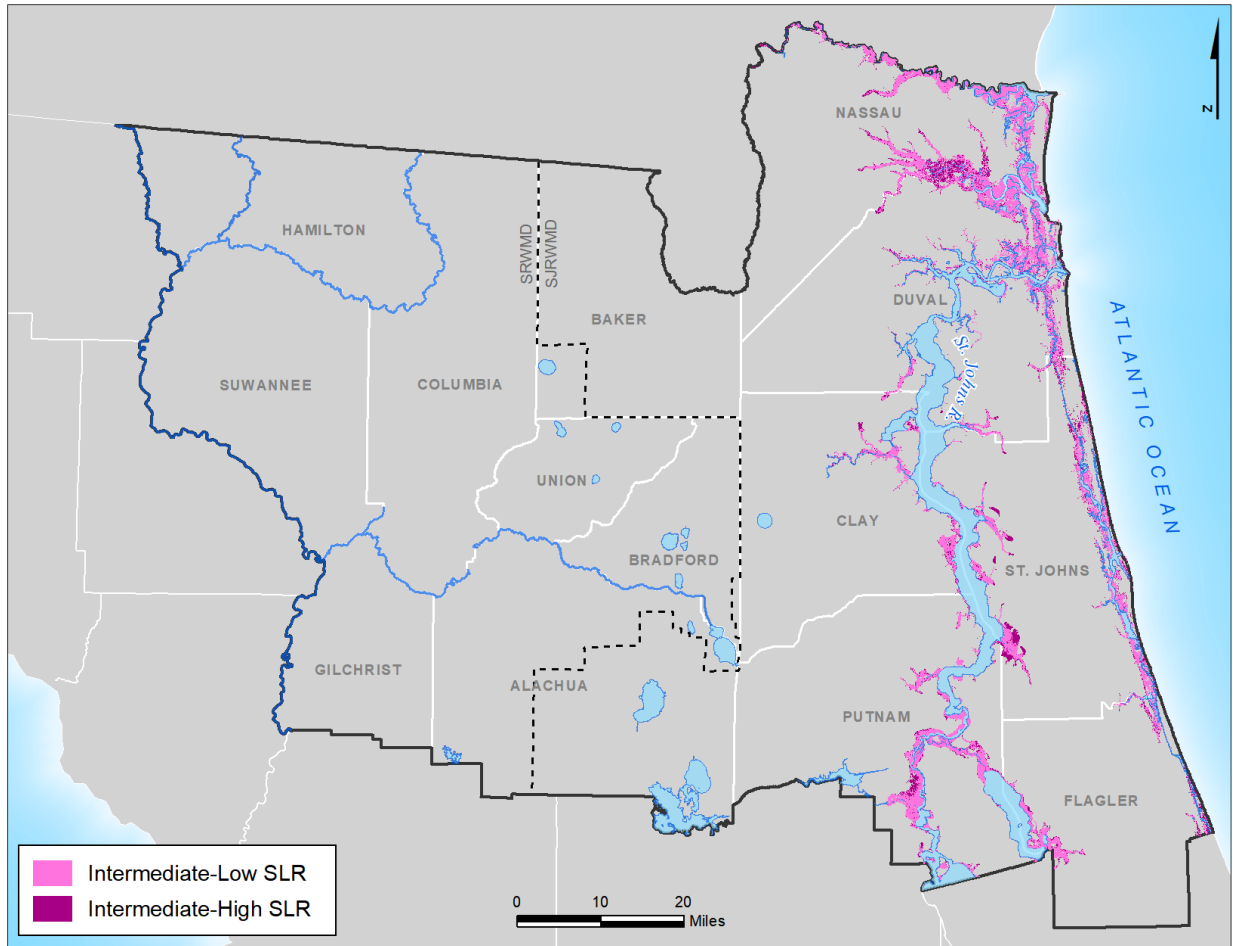


Figure I1. Map of projected SLR inundation surfaces in the NFRWSP area

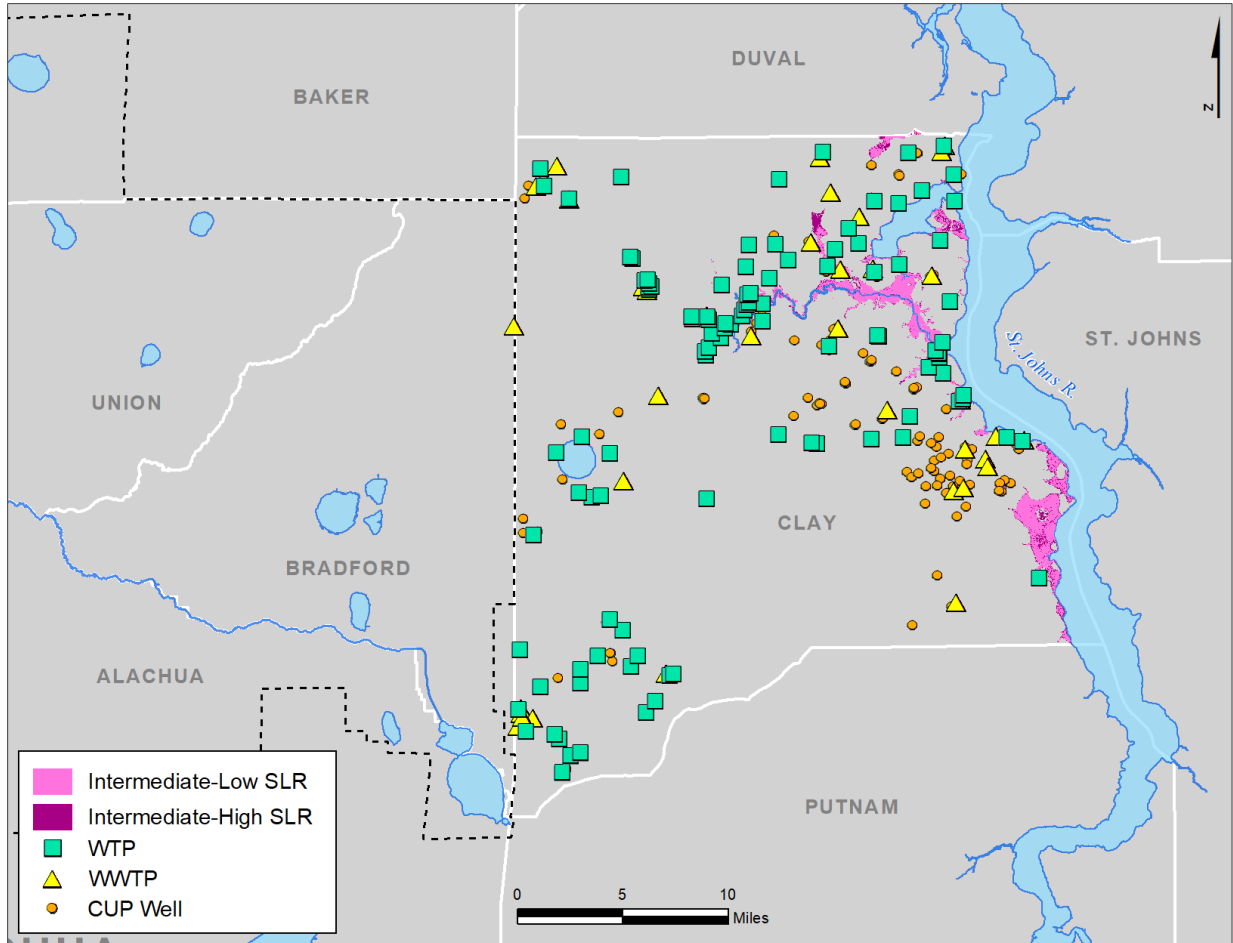


Figure I2. Map of projected SLR inundation surfaces and water supply infrastructure in Clay County

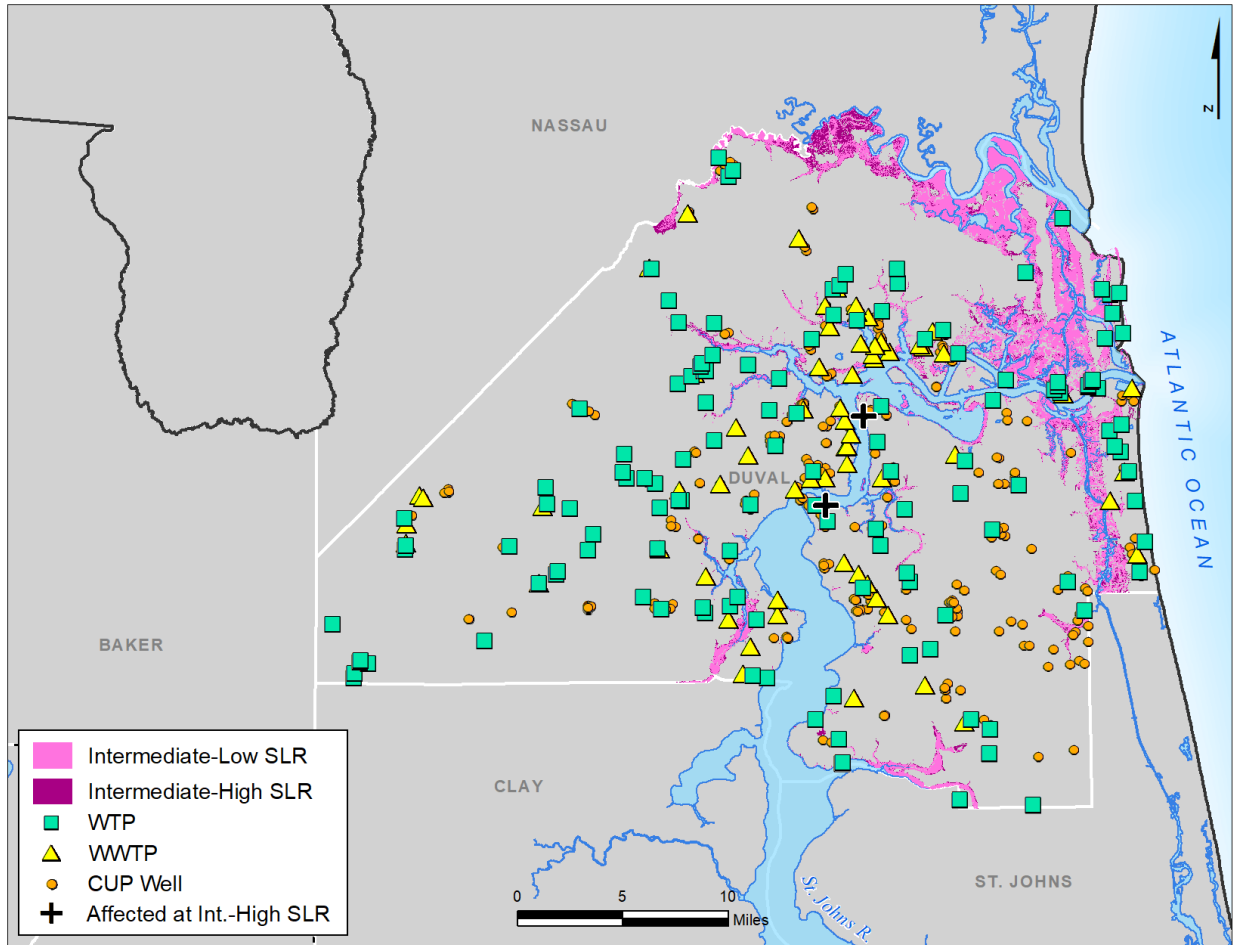


Figure I3. Map of projected SLR inundation surfaces and water supply infrastructure in Duval County

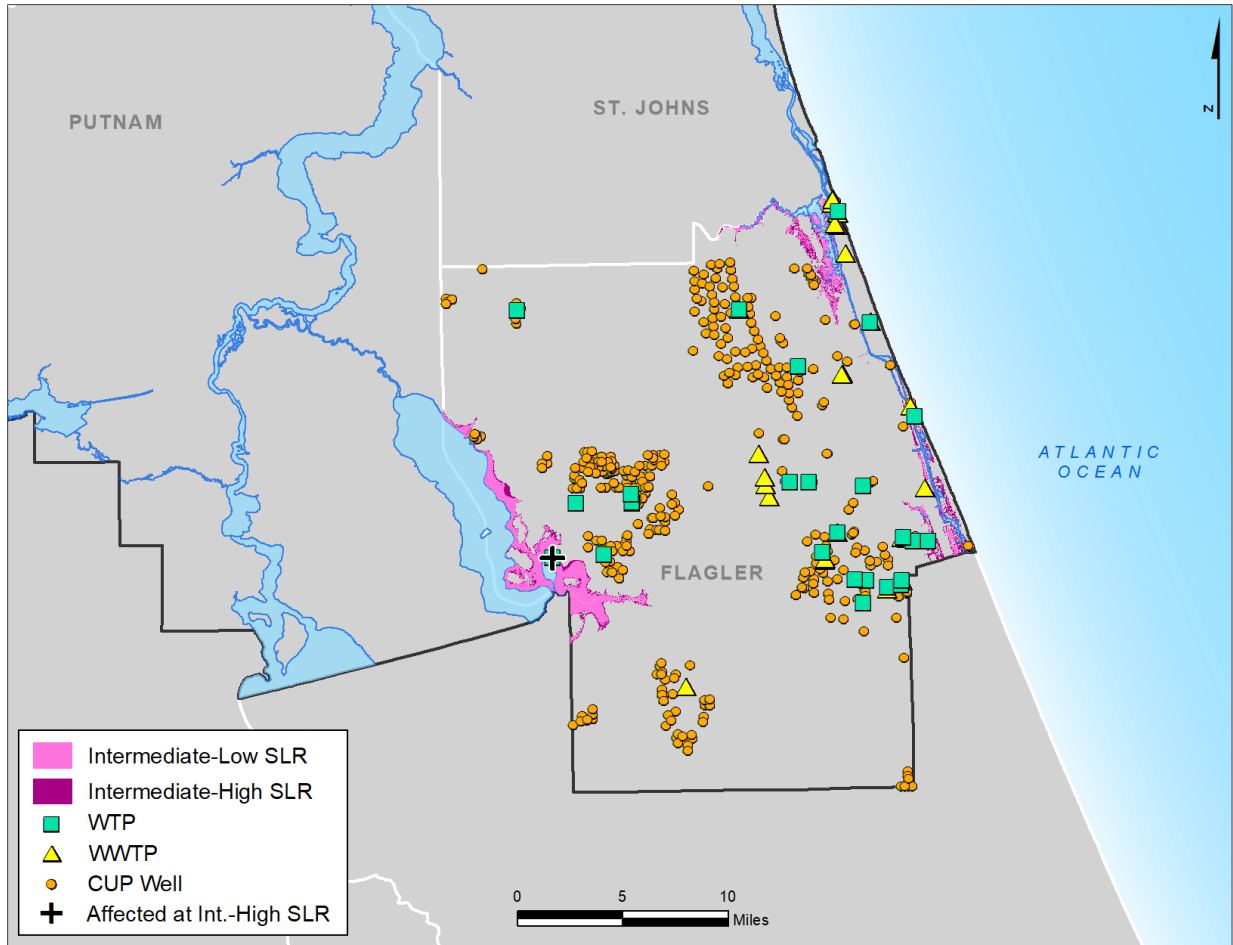


Figure I4. Map of projected SLR inundation surfaces and water supply infrastructure in Flagler County

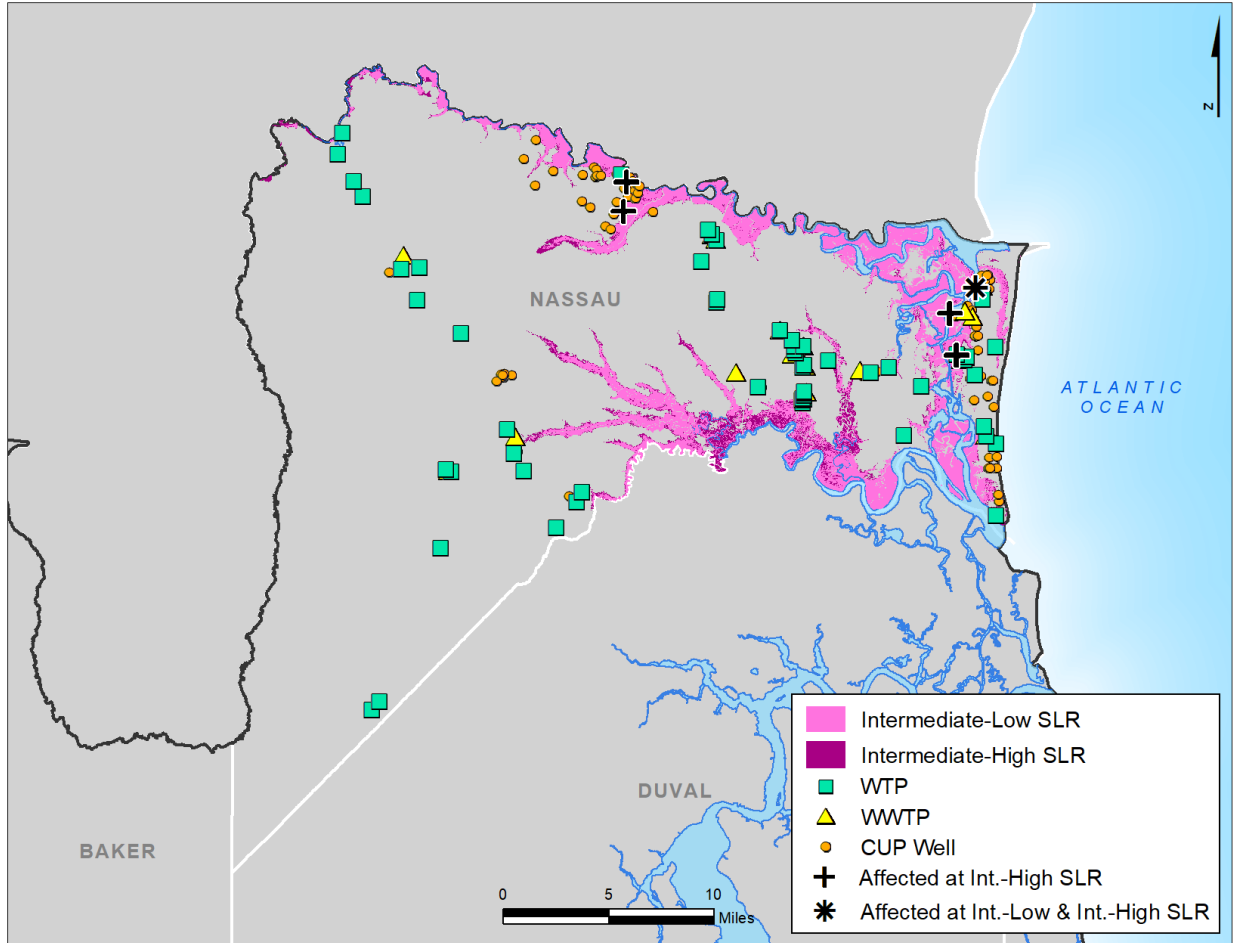


Figure I5. Map of projected SLR inundation surfaces and water supply infrastructure in Nassau County



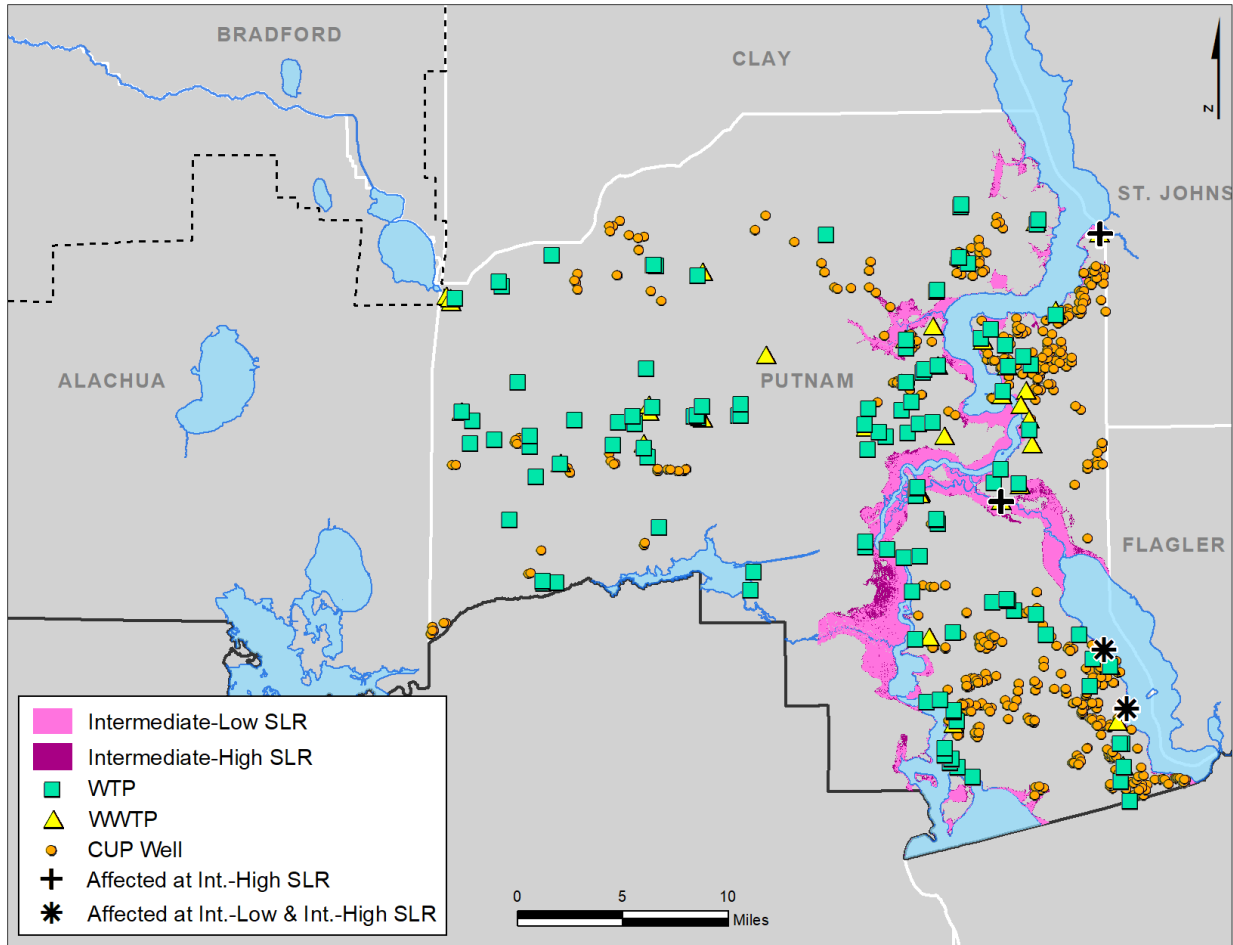


Figure I6. Map of projected SLR inundation surfaces and water supply infrastructure in Putnam County

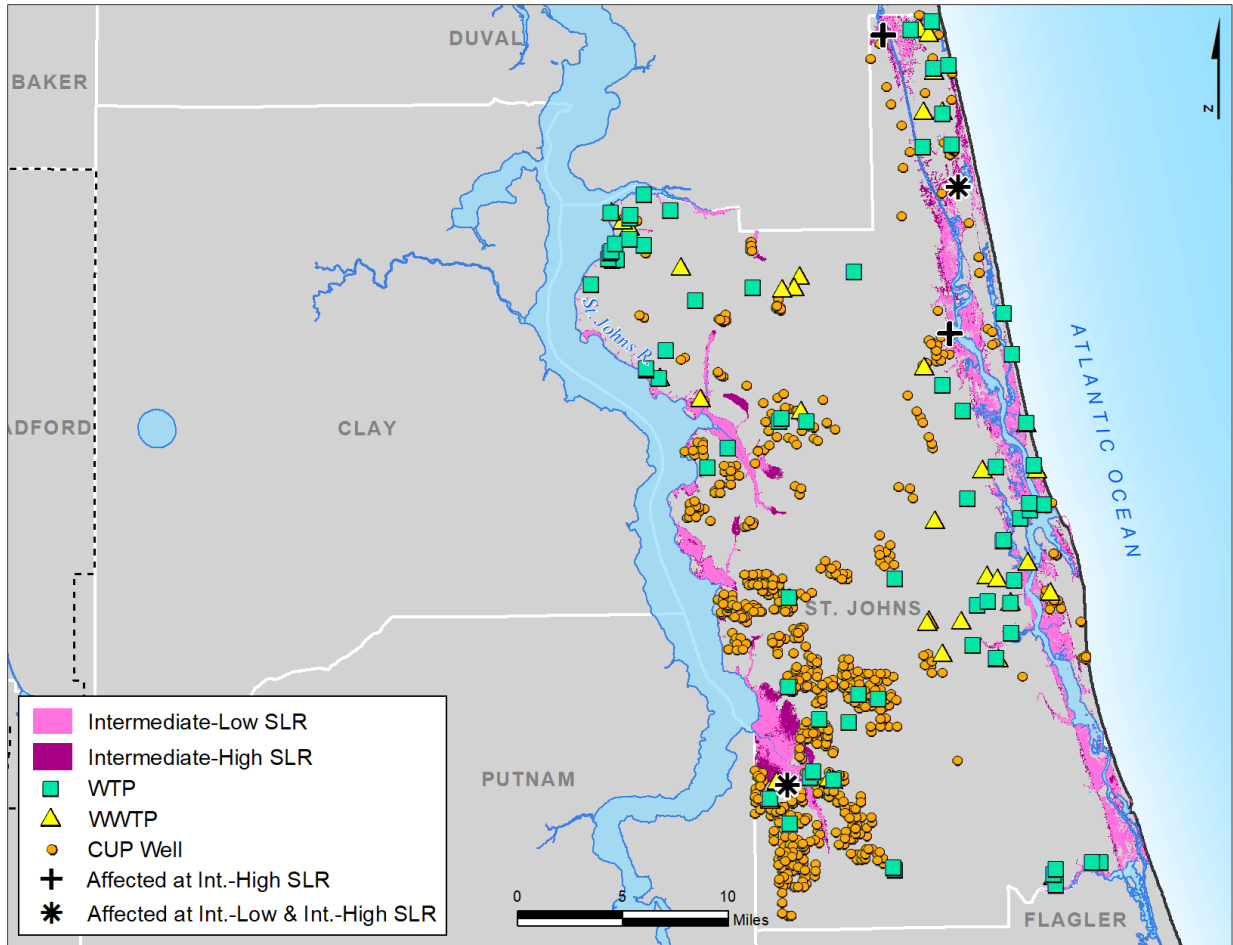


Figure 17. Map of projected SLR inundation surfaces and water supply infrastructure in St. Johns County

## References

Sweet, W. V., Kopp, R. E., Weaver, C. P., Obeysekera, J., Horton, R. M., Thieler, E. R., & Zervas, C. (2017). *Global and regional sea level rise scenarios for the United States*. National Oceanic and Atmospheric Technical Report NOS CO-OPS 083. U.S. Department of Commerce, National Ocean Service, Center for Operational Oceanographic Products and Services.

University of Florida GeoPlan Center. (2020). *Sea Level Scenario Sketch Planning Tool – Phase 4*. <https://sls.geoplan.ufl.edu/download-data/>. Accessed September 9<sup>th</sup>, 2022.