

Annual Assessments of Florida's Conservation Lands, Water Resources (Quantity and Quality), Stormwater and Wastewater Facilities, and Flooding Resiliency

January 18, 2023

Presented by:

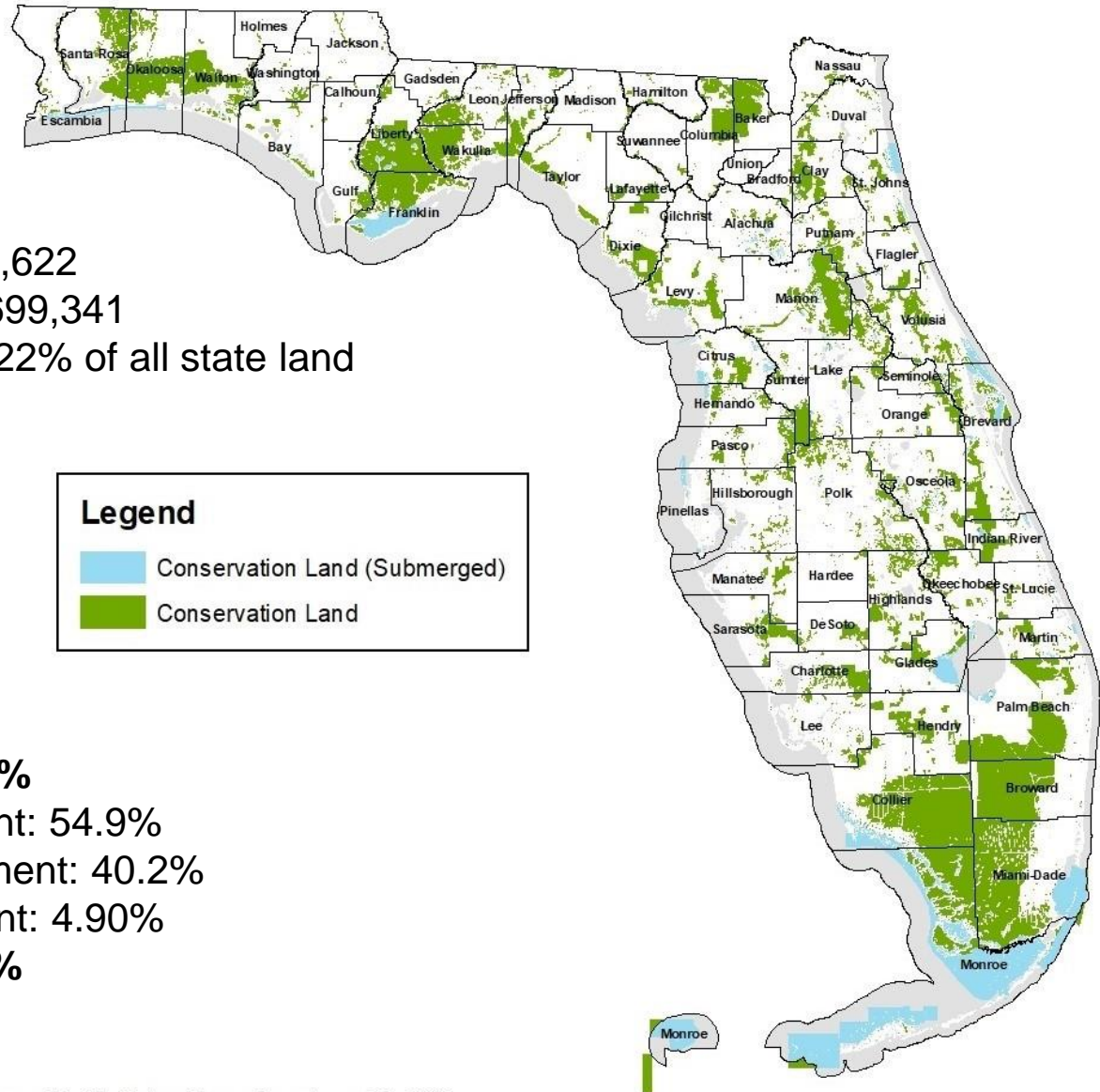


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Florida's Conservation Lands

Florida's Conservation Land...

Total Statewide Acres : 34,271,622
Total Conservation Acres: 10,699,341
Conservation Land covers 31.22% of all state land



Public Ownership: 96.9%

- State Government: 54.9%
- Federal Government: 40.2%
- Local Government: 4.90%

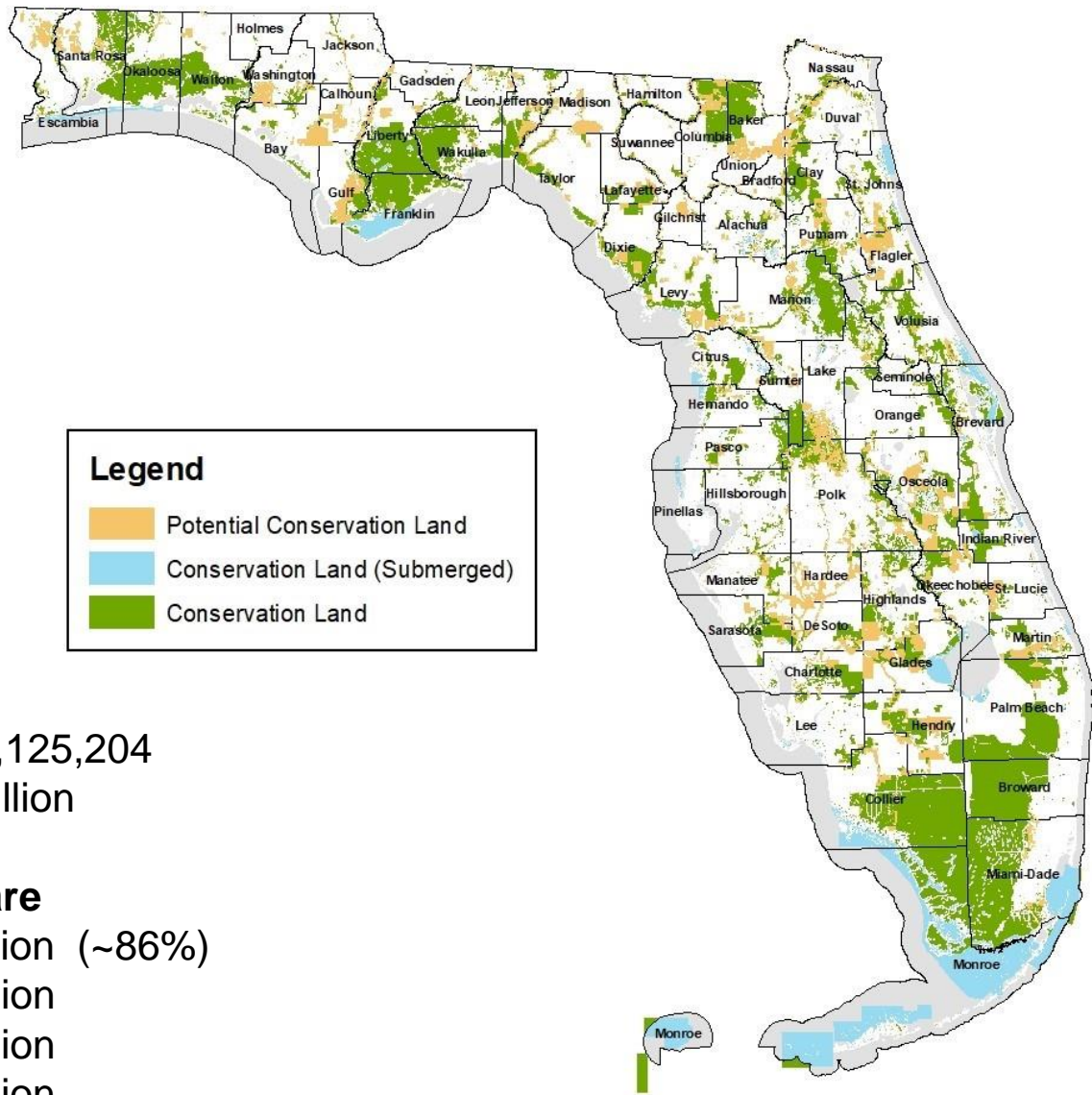
Private Ownership: 3.1%

Tax Impact of Conservation Land...

- Of the 31.22% percent of all land in the State of Florida that is currently designated for conservation purposes, eight counties are already over 50 percent (Broward, Collier, Miami-Dade, Monroe, Okaloosa, Franklin, Liberty, and Wakulla). For some of these counties, this has a significant impact on the property tax base.
- Regarding the impact on ad valorem taxation overall, roughly 1.74% of the statewide county tax base and 1.48% of the statewide school tax base have been removed from the tax roll. As a result, on net, approximately \$335 million in county taxes and \$260 million in school taxes were shifted to other property owners or lost due to lands being held in conservation in 2022.
- For five counties (Dixie, Glades, Hendry, Liberty, and Wakulla) the implied share of the tax base that is lost due to the presence of conservation lands was greater than 20% for both CTV and STV, while in twelve counties (Broward, Flagler, Lee, Manatee, Miami-Dade, Orange, Pasco, Pinellas, Polk, Seminole, Sumter, and Union) the implied base loss was less than 1% for both CTV and STV.

Future Conservation Land...

If all lands identified in plans set forth by state agencies and water management districts are acquired, the share of the state in conservation will jump to over 43%. If federal, local, and private plans were accounted for, this share would be even greater.



Future Conservation Acres: 4,125,204
Projected Total Cost: \$48.0 Billion

Projected Cost Share

State Share : \$41.3 Billion (~86%)
Federal Share: \$1.5 Billion
Regional Share: \$3.1 Billion
Local Share: \$2.1 Billion

Pace of State Acquisition...

History	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22
Land Acquisition	\$47.91	\$37.93	\$56.79	\$30.37	\$84.10	\$74.11	\$49.53	\$77.49	\$100.73	\$19.85
Land Management	\$154.43	\$159.81	\$175.90	\$195.71	\$215.68	\$226.55	\$226.35	\$220.51	\$217.69	\$229.65
Total	\$202.34	\$197.74	\$232.69	\$226.08	\$299.78	\$300.66	\$275.88	\$298.00	\$318.42	\$249.50
Forecast	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	FY 29-30	FY 30-31	FY 31-32
Land Acquisition	\$66.02	\$62.20	\$49.35	\$59.19	\$56.91	\$55.15	\$57.09	\$56.38	\$56.21	\$56.56
Land Management	\$224.74	\$226.15	\$228.97	\$226.62	\$227.25	\$227.61	\$227.16	\$227.34	\$227.37	\$227.29
Total	\$290.76	\$288.35	\$278.32	\$285.81	\$284.16	\$282.76	\$284.24	\$283.72	\$283.58	\$283.85

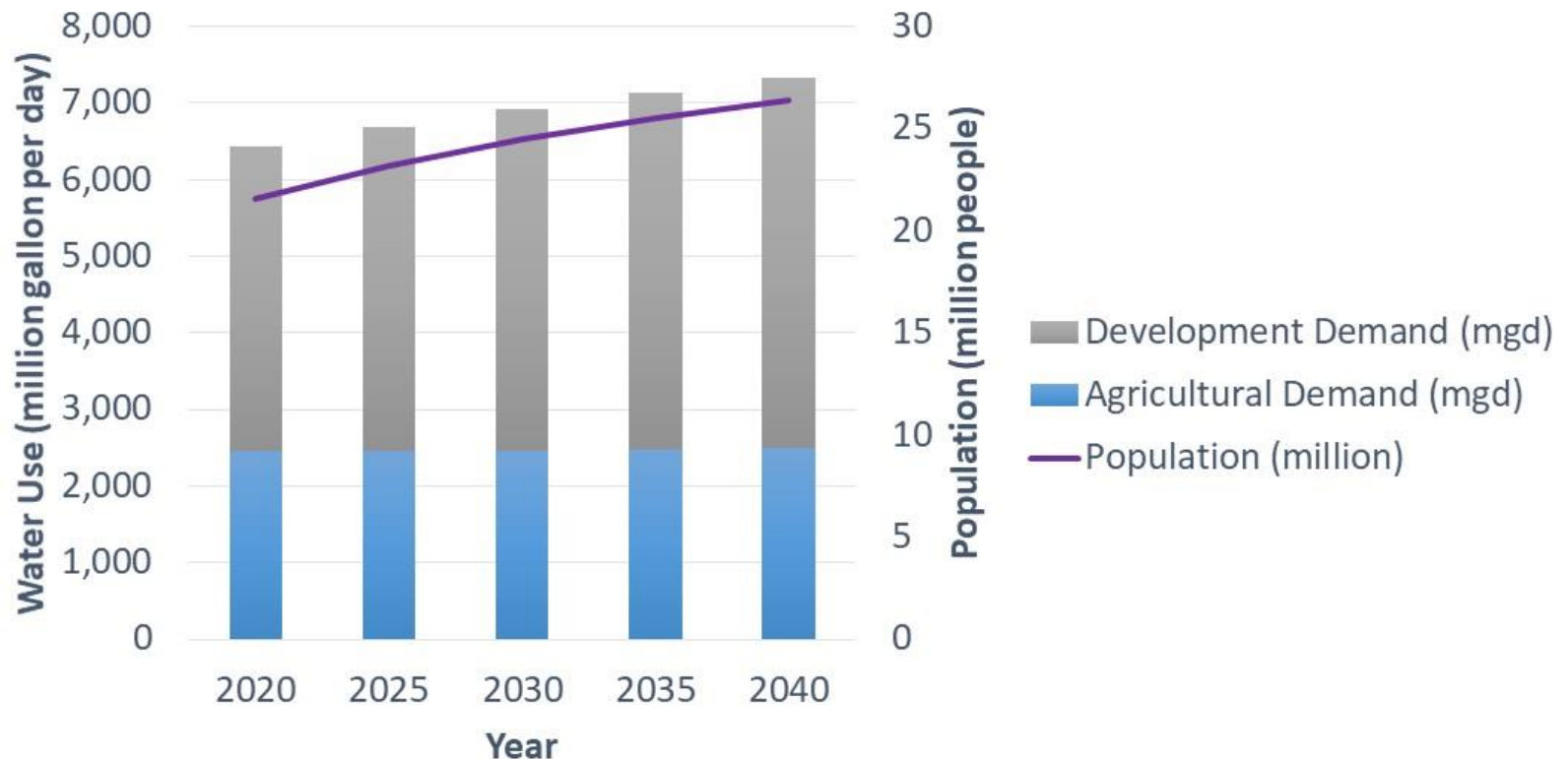
- While the appropriation was higher, the State of Florida expended about \$20.0 million on conservation land acquisition in FY 2021-22, but \$229.7 million on conservation land management. There is a long lag between authorization and expenditure for acquisition.
- At the average rate of annual state conservation land acquisition over the most recent five fiscal years, it would take nearly 746 years to purchase the state's share of identified future conservation land.
- Assuming the current level of expenditures per acre, the additional cost to manage the potential land acquisitions is projected to be \$166.2 million annually.

Time Sensitivity of Acquisition Decisions...

- There is at least some evidence that future conservation purchases could contend with the path of Florida's economic growth if left unconstrained.
- The analysis found that 44% of commercial parcels within a 2-mile buffer of Florida's future conservation purchases were either recently constructed or renovated. The expansion of commercial growth close to potential conservation land suggests that the land identified for conservation might also be particularly attractive for commercial expansion.
- This has implications for both the time sensitivity of acquisitions and the price, because commercial development is relatively unfettered while land acquisition is tied to state appropriations.
- Increased demand will also lead to higher costs. The land currently identified for potential acquisition has costs per acre that vary strongly—but, overall, is over \$11,000 per acre.

Florida's Water Demand and Supply (Quantity)

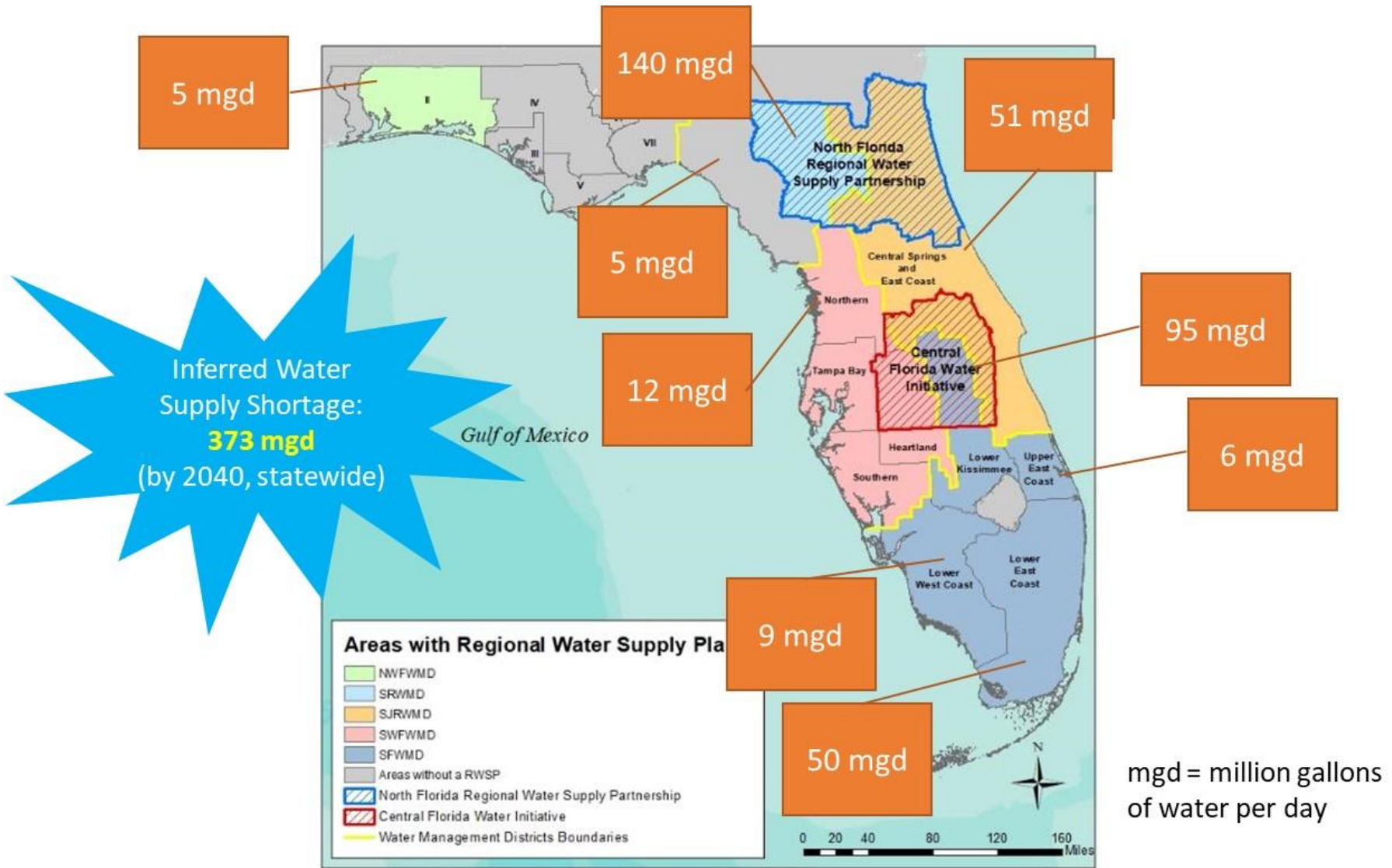
EDR's Assessment of Water Use Projections from Water Management Districts (mgd)...



- Water use is projected to grow significantly over the next decades in the current planning horizon, by 14% between now and 2040.
- Development water use (e.g., public water supply—typically utilities supplying water for household and community purposes) accounts for most of the total growth.
 - Agricultural water use is projected to increase by only 1.62%.

Inferred Water Supply Shortages...

(EDR's Calculation of WMD Data)



Analysis of the Projects in Construction, in Design, and On Hold, by Region Where Water is Needed...

Planning Regions	Inferred Supply Shortage by 2040, mgd	Water by the Projects in Design, Construction, and On Hold, mgd	Remaining Inferred Supply Shortage by 2040, mgd*
(1)	(2)	(3)	(4) = (2) – (3)
NWF – II	5.0	7.2	-
SR – West	5.2	1.1	4.1
SJR – CSEC	51.1	32.0	19.1
SW – N	11.6	3.1	8.5
SF – UEC	6.0	45.2	-
SF – LEC	49.6	0.7	48.9
SF – LWC	9.3	9.9	-
NFRWSP	140.3	9.7	130.9
CFWI	95.0	52.3	42.7
Sum of regions	373.0	160.8	254.2

Note: *Negative values of the inferred shortage are not reported.

mgd = million gallons of water per day

Upon completion, projects that are currently in design, in construction / underway, or on hold are expected to reduce the 2040 inferred water shortage from 373.0 to 254.2 million gallons of water per day.

Expenditure Forecast for the Additional Water Supply (million \$2022)...

Planning Regions	"Project Total" for the Projects in Design, Construction, and On Hold (million, \$2021)	Remaining Inferred Supply Shortage By 2040, mpg	"Project Total" to Meet Remaining Inferred Shortage (million, \$2022)		Total Forecasted Expenditure to meet 2040 Inferred Supply Shortage (million \$2022)		
			Less expensive	More expensive	Less expensive	More expensive	Average
(1)	(2)	(3)	(4)	(5)	(6)	(7)	((6) + (7)) / 2
NWF – II	\$69.4	0.0	\$0.0	\$0.0	\$69.4	\$69.4	\$69.4
SR – West	\$3.2	4.1	\$104.4	\$104.4	\$107.6	\$107.6	\$107.6
SJR – CSEC	\$179.4	19.1	\$166.7	\$182.3	\$346.0	\$361.7	\$353.9
SW – N	\$33.9	8.5	\$60.7	\$60.7	\$94.6	\$94.6	\$94.6
SF – UEC	\$151.6	0.0	\$0.0	\$0.0	\$151.6	\$151.6	\$151.6
SF – LEC	\$3.0	48.9	\$203.9	\$411.3	\$206.9	\$414.2	\$310.6
SF – LWC	\$27.4	0.0	\$0.0	\$0.0	\$27.4	\$27.4	\$27.4
NFRWSP	\$10.4	130.9	\$129.6	\$1,171.7	\$140.0	\$1,182.1	\$661.0
CFWI	\$139.4	42.7	\$87.5	\$163.5	\$227.0	\$303.0	\$265.0
Total	\$617.6	254.2	\$752.8	\$2,093.9	\$1,370.3	\$2,711.4	\$2,040.9

By 2040, the total expenditures needed to address water supply shortages (whether in design, construction, on hold or yet to be undertaken) is forecasted to range between \$1.37 billion and \$2.71 billion, with an average of \$2.04 billion.

Estimated State Share Needed to Address Inferred Water Supply Shortages (million \$2022)...

Region	Share of state's funding	Less expensive	More expensive	Average
(1)	(2)	(3)	(4)	(5)=((3)+(4))/2
NWF – II	37%	\$25.7	\$25.7	\$25.7
SR – West	26%	\$28.0	\$28.0	\$28.0
SJR – CSEC	9%	\$31.1	\$32.6	\$31.9
SW – N (excluding CFWI)	10%	\$9.5	\$9.5	\$9.5
SF – UEC	5%	\$7.6	\$7.6	\$7.6
SF – LEC	3%	\$6.2	\$12.4	\$9.3
SF – LWC	4%	\$1.1	\$1.1	\$1.1
NFRWSP	26%	\$36.4	\$307.3	\$171.9
CFWI	9%	\$84.0	\$112.1	\$98.0
Total		\$229.5	\$536.2	\$382.8

By 2040, the total state expenditures needed to address water supply shortages is forecasted to range between \$229.5 million and \$536.2 million, with an average of \$382.8 million—assuming the state's level of participation remains the same.

Projected Expenditures to Ensure that Sufficient Water Is Available for Natural Systems (million \$2022)...

Expenditure	MFL RPS projects	Reclaimed water for groundwater recharge or natural system restoration	Projects in the regions with no inferred water supply shortage	Total
Total expenditures	\$536.8	\$15.8	\$332.1	\$884.8
State share	\$78.6	\$4.7	\$48.7	\$132.0

Note: This Table does not include Everglades Restoration projects.

- Regarding the expenditures necessary to ensure that sufficient water is available for the natural systems, EDR examined projects implementing the recovery and prevention strategies for minimum flows and minimum water levels of water courses, water bodies, and aquifers, as well as additional projects expected to primarily benefit the natural systems.
- Ensuring that sufficient water is available for natural systems is projected to require an investment of \$884.8 million, with \$132.0 million (approximately 14.9 percent) being covered by state funds.

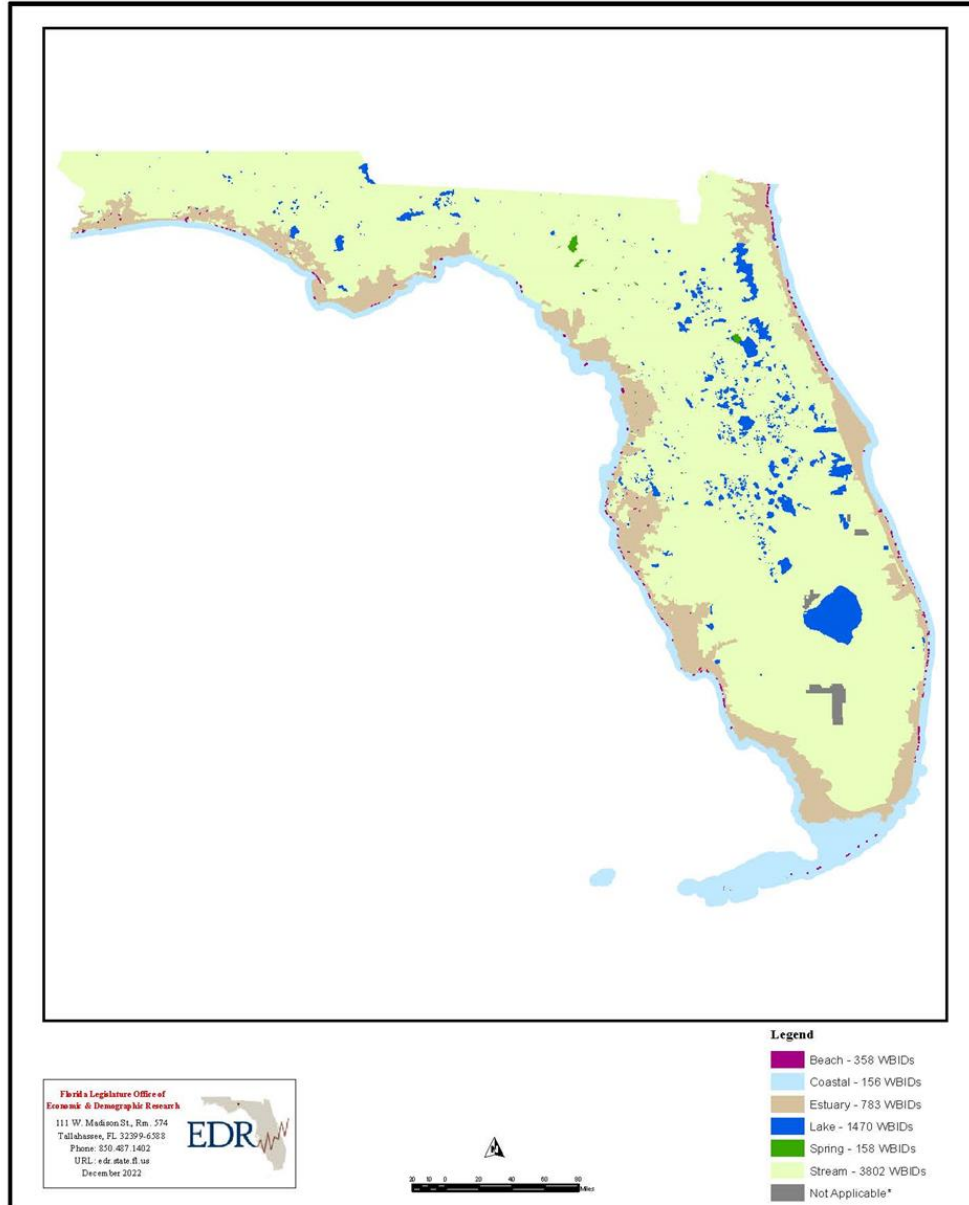
Total Projected Expenditures by 2040 for Addressing Inferred Water Supply Shortages and Natural Systems Initiatives (million \$2022)...

Expenditures	Addressing Inferred Water Supply Shortage	Providing Water for Natural Systems	Overall Total
Total expenditures	\$2,040.9	\$884.8	\$2,925.6
State share of expenditures	\$382.8	\$132.0	\$514.8

- Between the inferred water supply shortage and provision of water for the natural systems, \$2.9 billion is needed, with the state covering \$514.8 million (about 17.6% overall).
- EDR's independent pilot model projects a lower total cost (\$2.25 billion), but largely because it assumes greater conservation efforts and a lower water demand for agriculture based on the latest analysis of best management practices (FSAID-IX).

Florida's Water Quality

Basic Water Quality Framework...



DEP has delineated the state into assessment units with unique water body identification numbers (WBIDs). These WBIDs include drainage basins, lakes, lake drainage areas, springs, rivers and streams, segments of rivers and streams, coastal, bay and estuarine waters in Florida. The WBIDs are used by DEP in implementation of a number of responsibilities including impaired waters assessment, total maximum daily loads and basin management action plans. Currently, EDR can identify 6,727 WBIDs in Florida.

Total Maximum Daily Loads...

	2004 & prior	CY 2005	CY 2006	CY 2007	CY 2008	CY 2009	CY 2010	CY 2011	CY 2012	CY 2013
DO, Nutrients, Unionized Ammonia	10	1	28	8	53	46	2	-	2	37
Fecal Coliform	6	1	18	5	21	40	31	-	39	1
Iron	-	-	1	-	-	-	-	-	-	-
Lead	-	-	-	-	-	3	-	-	-	-
Mercury in Fish Tissue (statewide)	-	-	-	-	-	-	-	-	-	1
Turbidity	-	-	-	-	-	-	-	-	-	1
Total	7	2	47	13	74	89	33	-	41	40
	CY 2014	CY 2015	CY 2016	CY 2017	CY 2018	CY 2019	CY 2020	CY 2021	CY 2022	All Years
DO, Nutrients, Unionized Ammonia	10	10	4	13	17	12	9	4	8	274
Fecal Coliform	17	-	-	-	-	-	-	-	-	179
Iron	-	-	-	-	-	-	-	-	-	1
Lead	-	-	-	-	-	-	-	-	-	3
Mercury in Fish Tissue (statewide)	-	-	-	-	-	-	-	-	-	1
Turbidity	-	-	-	-	-	-	-	-	-	1
Total	27	10	4	13	17	12	9	4	8	459

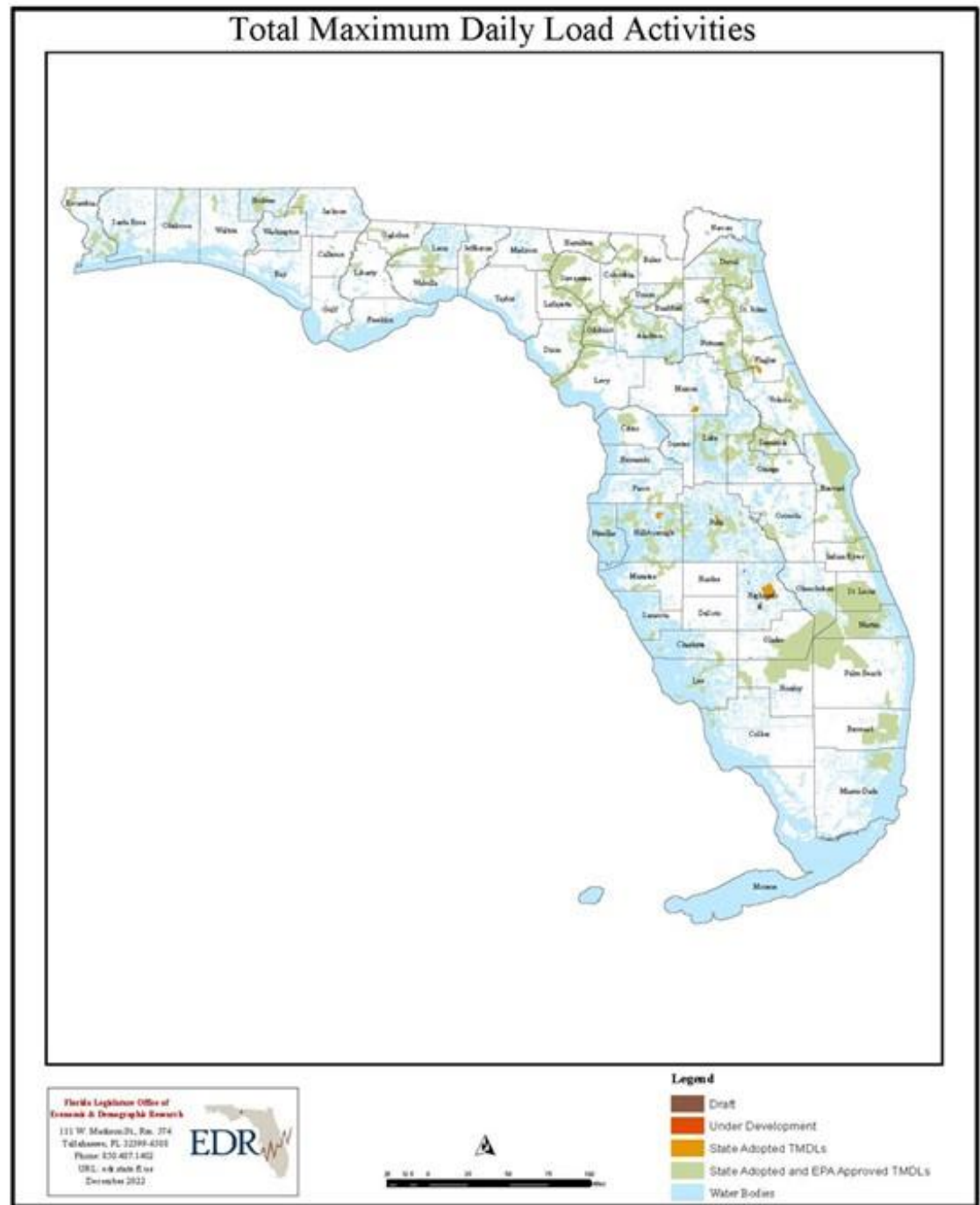
As the federal Clean Water Act is implemented by Florida, the cornerstone of water quality restoration is the development and implementation of total maximum daily loads (TMDLs) for waterbodies or waterbody segments that do not meet delineated water quality standards. A TMDL is a water quality restoration goal that represents the maximum amount of a specific pollutant that a waterbody or waterbody segment can assimilate from all sources while still maintaining applicable water quality standards. Through December 31, 2022, Florida had 459 TMDLs.

TMDL Status...

Based on DEP's statewide Comprehensive Verified List of impaired waters, which includes the most recent updates published through June 11, 2022, there are approximately 1,846 waterbody-parameter combinations in Florida that are listed as impaired and require a TMDL.

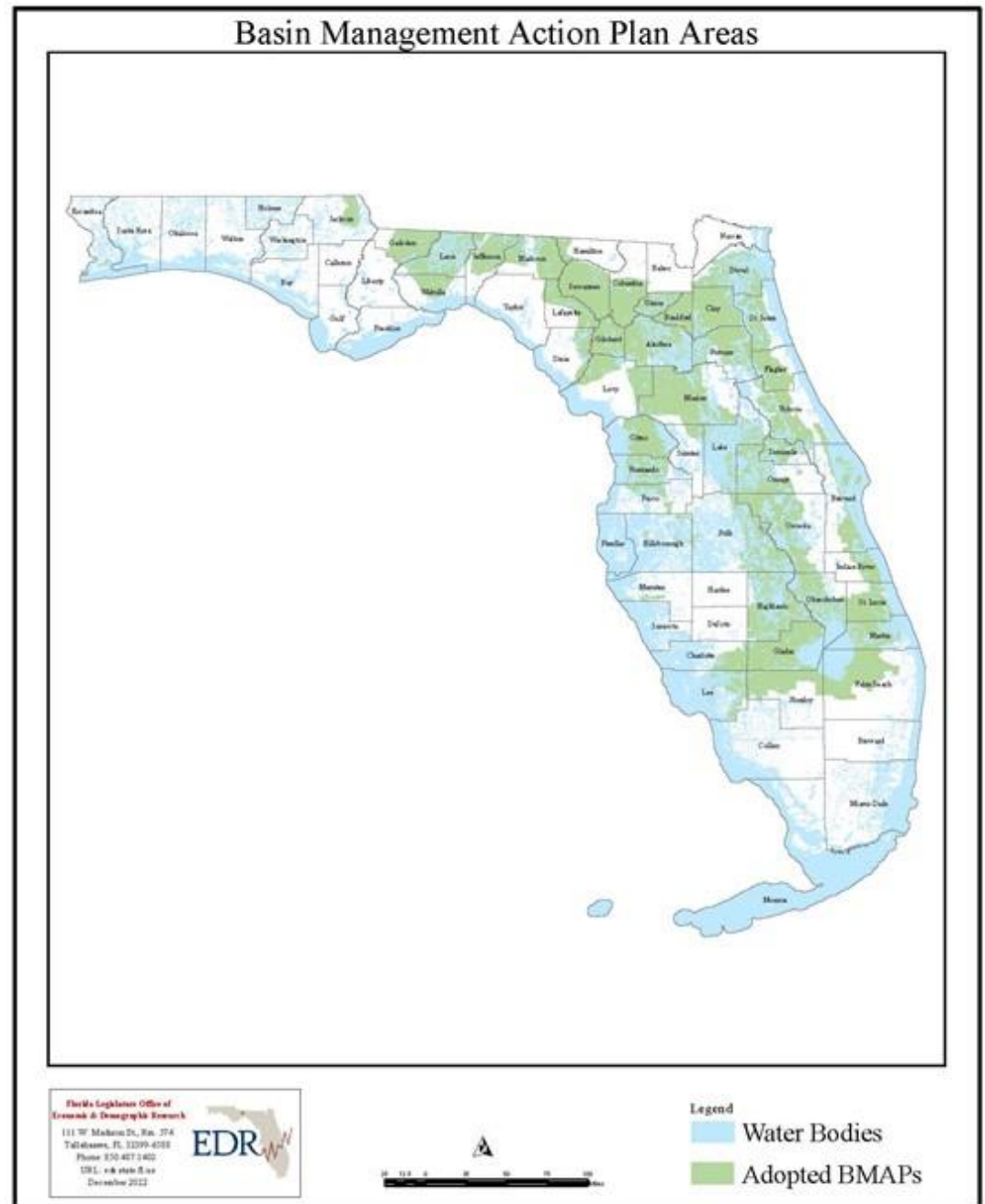
After analyzing potential combinations, EDR finds that 1,428 TMDLs could proceed through the development stage if alternative restoration plans are not undertaken.

Over the next 10 years, this is a state investment of \$318.7 million for development costs.



Basin Management Action Plans...

In 2005, the Florida Watershed Restoration Act was amended to authorize DEP to adopt basin management action plans (BMAPs), which are water quality restoration plans that are unique to Florida. The BMAPs provide the state's primary mechanism and blueprint for restoring impaired waters by meeting TMDLs. The plans are intended to integrate all of the management strategies committed to by state, regional, local, and private stakeholders to reduce pollutant sources, and thereby achieve water quality standards for the pollutants causing impairment. BMAPs are adopted by DEP secretarial order and are enforceable by law. Currently, there are 33 BMAPs, the majority of which address nutrient impairments.



Forecast of BMAP Expenditures (\$ millions)...

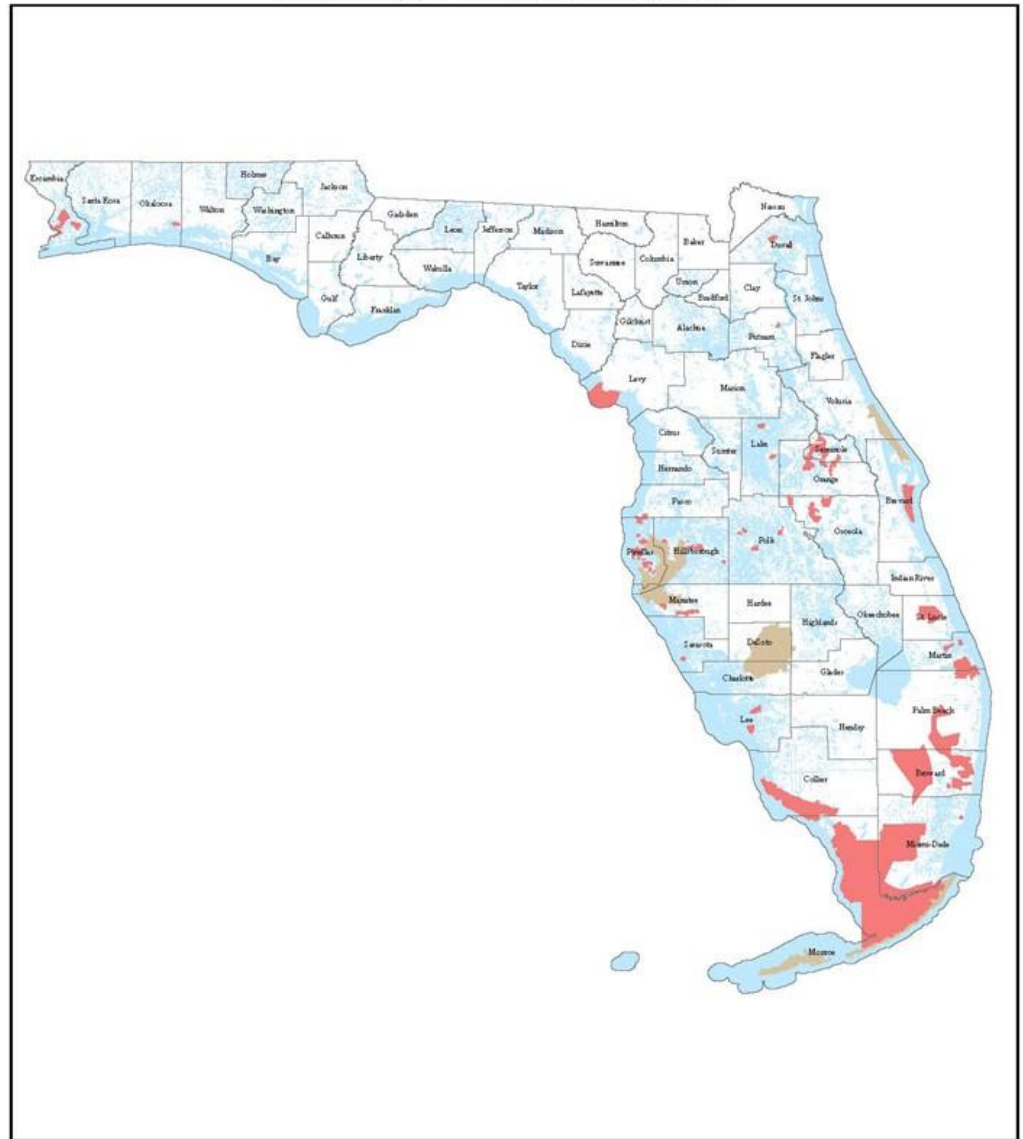
	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	FY 29-30	FY 30-31	FY 31-32
Local	\$305.89	\$298.59	\$289.96	\$235.66	\$235.66	\$127.92	\$127.79	\$127.79	\$124.27	\$114.22
Regional	\$171.71	\$167.62	\$162.77	\$132.29	\$132.29	\$71.81	\$71.73	\$71.73	\$69.76	\$64.12
State	\$768.61	\$750.29	\$728.59	\$592.16	\$592.16	\$321.43	\$321.10	\$321.10	\$312.26	\$287.01
Federal	\$204.59	\$199.71	\$193.94	\$157.62	\$157.62	\$85.56	\$85.47	\$85.47	\$83.12	\$76.40
Private	\$2.55	\$2.49	\$2.42	\$1.97	\$1.97	\$1.07	\$1.07	\$1.07	\$1.04	\$0.95
Total	\$1,453.35	\$1,418.70	\$1,377.66	\$1,119.71	\$1,119.71	\$607.78	\$607.15	\$607.15	\$590.45	\$542.71
	FY 32-33	FY 33-34	FY 34-35	FY 35-36	FY 36-37	FY 37-38	FY 38-39	FY 39-40	Total	
Local	\$112.45	\$92.65	\$92.65	\$38.84	\$38.84	\$38.84	\$19.03	\$19.03	\$2,440.07	
Regional	\$63.13	\$52.01	\$52.01	\$21.80	\$21.80	\$21.80	\$10.68	\$10.68	\$1,369.76	
State	\$282.57	\$232.81	\$232.81	\$97.59	\$97.59	\$97.59	\$47.81	\$47.81	\$6,131.29	
Federal	\$75.21	\$61.97	\$61.97	\$25.98	\$25.98	\$25.98	\$12.73	\$12.73	\$1,632.03	
Private	\$0.94	\$0.77	\$0.77	\$0.32	\$0.32	\$0.32	\$0.16	\$0.16	\$20.35	
Total	\$534.30	\$440.21	\$440.21	\$184.53	\$184.53	\$184.53	\$90.40	\$90.40	\$11,593.50	

EDR forecasts that it will cost nearly \$11.6 billion to comply with laws governing BMAP initiatives between FY 2022-23 and FY 2039-40, assuming all projected TMDLs proceed to this stage. Of the total, 53% or \$6.1 billion will be a state responsibility. Overall, this is a 10% increase from the previous edition—the primary reasons being inflation and the incorporation of three additional BMAPs into the analysis.

Alternative Restoration Plans...

The EPA recognizes that under certain circumstances, the TMDL development approach required under the CWA may not be the most efficient and effective strategy to attain water quality standards. In Florida, DEP encourages local stakeholders to develop and implement water quality restoration activities as soon as practicable, which may obviate the need to use limited state resources to develop TMDLs and implement BMAPs. Currently, Florida has five Reasonable Assurance Plans (4b) and 135 waterbodies listed as 4e (18 more than last report). The primary difference between the 4b and 4e plans concerns the level of certainty regarding when applicable water quality standards will be attained, with 4b plans having greater certainty that reasonable progress will be made by the next assessment cycle for that basin. Detailed project data is not currently accessible for these plans.

Alternative Restoration Plans



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December 2022



Legend

- Reasonable Assurance Plan
- Pollutant Reduction Plan
- Water Bodies

Florida's Stormwater and Wastewater Needs

Stormwater Needs Analysis...

- Section 403.9302, Florida Statutes, states “(1) The Legislature intends for each county, municipality, or special district providing a stormwater management program or stormwater management system to create a 20-year needs analysis.”
- In the sample template published by the Office of Economic and Demographic Research (EDR), local governments were asked to answer a number of questions about their priorities, stormwater management programs, and expenditures. The first analyses were due during the Summer of 2022.
- Based on the submissions from counties, municipalities, and independent special districts, EDR is now able to develop a statewide picture which includes data from 832 separate needs analyses. Even though the majority of needs analyses were submitted by independent special districts (526 are included in analysis), the vast majority of management activities and expenditures belong to counties and municipalities (from 50 and 256 plans, respectively).

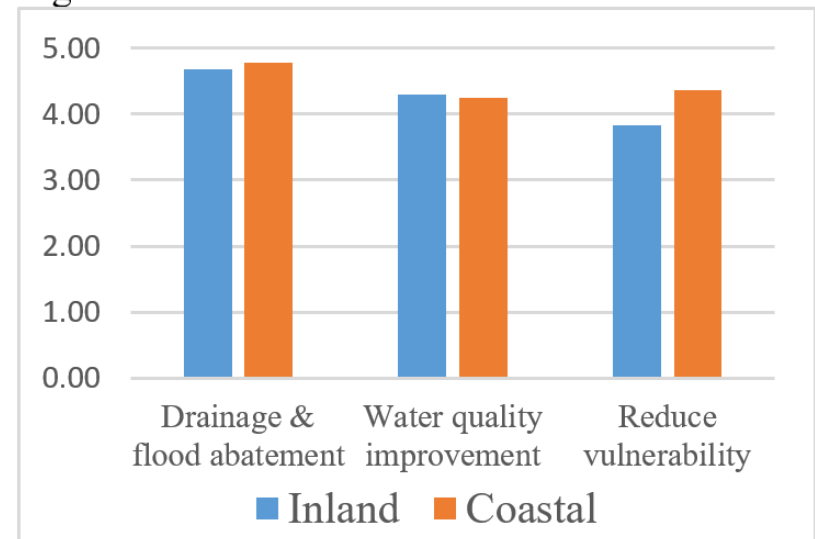
Stormwater Goals...

Stormwater goals are not always clear cut. When asked to indicate the relative importance of three broad goals that could guide the local government’s stormwater management program, independent special districts consistently rated all three goals as slightly less important than counties or municipalities. Table 1 shows the average score on a scale of 1 to 5 (with 5 the highest) assigned to each goal by government type. Figure 1 excludes special districts and shows the policy separation introduced by the presence of a coastline. Local governments in coastal counties are more likely to be concerned with climate-related vulnerability reduction and general flood control, while inland governments are more likely to focus on water quality.

Table 1.

Goal	County	Municipality	District
Drainage & flood abatement (such as flooding events associated with rainfall and hurricanes)	4.91	4.728	4.725
Water quality improvement (TMDL Process / BMAPs / other)	4.20	4.27	4.15
Reduce vulnerability to adverse impacts from flooding related to increases in frequency and duration of rainfall events, storm surge and sea level rise	4.29	4.21	3.36

Figure 1.



Stormwater Activities...

As regards discrete stormwater management activities (such as erosion control programs for new construction, public involvement, ordinance compliance programs, and mapping systems), local governments in coastal counties were far more likely to have active programs in place in general and across all types of activities. They are also more likely to report having an asset management system for their stormwater infrastructure (51% coastal counties, vs. 44% inland counties).

The aggregated inventory in the table below shows that the state has over 41,000 miles of buried culvert and nearly 65,000 miles of open ditches. Segregated by Water Management District, the statewide inventory shows that stormwater infrastructure is concentrated in the southern portion of the state, much like Florida's population.

Asset	NWFWMD	SRWMD	SJRWMD	SFWMD	SWFWMD	Statewide
Estimated miles of buried culvert	1,739	273	11,143	18,666	9,282	41,104
Estimated miles of open ditches/conveyances (lined and unlined)	7,635	4,251	15,392	20,000	17,690	64,969
Estimated number of storage or treatment basins (i.e., wet or dry ponds)	3,315	365	11,620	13,060	19,090	47,449
Estimated number of gross pollutant separators including engineered sediment traps	663	20	973	6,191	1,240	9,086
Number of chemical treatment systems	2	0	10	15	39	65
Number of stormwater pump stations	42	12	173	322	182	730
Number of dynamic water level control structures	22	1	4,008	2,697	4,507	11,234
Number of stormwater treatment wetland systems	4	1	9	101	135	249

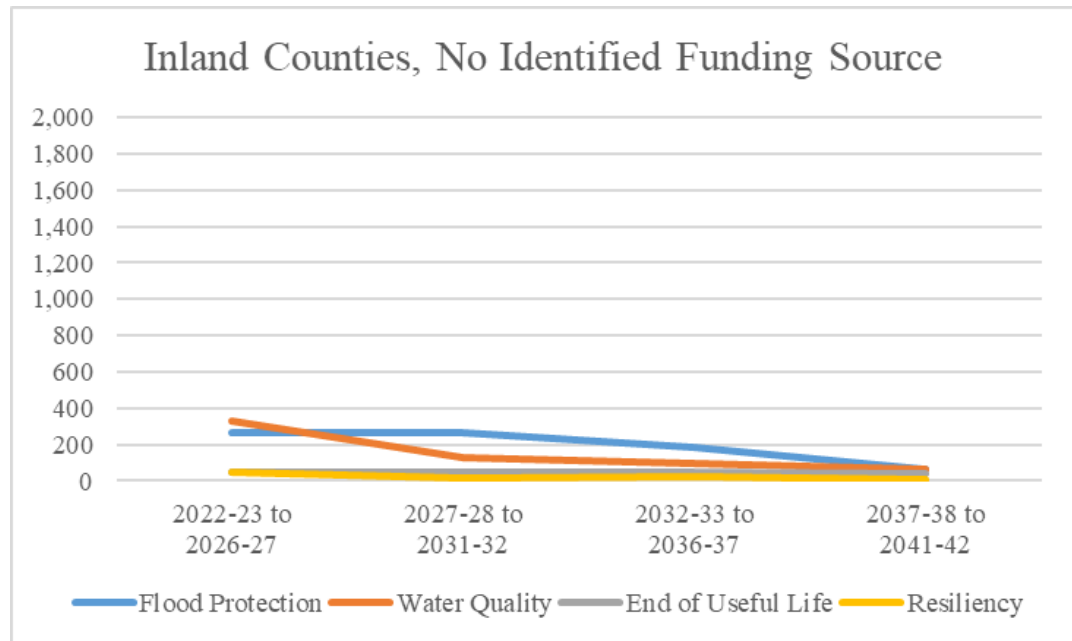
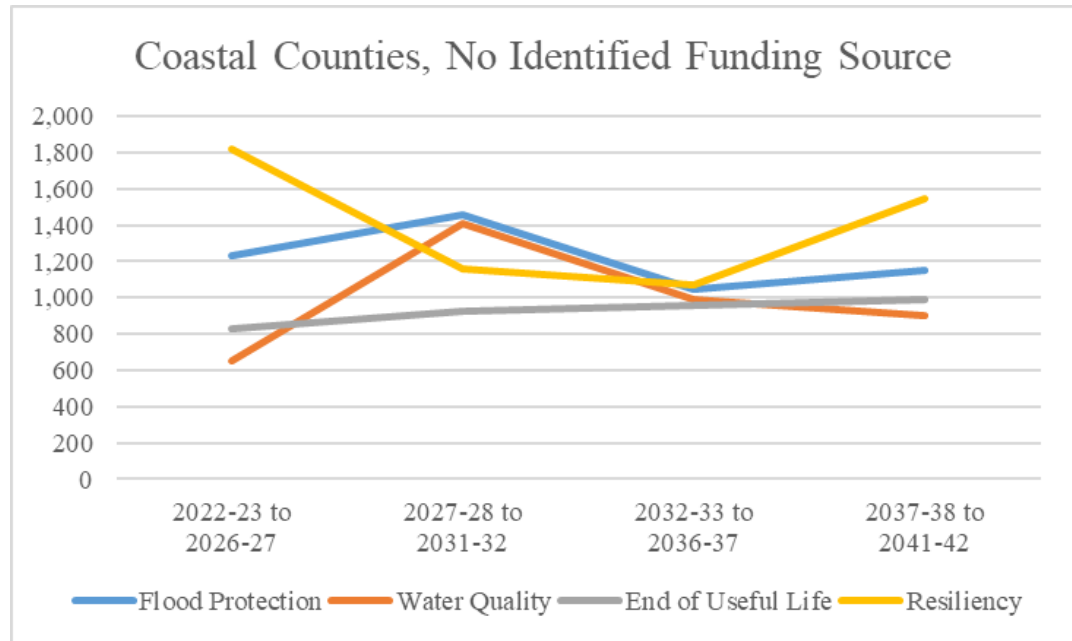
Stormwater Expenditures...

Future expenditures were reported in 5-year increments by project, with a specified project type and whether that project currently has a committed funding source or no identified funding source (i.e., the local government would need to partially or completely pay for the project with outside funding that has yet to be identified). The tables below show, in billions, total projected expenditures based on the county location and project type.

Project Type	Coastal	%	Inland	%	All	%
Flood Protection	\$7.7	30.8%	\$1.1	42.7%	\$8.7	31.9%
Water Quality	\$4.9	19.9%	\$1.0	38.8%	\$5.9	21.6%
End of Useful Life	\$4.8	19.3%	\$0.3	13.2%	\$5.1	18.8%
Resiliency	\$7.4	30.0%	\$0.1	5.3%	\$7.6	27.7%
TOTAL	\$24.9	100.0%	\$2.5	100.0%	\$27.4	100.0%
Share of Total	90.9%		9.1%		100.0%	

Funding Source	2022-23 to 2026-27	2027-28 to 2031-32	2032-33 to 2036-37	2037-38 to 2041-42	All	%
Committed Funding Source	\$4.4	\$1.4	\$1.0	\$1.0	\$7.9	28.8%
No Identified Funding Source	\$5.1	\$5.4	\$4.3	\$4.7	\$19.5	71.2%
TOTAL	\$9.5	\$6.8	\$5.4	\$5.7	\$27.4	100%

Stormwater Needs Least Likely To Have Known Funding Sources...



Wastewater Needs Analysis...

- Section 403.9301, Florida Statutes, states “(1) The Legislature intends for each county, municipality, or special district providing wastewater services to create a 20-year needs analysis.”
- In the sample template published by the Office of Economic and Demographic Research (EDR), local governments were asked to answer a number of questions about their infrastructure, treatment systems, plans, and expenditures. The first analyses were due during the Summer of 2022.
- Based on the submissions from counties, municipalities, and independent special districts, EDR is now able to develop a statewide picture which includes data from 276 separate needs analyses. Few independent special districts submitted needs analyses (40). The majority of needs analyses were submitted by municipalities (200).
- While only 36 needs analyses were submitted by counties, those counties directly provided wastewater services to over 40% of the population reported in the analyses.

Wastewater Activities...

The aggregated inventories in the tables to the right are divided by DEP district. The first table shows that the state has over 50,000 lift stations, which are typically used in conjunction with gravity mains to ensure wastewater flows towards the treatment facility. The second table aggregates the linear feet of wastewater mains, totaling over 74,000 miles across the state. Compared with the estimated population served in each district, local governments in DEP's Southwest District have more linear feet of wastewater mains than other areas of the state, while the local governments in the Southeast District report a much lower amount.

DEP District	Lift Stations		Manholes	Valves
	Utility Owned	Privately Owned		
Northeast District	3,156	4,073	130,970	21,407
Northwest District	1,453	1,963	66,574	7,781
Central District	5,601	3,496	218,892	15,058
Southeast District	7,245	3,071	324,090	43,545
South District	6,533	2,640	113,908	19,091
Southwest District	5,641	5,888	253,352	29,337
Multiple Districts	143	0	1,624	97
Statewide	29,772	21,131	1,109,410	136,315

DEP District	Linear Feet of WW Mains			Miles
	Gravity Mains	Force Mains	Total	Total
Northeast District	27,713,138	13,168,017	40,881,155	7,743
Northwest District	15,762,252	6,095,674	21,857,926	4,140
Central District	49,752,583	19,365,266	69,117,849	13,091
Southeast District	69,376,032	25,769,913	95,145,945	18,020
South District	27,982,261	13,841,319	41,823,580	7,921
Southwest District	102,897,014	20,823,463	123,720,477	23,432
Multiple Districts	247,078	140,048	387,126	73
Statewide	293,730,358	99,203,701	392,934,059	74,419

Wastewater Highlights...

Not every utility that collects wastewater has the ability to treat wastewater. Collection-only utilities are wholesale customers of (typically) larger utilities. Of the 276 needs analyses included in EDR's dataset, 86 belong to utilities that only collect wastewater and 52 belong to utilities that treat wastewater collected by other utilities. Local governments reported operating 370 wastewater treatment facilities, with an additional 10 under construction.

When asked about “green infrastructure best management practices,” an overwhelming majority of local governments currently engage in, and plan on continuing to engage in, lining existing wastewater mains. Lining is generally faster and less expensive than replacement, and requires less of an interruption for customers (road closures, etc.).

Additionally, 64.5 percent of respondents reported they reuse reclaimed water. Twenty-one local governments reported that they do not reuse reclaimed water now but they plan to do so, and five reported that they plan to stop engaging in the practice. The table below shows the total number of local governments which currently engage in a best management practice and how many reported that they plan to engage in that practice (but do not currently do so).

Green Infrastructure Best Management Practice	Currently in Use	Planned (Not current)
Lining	205	15
Co-generation (energy)	10	8
Reuse of reclaimed water	166	21
Hydrogen sulfide recovery/use	9	2
Beneficial use of biosolids	89	21

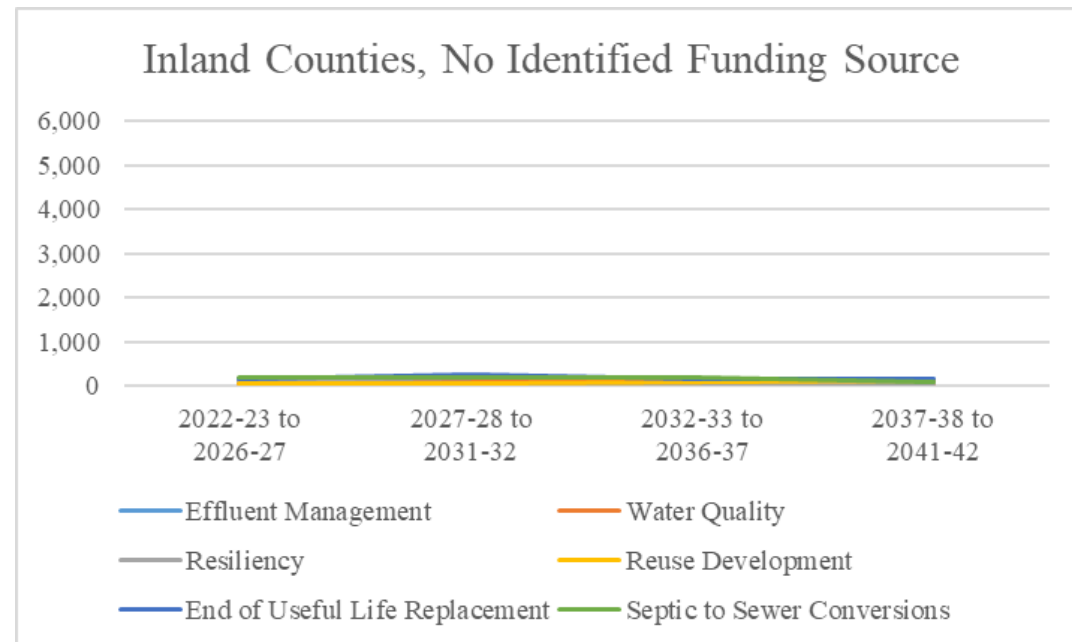
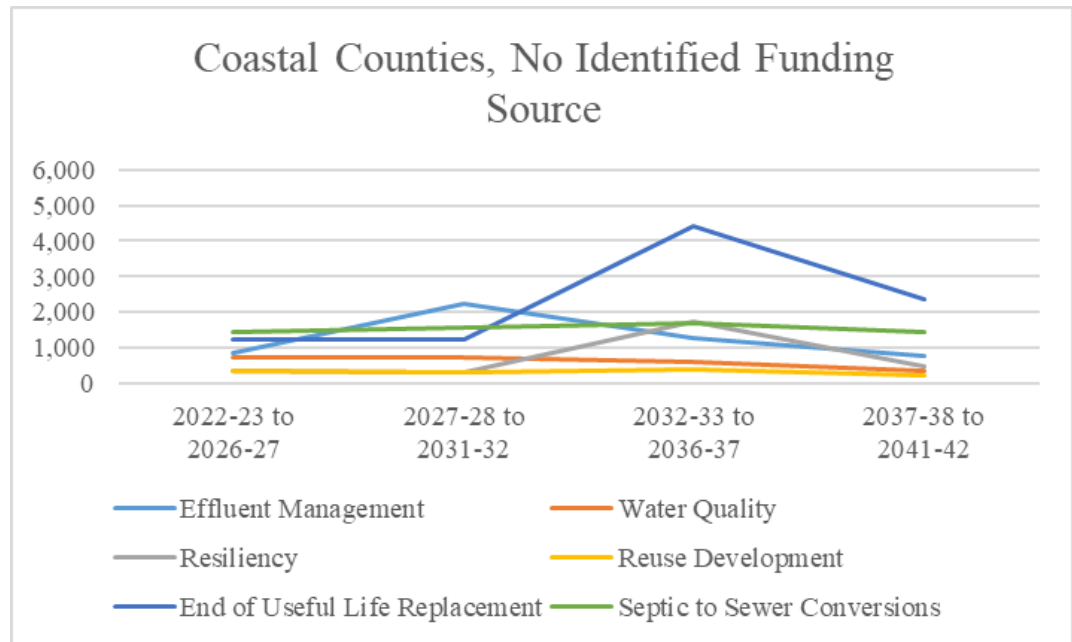
Wastewater Expenditures...

Future expenditures were reported in 5-year increments by project, with a specified project type, subtype, and whether that project currently has a committed funding source or no identified funding source (i.e., the local government would need to partially or completely pay for the project with outside funding that has yet to be identified). The tables below show, in billions, total projected expenditures based on the county location and project type.

Project Type	Coastal	%	Inland	%	Total	%
Effluent Management	\$8.9	16.6%	\$1.2	13.4%	\$10.1	16.1%
Water Quality	\$6.4	12.0%	\$1.6	18.7%	\$8.0	12.9%
Resiliency	\$5.7	10.6%	\$0.4	4.9%	\$6.2	9.9%
Reuse Development	\$3.1	5.7%	\$1.0	11.2%	\$4.1	6.5%
End of Useful Life Replacement	\$21.9	40.7%	\$3.1	36.7%	\$25.1	40.1%
Septic to Sewer Conversions	\$7.8	14.4%	\$1.3	15.1%	\$9.1	14.5%
TOTAL	\$53.9	100.0%	\$8.6	100.0%	\$62.5	100.0%
Share of Total	86.3%		13.7%		100.0%	

Funding Source	2022-23 to 2026-27	2027-28 to 2031-32	2032-33 to 2036-37	2037-38 to 2041-42	All	%
Committed Funding Source	\$17.5	\$5.8	\$4.8	\$4.4	\$32.6	51.5%
No Identified Funding Source	\$5.6	\$7.1	\$10.8	\$6.3	\$29.9	47.2%
Customer (Septic to Sewer)	\$0.3	\$0.2	\$0.3	\$0.1	\$0.8	1.3%
TOTAL	\$23.4	\$13.1	\$15.9	\$10.8	\$63.3	100.0%

Wastewater Needs Least Likely To Have Known Funding Sources...



Florida's Flooding and Sea Level Rise Needs

Flooding and Sea Level Rise...

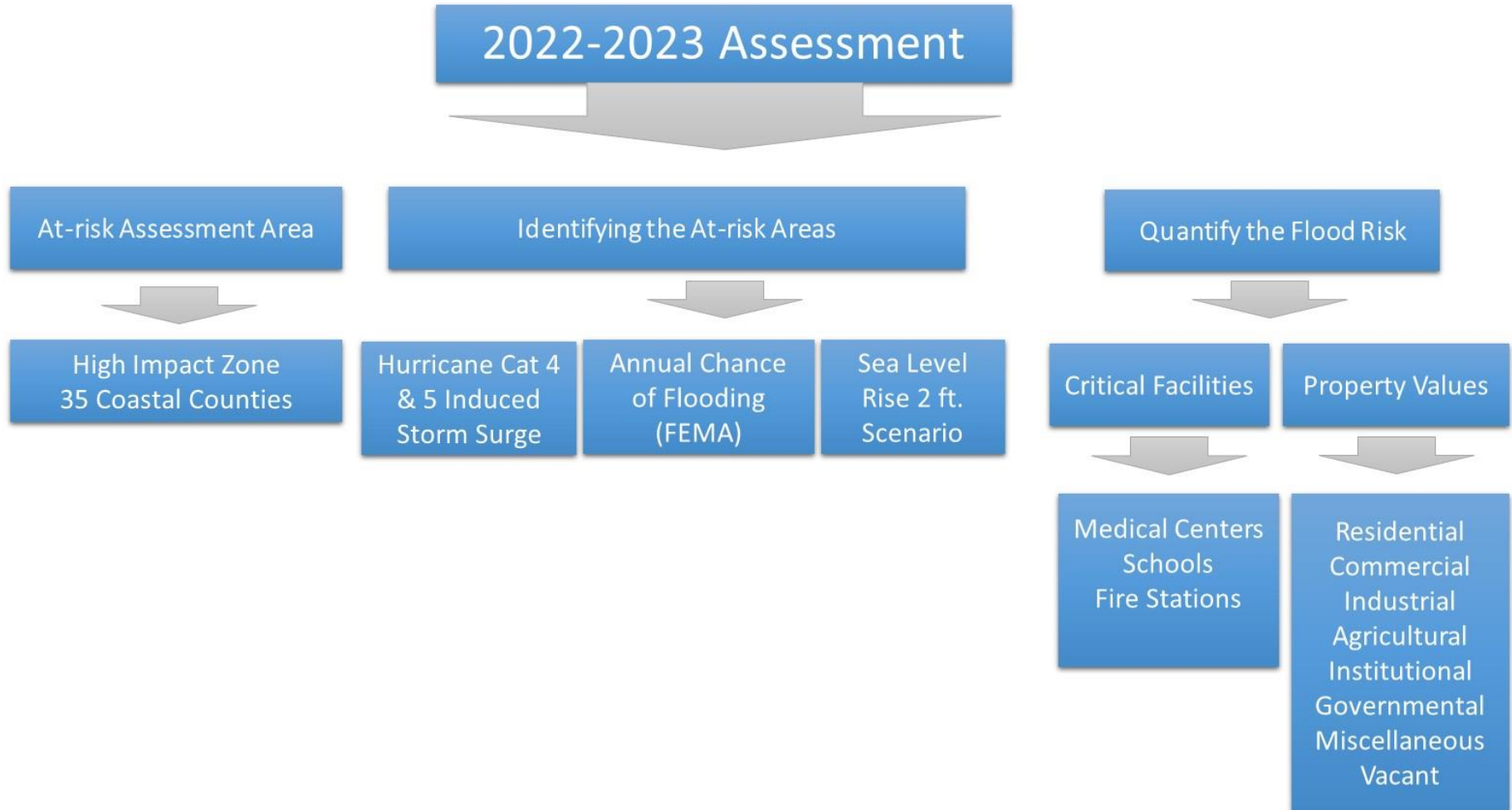
Given Florida's flat topography and phenomenal rainfall events, flooding has been an issue throughout its history as a state. During the 2021 Session, the Florida Legislature passed CS/CS/SB 1954, an act relating to Statewide Flooding and Sea Level Rise Resilience. Among other things, the Legislature's Office of Economic and Demographic Research (EDR) was directed to develop an analysis of future expenditures by federal, state, regional, and local governments required to achieve the Legislature's intent of minimizing the adverse economic effects of inland and coastal flooding, thereby decreasing the likelihood of severe dislocations or disruptions in the economy and preserving the value of real and natural assets to the extent economically feasible. Further, to the extent possible, the analysis must evaluate the cost of the resilience efforts necessary to address inland and coastal flooding associated with sea level rise, high tide events, storm surge, flash flooding, stormwater runoff, and increased annual precipitation over a 50-year planning horizon. This year's report focuses on the 35 Florida coastal counties identified as the current High Impact Zone by EDR.

Goal: to estimate the needed expenditures by all levels of government which are required to minimize the adverse economic effects of flooding in Florida.

At Risk Assessment Area	Description	Status
High Impact Zone	Based on a variety of federal data sources (preferably USGS data) and modeling of the coastal areas which currently extends to the head of the tide. These areas are affected by a multiplicity of factors occurring persistently, rather than periodically or as a consequence of one-off events.	Currently defined as the 35 Coastal Counties.
Intermediate Impact Zone	The area beyond the High Impact Zone that may still be affected by storm surge, as well as the area along rivers or larger lakes where significant flooding either is recurrent or will likely be recurrent in the future.	TBD
Dispersed Impact Zone	The area outside the High and Intermediate Impact Zones that still experiences localized flooding challenges, but where those are primarily caused by factors such as higher levels of precipitation in urban or urbanized areas, the weaker impacts of storms and hurricanes, or nuisance flooding.	TBD



Assessment Map...



High Impact Zone: Property Inventory...

The ranking of Florida's coastal counties based on the total property value (excluding vacant properties) and identification of the counties at risk from flooding factors.

- First Highest: Miami-Dade County with close to \$526 billion property value.
- Second Highest: Palm Beach County close to \$380 billion.
- Third highest: Broward County close to \$356 billion.

As currently identified, the entire High Impact Zone (35 coastal counties) has nearly \$3.1 trillion in property value and 77.35% of the state's GDP.

County	Property Values \$	Highly in danger of Storm Surge Cat. 4 & 5	1% & 0.2% Chance of Flooding threatening developed areas	2 ft. SLR threatening developed areas
Miami-Dade	525,621,458,697	X	X	X
Palm Beach	379,764,438,275	X	Waterfront areas	
Broward	355,862,867,190	X	X	
Hillsborough	217,186,721,922	X	X	
Collier	176,835,474,951	X	X	
Pinellas	174,098,895,420	X	Waterfront areas	
Lee	164,450,731,765	X	Waterfront areas + Iona	
Duval	127,697,965,116	X	Waterfront areas	
Sarasota	125,357,194,500	X	Waterfront areas	
Brevard	90,819,342,860			
Volusia	76,630,516,534			
Manatee	75,998,484,173			
Pasco	63,523,575,175			
St Johns	60,947,367,800	X	X	
Monroe	51,134,165,008	X		X
St Lucie	47,128,092,294			
Walton	40,995,665,962			
Martin	40,090,294,339			
Escambia	37,258,842,237			
Charlotte	35,751,005,989	X	X	
Indian River	35,266,198,903			
Okaloosa	35,034,162,468			
Bay	29,007,843,252			
Hernando	23,268,658,623			
Santa Rosa	22,745,148,177			
Flagler	19,772,543,602			
Nassau	18,112,720,905	X	Some waterfront	
Citrus	18,100,729,255			
Levy	5,838,338,366	X		
Franklin	3,598,804,195	X		
Gulf	3,340,137,667	X		
Wakulla	3,116,548,682	X		
Taylor	1,892,660,042	X		
Jefferson	1,671,290,154			
Dixie	1,482,511,500	X		
Total	3,089,401,395,998	1,991,378,201,915	2,361,686,842,530	576,755,623,705

High Impact Zone: Economy...

The ranking of Florida's coastal counties based on GDP

Considering its economic and property value in conjunction with the potential impact of various flooding hazards, the southeast portion of Florida, including Palm Beach, Broward and Miami-Dade Counties, is the most at risk area in the state. After including Monroe County, the four counties combined represent over one-third of the state's Real Gross Domestic Product (GDP).

GDP Analysis of High Impact Zone	
High Impact Zone Counties	Percentage of 2021 State Real GDP
Miami-Dade, FL	14.75%
Broward, FL	10.19%
Hillsborough, FL	8.88%
Palm Beach, FL	8.20%
Duval, FL	6.24%
Pinellas, FL	4.72%
Lee, FL	3.13%
Brevard, FL	2.53%
Sarasota, FL	2.08%
Collier, FL	1.87%
Volusia, FL	1.72%
Escambia, FL	1.46%
Manatee, FL	1.46%
Pasco, FL	1.34%
Okaloosa, FL	1.17%
St. Johns, FL	0.98%
St. Lucie, FL	0.90%
Bay, FL	0.81%
Martin, FL	0.73%
Indian River, FL	0.64%
Charlotte, FL	0.54%
Monroe, FL	0.48%
Santa Rosa, FL	0.46%
Hernando, FL	0.42%
Citrus, FL	0.40%
Walton, FL	0.34%
Flagler, FL	0.28%
Nassau, FL	0.27%
Levy, FL	0.10%
Wakulla, FL	0.06%
Taylor, FL	0.06%
Gulf, FL	0.04%
Franklin, FL	0.04%
Dixie, FL	0.03%
Jefferson, FL	0.03%
Percent of State	77.35%

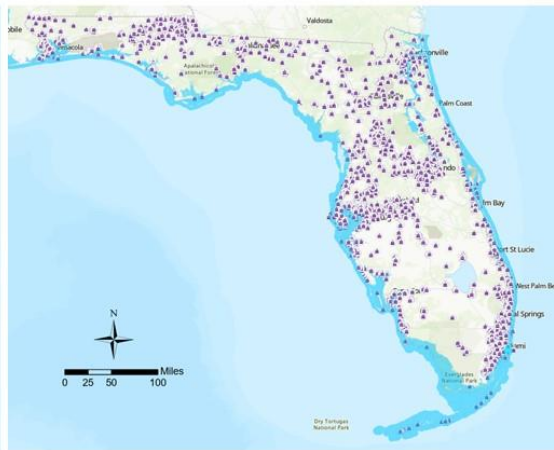
Sea Level Rise and Critical Infrastructure...

Infrastructure Assessment at 2 ft. SLR Scenario

Medical Facilities



Schools



Fire Stations



Infrastructure	Medical facilities	Schools	Fire Stations
Number at risk	53	8	7

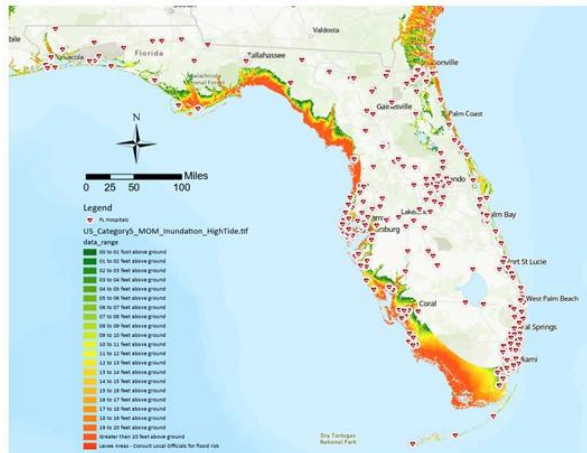
The 2 ft. SLR scenario is projected to affect all coastal areas of Florida. These areas are highly populated and developed. In addition, there are ports and power plant facilities along the coast that may be affected by 2 ft. SLR. Even when they are not directly affected, industries, residential areas, and facilities may have indirect effects from road inundation and loss of accessibility.

The counties projected to be most impacted by 2 ft. SLR are Miami-Dade and Monroe, including the Florida Keys.

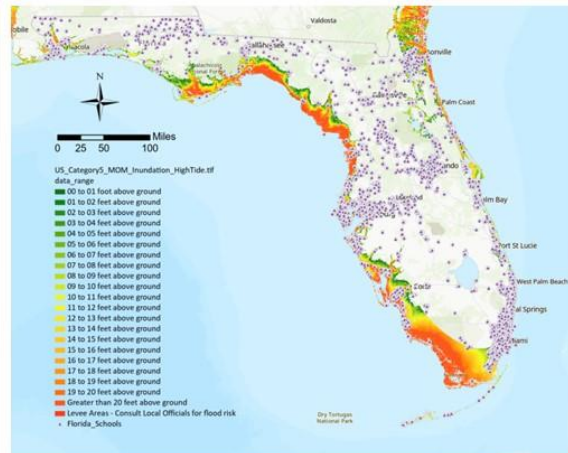
Storm Surge and Critical Infrastructure...

Infrastructure Assessment in Hurricane Cat. 5 Storm Surge

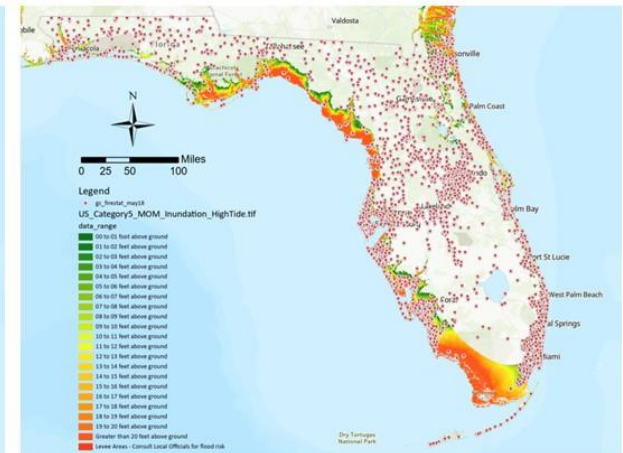
Medical Facilities



Schools



Fire Stations

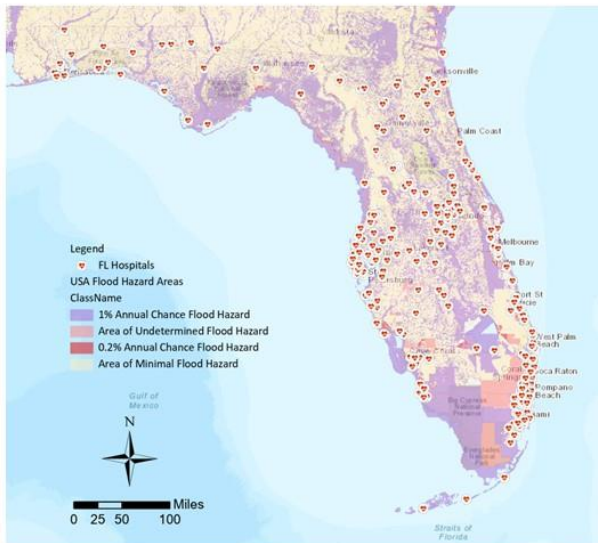


The impacts of hurricanes include a combination of strong winds, precipitation, and storm surge. Therefore, it is difficult to predict the exact impact of future hurricanes due to several factors, including the strength of the wind, the amount of precipitation, and the duration of the storm.

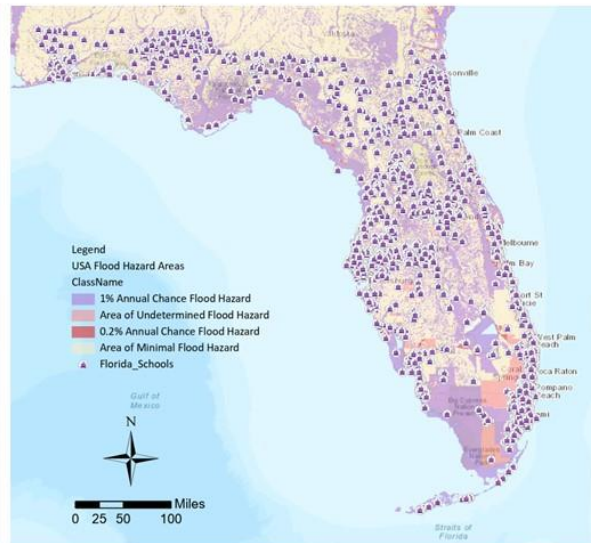
Flooding and Critical Infrastructure...

Infrastructure Assessment in Flood Zones

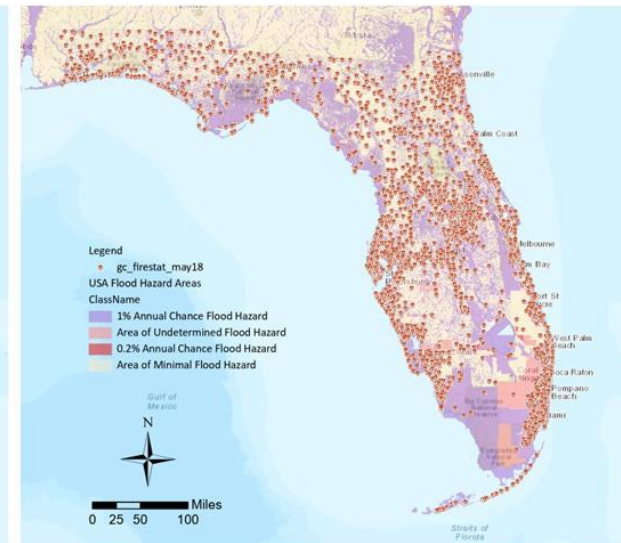
Medical Facilities



Schools



Fire Stations



FEMA flood hazard zones are mainly created to provide flood hazard data in support of the National Flood Insurance Program. This data does not provide a comprehensive accounting of the coastal hazards facing any community or any individual parcel of land.

Conclusions and Future Direction...

The actual number of structures that may be completely or partially inundated are limited. However, in low-lying areas, and especially on barrier islands, the submergence of the connecting routes may be a major issue.

Taking this fact into account, to the extent possible, the state might need to consider:

- Relocating some of the existing at-risk facilities.
- Building future facilities further from the hazard areas.
- Developing alternative means of providing critical services.

In this year's assessment, the High Impact Zone is identified on a county-wide basis. For next year's report, the zone boundary will be flexed based on geospatial analysis of the various flooding factors in order to more precisely reflect at-risk geographies that are less than county-wide. At the same time, initial steps to identify the Intermediate Impact Zone will be undertaken. After gaining an understanding of the flooding domain through scenario building, the next stage is to identify likely choices for adaptation and hazard mitigation, as well as the probable near-term and longer-term costs and consequences. The forward looking aspect of this part of the analysis is extremely nuanced and will need to incorporate more than physical geography and topography. For example, some studies have already found a strong relationship between the likely deployment of adaptive measures and wealth, both for individuals and cities.