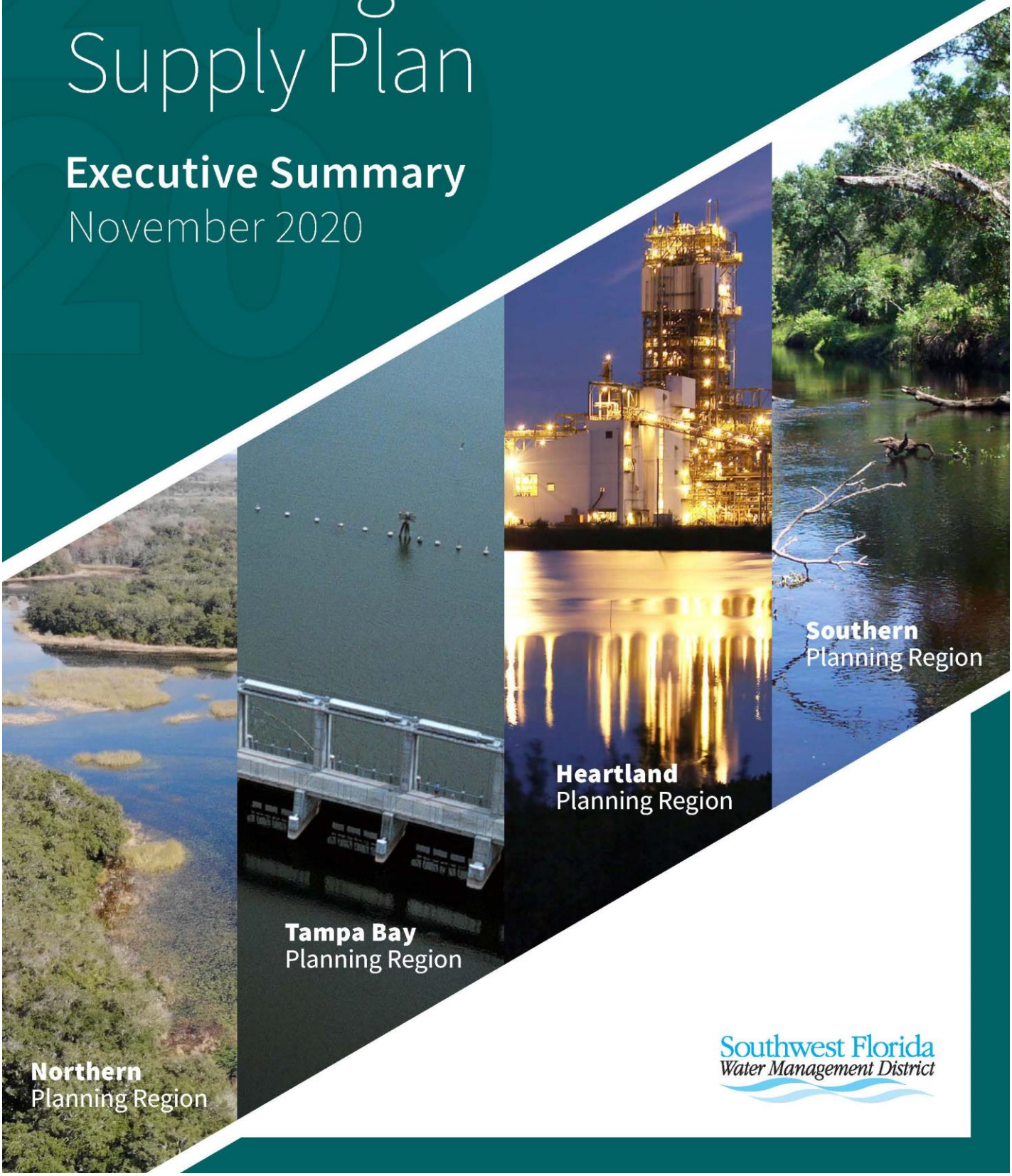
2020 Regional Water Supply Plan

Executive Summary

November 2020



Southwest Florida
Water Management District

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Southwest Florida Water Management District

2020 Regional Water Supply Plan

This report is produced by the Southwest Florida Water Management District

November 2020 – Final Draft

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Chapter 1. Introduction

The 2020 Regional Water Supply Plan (RWSP) is an assessment of projected water demands in the Southwest Florida Water Management District (District) and potential sources of water to meet those demands for the period from 2015 through 2040. The RWSP has been prepared in accordance with the Florida Department of Environmental Protection's (DEP) 2009 Format and Guidelines for Regional Water Supply Planning. The RWSP consists of four geographically based volumes that correspond to the District's four designated water supply planning regions (see Figure 1). The RWSPs for each planning region contain the following chapters: Chapter 1, Introduction; Chapter 2, Resource Protection Criteria; Chapter 3, Demand Estimates and Projections; Chapter 4, Evaluation of Water Sources; Chapter 5, Overview of Water Supply Development Options; Chapter 6, Water Supply Projects Under Development; Chapter 7, Water Resource Development Component; and Chapter 8, Overview of Funding Mechanisms. This Executive Summary also contains a list of Guiding Principles outlining strategies to meet water supply demand throughout the planning period.

The purpose of the RWSP is to provide a framework for future water management decisions in the District. The 2020 RWSP for the four planning regions shows that water supply demands for all use sectors can be met through 2040. It also shows natural systems can be restored or sustained using a combination of alternative water sources, fresh groundwater and water conservation measures. The RWSP also identifies a variety of potential water supply options and associated costs for developing alternative sources. The options are not intended to represent the District's most preferable options for water supply development. However, they are provided as reasonable concepts that water users in the planning region can pursue to meet their water supply needs. Additionally, the RWSP provides information to assist water users in developing funding strategies to construct water supply projects. The District previously completed RWSPs in 2001, 2006, 2010 and 2015 that included the Southern, Heartland and Tampa Bay planning regions. The 2010 update included the District's Northern Planning Region for the first time.

Springs are a major economic resource for the Northern Planning Region

Statutory Requirements for Water Supply Planning

The requirement for regional water supply planning originated from legislation passed in 1997 that amended Chapter 373, Florida Statutes (F.S.). Regional water supply planning requirements are codified in Part VII of Chapter 373 (373.709), F.S., and the District's RWSP has been prepared pursuant to these provisions. Regional water supply planning requirements were amended as a result of the passage of Senate Bill 444 during the 2005 Florida legislative session. The bill strengthened requirements for the identification and listing of water supply development projects. In addition, the legislation intended to foster better communications among water planners, local government planners and local utilities. Local governments are now permitted to develop their

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own water supply assessments, which the water management districts (WMDs) are required to consider when developing their RWSPs. Finally, a trust fund was created that provides the WMDs with state matching funds to support the development of alternative water supplies by local governments, water supply authorities and other water users.

Connection to Central Florida Water Initiative (CFWI)

Since 2011, the District has been working with public water supply utilities, the St. Johns River and South Florida WMDs, DEP, Florida Department of Agriculture and Consumer Services (FDACS), and multiple stakeholders on the CFWI, which includes southern Lake County, and the entirety of four other counties in central Florida outside of the District (see Figure 2). This is an area where the WMDs have previously determined, through water supply planning efforts and real-time monitoring, that groundwater availability is limited. The CFWI mission is to help protect, develop, conserve and restore central Florida's water resources by collaborating to address central Florida's current and long-term water supply needs. The CFWI is led by a Steering Committee that includes a public water supply utility representative, a Governing Board member from each of the three WMDs, and representatives from DEP and FDACS. The Steering Committee oversees the CFWI process and provides guidance to the technical teams and technical oversight/management committees that are developing and refining information on central Florida's water resources. The Steering Committee has guided the technical and planning teams in the development of the CFWI RWSP, which ensures the protection of water resources and related natural systems and identifies sustainable water supplies for all water users in the CFWI region through 2040. Those efforts, which are reflected in this 2020 RWSP update for the Heartland and Northern planning regions, will lead to adoption of a uniform set of rules and management strategies. More detailed information concerning the CFWI is available on the CFWI website at http://cfwiwater.com/planning.html.

Connection to Growth Management and Local Government Comprehensive Plans

Consistent with Section 373.709(8)(a), F.S., within six months following approval or amendment of a RWSP, the District is to notify each local government covered by the RWSP of that portion of the plan relevant to the local government. Within one year after the notification, each local government is required to provide to the District notification of any alternative water supply projects or options that it has developed or intends to develop; an estimate of the quantity of water to be produced by each project; and the status of project implementation, including development of the financial plan. The information is updated annually in a progress report provided to the District. If an entity does not intend to develop an alternative water supply project option identified in the RWSP, the local government is to propose, within one year after notification, another alternative water supply project option sufficient to address the demands within the local government's jurisdiction; and to provide an estimate of the quantity of water to be produced by the project and the status of project implementation. The local government has the option to request that the District consider a project not included in the RWSP.

Within 18 months after Governing Board approval of a RWSP, Section 163.3177(6)(c)3., F.S., requires that local governments in the planning region update their comprehensive plans. These updates must incorporate a work plan detailing alternative and traditional water supply projects,

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including conservation and reuse, within the local government's jurisdiction, covering at least a 10-year planning period.

Agency Coordination/Public Outreach

The RWSP was developed in an open public process, in coordination and cooperation with staff from other WMDs, water supply authorities, the DEP and FDACS, and representatives from utilities, agriculture, various industries, and environmental organizations.

The District actively involved stakeholders in the RWSP planning process by facilitating public workshops in the Brooksville, Sarasota, and Tampa service offices and at the Department of Agriculture and Consumer Services offices in Bartow. The District conducted and recorded interactive webcasts at all public workshops, and involved its standing advisory committees (public supply, agricultural, industrial, well drillers, green industry and environmental) and advisory groups (environmental resource permit and water use permit). Additionally, District staff facilitated presentations to a number of professional organizations and community groups.

District staff also involved other affected parties in the development of the RWSP. This involvement included coordinating methods for projecting water demands and assisting with the identification of potential options for water supply development. The District's RWSP webpage was updated to provide public drafts of the entire document, advertise public webinars and workshops, and solicit comments from the public and interested parties.

Overall, the District conducted a variety of outreach activities to inform and engage the public and stakeholders on development of the 2020 RWSP. These activities included public webinars and workshops, stakeholder meetings, and presentations at District advisory committees and other local and regional forums between June 2018 and September 2020. These outreach activities provided the opportunity to explain the draft RWSP, collect input on major plan components, and develop water resource and water supply project options.

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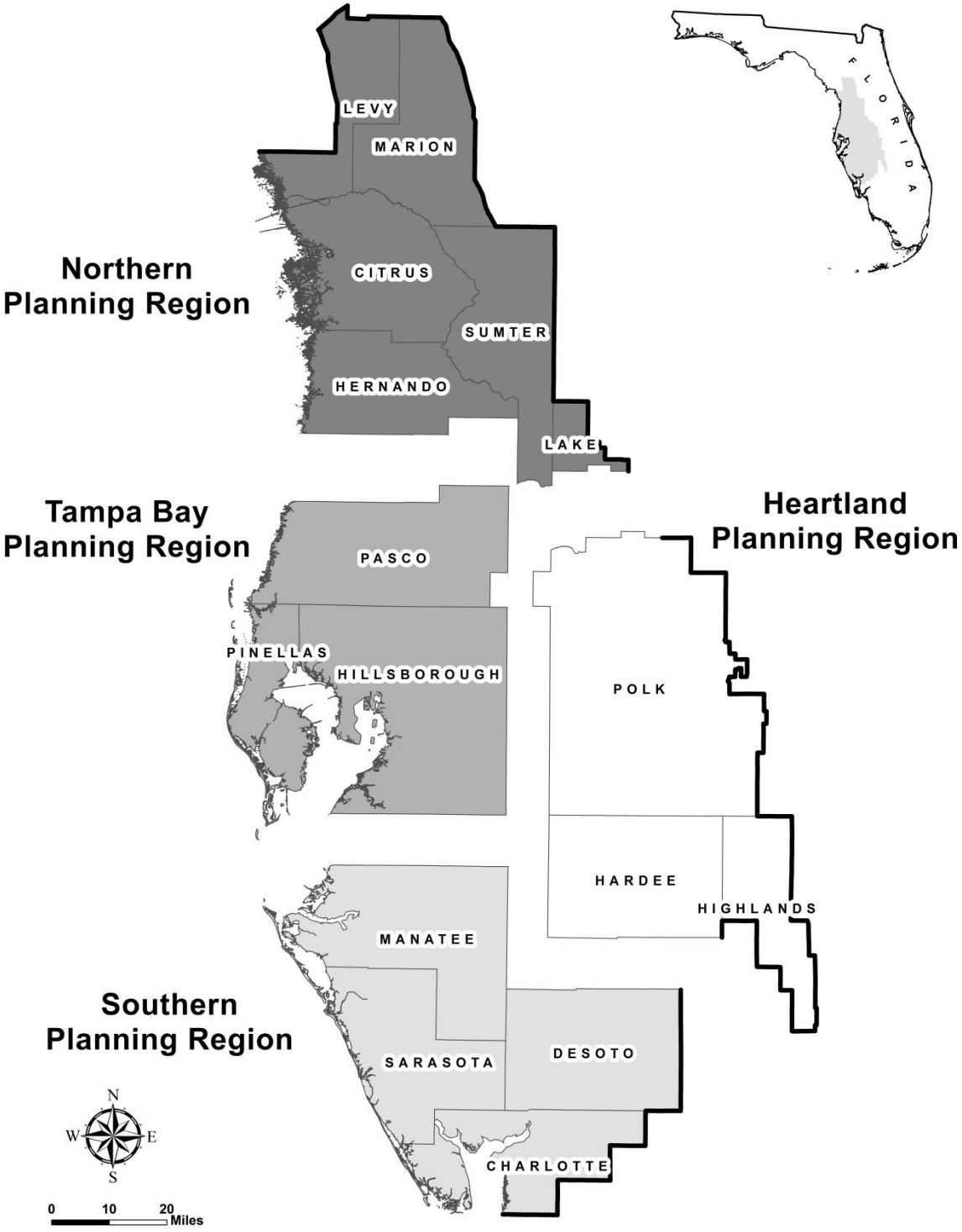

Figure 1. *Location of the District's four water supply planning regions*

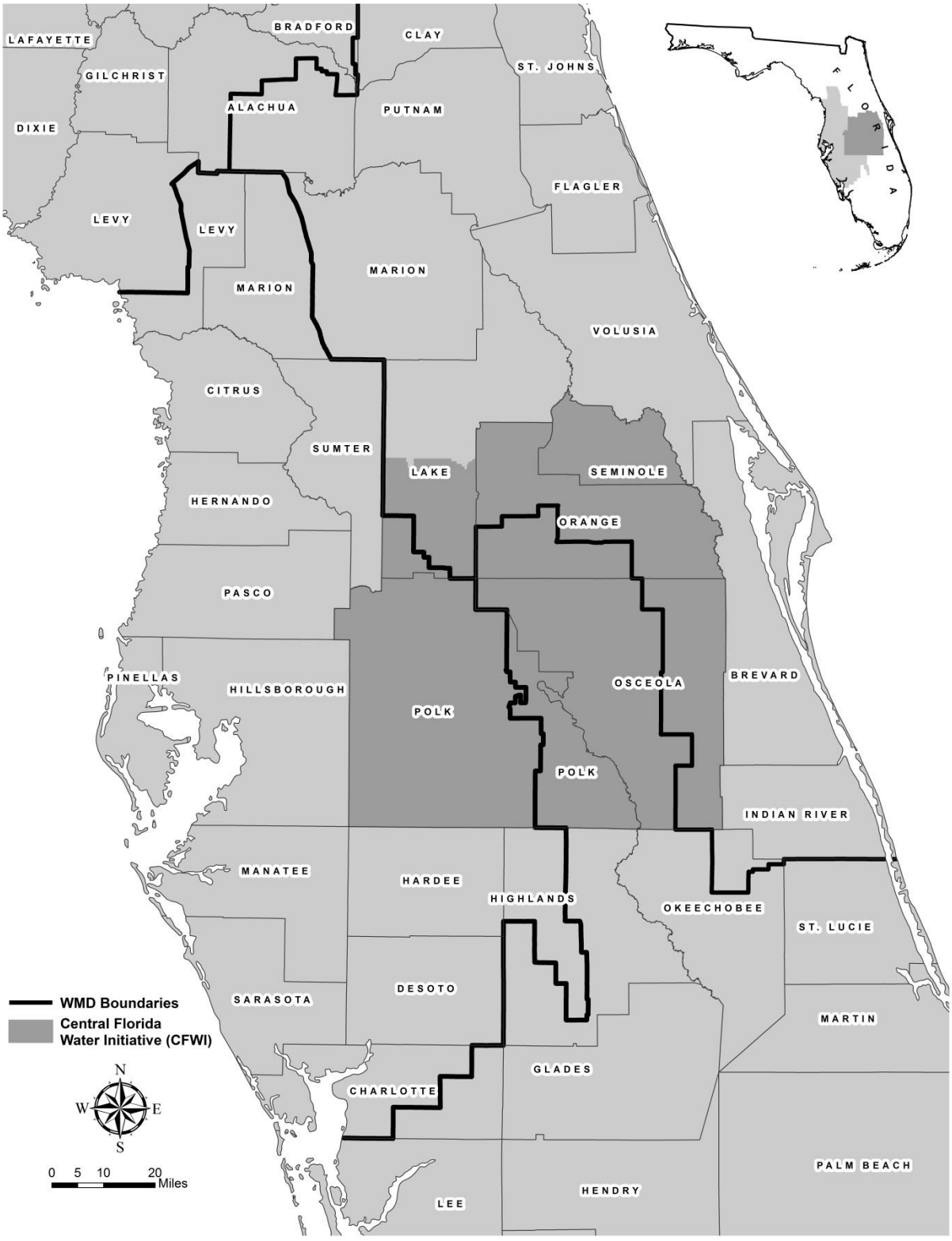

Figure 2. *Location of the Central Florida Water Initiative Area*

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Chapter 2. Resource Protection Criteria

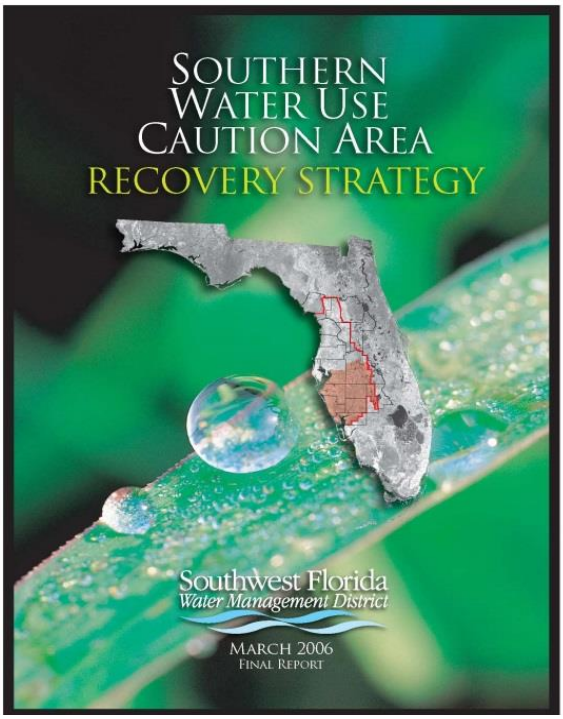
This chapter addresses the primary strategies the District employs to protect water resources, which include minimum flows and levels (MFLs), water use caution areas (WUCAs), prevention and recovery strategies, reservations, and climate change.

Minimum Flows and Levels (MFLs)

A water resource MFL is the limit at which additional withdrawals would be significantly harmful to water resources or the ecology of the area. The District implements established MFLs primarily through its water supply planning, water use and environmental resource permitting programs, and by funding water resource and water supply development projects that are part of a recovery strategy. The District establishes and annually updates a list of priority ground and surface waters for which MFLs will be set. Numerous factors are considered in determining which water resources are included, such as the importance of the water resources to the state or region; the existence of, or potential for, significant harm to occur; the required inclusion of all first-magnitude springs and all second-magnitude springs within state or federally- owned lands purchased for conservation purposes; the availability of historic hydrologic records; the possibility that the water resource may be developed as a water supply; and the value of developing an MFL for regulatory purposes.

Water Use Caution Areas (WUCAs)

WUCAs are areas requiring regional action to address cumulative water withdrawal concerns that are causing or may cause adverse impacts to the water and related land resources or the public interest (Rule Chapter 40D-2.801, Florida Administrative Code (F.A.C.)). To determine whether an area should be declared a WUCA, the District considers factors that include the quantity and quality of water available for use from groundwater and surface water sources; the health of environmental systems such as wetlands, lakes, streams, estuaries, fish and wildlife or other natural resources; and lake stages or surface water rates of flow. In response to continuing resource concerns, the District established the Northern Tampa Bay Water Use Caution Area (NTBWUCA), the Southern Water Use Caution Area (SWUCA) and its Most Impacted Area (MIA), and the Dover/Plant City Water Use Caution Area (Dover/Plant City WUCA) (see Figure 3).



To achieve adopted MFLs, recovery strategies have been developed for each WUCA

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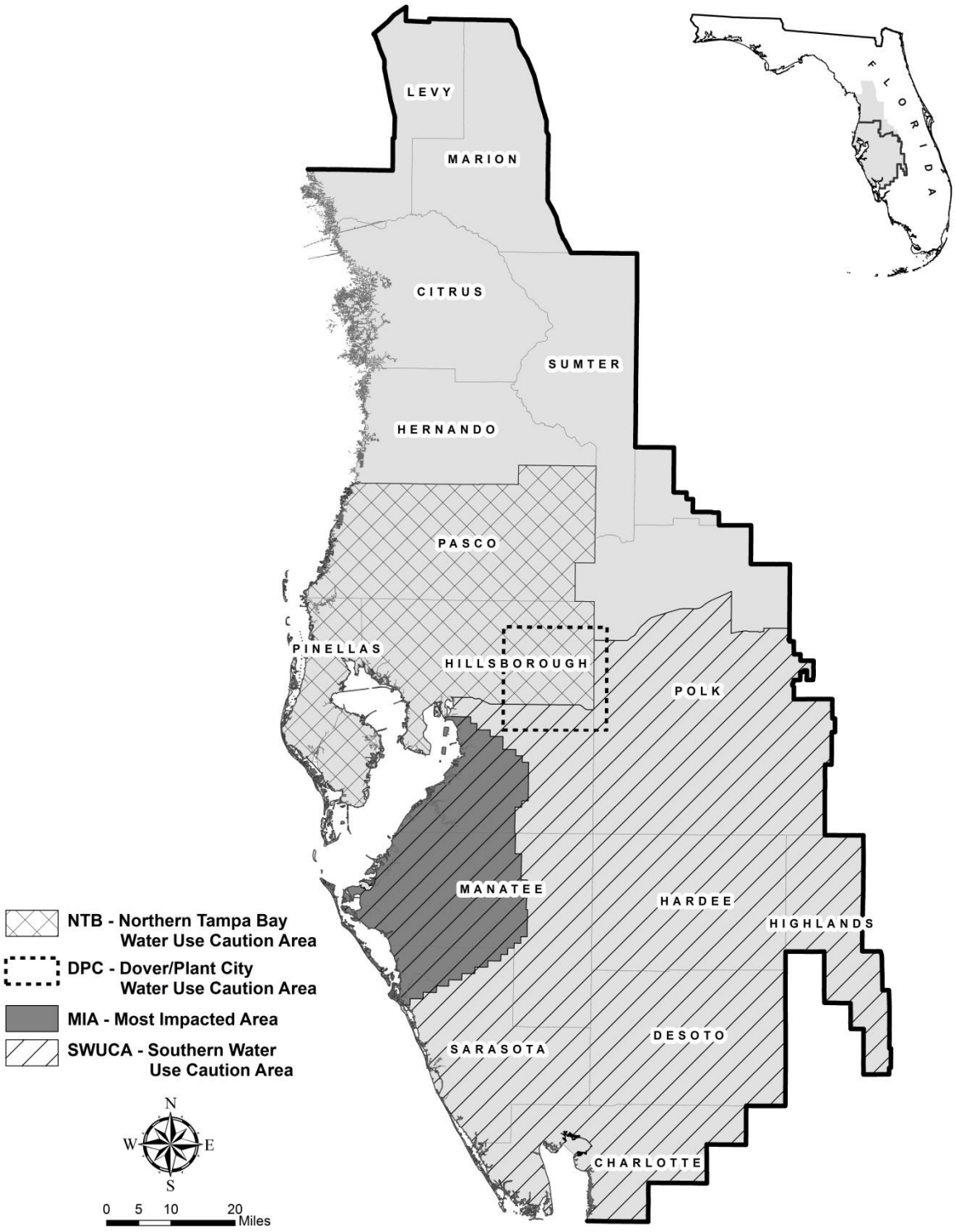

Figure 3. *Location of the District's water use caution areas and the MIA of the SWUCA*

Prevention and Recovery Strategies

Section 373.0421(2), F.S., requires that a recovery strategy be developed if the existing flow or level in a water resource is below an established MFL, or a prevention strategy if an existing flow or level is projected to fall below established MFLs within 20 years. To date, the District has developed several recovery strategies for achieving compliance with adopted MFLs. Regional plans were developed for the NTBWUCA and SWUCA; and recovery strategies were developed for the lower Alafia and Hillsborough rivers and the Dover/Plant City WUCA. Regulatory components of the recovery strategies for water resources in these areas are incorporated into District rules (Rule Chapter 40D-80, F.A.C.) and outlined in District reports.

To address the effects of water resource impacts in the NTBWUCA, the District took several important actions, including the establishment of MFLs for cypress wetlands, lakes, rivers and the Upper Floridan aquifer (UFA); entering into an agreement with Tampa Bay Water (TBW) and its member governments to reduce groundwater withdrawals; and working toward recovery in areas where water resources are impacted. The SWUCA recovery strategy, adopted in 2006, provides a plan for reducing the rate of saltwater intrusion in the UFA, restoring low flows to the upper Peace River, and restoring lake levels by 2025 while ensuring sufficient water supplies and protecting the investments of existing water use permittees. The Lower Hillsborough River recovery strategy is a plan to develop a number of projects that will supply quantities of water sufficient to meet the river's established minimum flow. The Lower Alafia River recovery strategy requires major industrial water users to augment the river with groundwater to prevent their use of surface water from exceeding the established MFL. The recovery strategy for the Dover/Plant City WUCA requires reduction of groundwater withdrawals used for frost/freeze protection.

Reservations

Section 373.223(4), F.S., authorizes reservations of water from use by permit applicants for the protection of fish and wildlife or public health and safety. The District will consider establishing a reservation of water when a District water resource development project will produce water needed to achieve adopted MFLs. Reservations of water are established by rule. Details on the recently developed Lake Hancock Reservation are provided in the Heartland Planning Region volume.

Climate Change

Climate change may affect water supply sources and will be factored into evaluations of supplies to meet future demand. It also has the potential to change patterns of demand and could be an important consideration in demand projections. Changes in the nature of supply and demand may also necessitate infrastructure adaptation, which can be costly. However, as information is generated, existing and proposed water sources and projects will be evaluated to determine their feasibility and desirability. For these reasons, the District has assumed a "monitor and adapt" approach toward climate change. The District will continue to actively monitor current research projects, both locally and nationally, interpret the results, and initiate appropriate actions deemed necessary to protect our water resources against the effects of climate change. For further information, see the climate change section in the Resource Protection Criteria chapter of each planning region's RWSP.

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Chapter 3. Demand Estimates and Projections

This chapter presents the analysis of water demand for each water use sector in the District through 2040. The analysis includes the District's methods and assumptions used in projecting water demand for each county, the demand projections in five-year increments and a discussion of important trends in the data. The multiagency-produced demand estimates and projections for the CFWI region are noted.

Water demand has been projected for the following sectors for each county in the District: public supply (PS), agriculture (AG), industrial/commercial (I/C), mining/dewatering (M/D), power generation (PG), and landscape/recreation (L/R). FDACS prepared Florida Statewide Agricultural Irrigation Demand (FSAID5) projections through 2040. For an explanation of the District's integration of the FSAID5 for AG demand projections, see Appendix 3-1.

Table 1 summarizes the projected changes in demand for the average rainfall (5-in-10) condition for each water use sector in the District in five-year increments during the planning period. The table shows that the overall increase in water supply demand for the planning period for all use categories is 209.73 million gallons per day (mgd); a 19.9 percent increase over the quantity used in the 2015 base year.

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Table 1. *Summary of the projected demand by planning region (5-in-10) (mgd)*

Water Use Category	Planning Period						Change 2015-2040	
	2015	2020	2025	2030	2035	2040	mgd	%
Heartland Planning Region								
Public Supply	81.93	92.06	99.02	104.78	110.21	115.10	33.17	40.5%
Agriculture	155.74	152.36	149.35	146.93	146.56	143.79	-11.95	-7.7%
I/C & M/D	47.30	52.60	53.00	66.10	63.40	60.60	13.30	28.1%
Power Gen.	7.62	9.94	10.00	10.07	10.13	10.21	2.59	34.0%
Landscape/Rec.	9.67	10.10	10.51	10.84	11.16	11.44	1.77	18.3%
Region Total	**302.26**	**317.06**	**321.88**	**348.72**	**341.46**	**341.14**	**38.88**	**12.9%**
Northern Planning Region								
Public Supply	89.20	98.65	106.77	113.68	120.23	125.98	36.78	41.2%
Agriculture	18.44	20.17	21.65	23.18	24.95	26.71	8.27	44.8%
I/C & M/D	6.35	6.52	6.70	6.87	7.03	7.19	0.84	13.2%
Power Gen.	2.94	1.80	1.85	1.96	2.08	2.21	-0.73	-24.8%
Landscape/Rec.	14.96	16.09	17.31	18.38	19.37	20.23	5.27	35.3%
Region Total	**131.89**	**143.23**	**154.28**	**164.07**	**173.66**	**182.32**	**50.43**	**38.2%**
Southern Planning Region								
Public Supply	101.71	109.42	116.59	122.74	128.05	132.49	30.78	30.3%
Agriculture	105.05	105.58	106.48	107.52	108.55	109.65	4.60	4.4%
I/C & M/D	6.09	7.13	7.19	10.59	10.62	10.65	4.56	74.9%
Power Gen.	3.60	3.69	3.92	4.17	4.40	4.64	1.04	28.9%
Landscape/Rec.	18.50	19.21	20.04	20.75	21.37	21.91	3.41	18.4%
Region Total	**234.95**	**245.03**	**254.22**	**265.77**	**272.99**	**279.34**	**44.39**	**18.9%**
Tampa Bay Planning Region								
Public Supply	304.63	325.88	346.36	364.29	379.09	391.99	87.46	28.7%
Agriculture	48.11	46.12	44.18	42.35	40.45	38.16	-9.95	-20.7%
I/C & M/D	18.66	26.11	26.31	13.77	13.94	14.12	-4.54	-24.3%
Power Gen.	0.26	0.34	0.35	0.36	0.37	0.38	0.12	46.2%
Landscape/Rec.	14.16	14.89	15.57	16.19	16.71	17.20	3.04	21.5%
Region Total	**385.82**	**413.34**	**432.77**	**436.96**	**450.56**	**461.85**	**76.03**	**19.7%**
Districtwide Totals								
Public Supply	577.47	626.01	668.74	705.49	737.58	765.56	188.19	32.6%
Agriculture	327.34	324.23	321.66	319.98	320.51	318.31	-9.03	-2.8%
I/C & M/D	78.40	92.36	93.20	97.33	94.99	92.56	14.16	18.1%
Power Gen.	14.42	15.77	16.12	16.56	16.98	17.44	3.02	20.9%
Landscape/Rec.	57.29	60.29	63.43	66.16	68.61	70.78	13.49	23.6%
Districtwide Total	**1,054.92**	**1,118.66**	**1,163.15**	**1,205.52**	**1,238.67**	**1,264.65**	**209.73**	**19.9%**

Notes: Summation and/or percentage calculation differences occur due to rounding. Values match the 5-in-10 scenarios provided in Table 3-6 of the HPR, SPR, and TBPR volumes and Table 3-5 in the NPR volume. Additional water quantities may be required over the planning period to address environmental restoration needs, including those for the SWUCA SWIMAL, upper Peace River and lower Hillsborough River. Any additional quantities will be determined during upcoming planned recovery assessments scheduled in 2023 for the lower Hillsborough River and 2025 for the SWUCA.

Chapter 4. Evaluation of Water Sources

This chapter outlines the District's investigations to quantify the amount of water that is potentially available from all sources of water within each planning region to meet demands through 2040. Sources of water that were evaluated include surface water, stormwater, reclaimed water, seawater, brackish groundwater, fresh groundwater and conservation. Aquifer storage and recovery (ASR) is also discussed as a storage option with great potential to maximize the utilization of surface water, stormwater, and reclaimed water.

Table 2 summarizes the potential availability of water from each source and the potential for water conservation measures to reduce demand through 2040 in each of the planning regions. The table shows that approximately 78 mgd is available from fresh groundwater and approximately 307 mgd is available from other permitted sources or alternative water supply options. The table also shows that water conservation measures have the potential to reduce demand, and therefore reduce and delay the need for development of more expensive alternative water supply projects, by approximately 98 mgd. The total water supply availability and potential for water conservation to reduce demand in the District through 2040 is approximately 788 mgd. When compared to the projected 2040 additional demand of 209.83 mgd (see Table 1), it can be concluded that the available water supplies and conservation measures are sufficient to meet the 2040 projected demands.

Water demand will be met differently in each planning region. The following is a general overview of how the projected water demands in each planning region are likely to be met with the identified sources.

Heartland Planning Region

The 2015 to 2040 increase in water demand in the Heartland Planning Region is projected to be 38.88 mgd. As of 2020, it is estimated that 30.89 mgd in existing permitted quantities were potentially available, however, these quantities may be limited due to resource constraints within the planning region. The remaining 7.99 mgd of demand will be supplied in part by reclaimed water projects or growth in existing facilities, as well as agricultural and non-agricultural conservation projects under development (see Table 3). In addition, the development of regional alternative water supply and transmission systems, such as the Polk Regional Water Cooperative's Southeast and West Polk brackish water wellfield projects, are anticipated to help improve water supply reliability and assist with environmental restoration. Additional water supply options through 2040 include up to 23.77 mgd of reclaimed water, 8.70 mgd of non-agricultural water conservation, and 8.06 mgd of agricultural water conservation (see Table 2).

Northern Planning Region

The 2015 to 2040 increase in demand in the Northern Planning Region is projected to be 50.43 mgd. As of 2020, it is estimated that at least 31 percent of that demand (15.86 mgd) has either been met or will be met by existing permitted quantities. The remaining 34.55 mgd will be supplied in part by 5.40 mgd of reclaimed water projects or growth in existing facilities, as well as agricultural and non-agricultural conservation projects under development (see Table 3), leaving approximately 29.15 mgd of demand unmet. Computer groundwater flow modeling using the Northern District model has demonstrated that groundwater is available to meet demand to 2040.

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The expanded implementation of conservation and reuse initiatives can be utilized to reduce demands and extend the availability of these groundwater resources. Additional demand reductions can be achieved through identified and future project options including a total of 5.67 mgd of reclaimed water, 10.87 mgd of non-agricultural water conservation, and 3.25 mgd of agricultural water conservation (see Table 2). While the availability of fresh groundwater from the UFA can be prolonged by maximizing conservation and reclaimed water benefits, future groundwater availability will be dependent on achieving MFLs for the Withlacoochee River and springs systems.

Southern Planning Region

The 2015–2040 increase in water demand in the Southern Planning Region is projected to be 44.39 mgd. As of 2020, it is estimated that most or all of this demand has been or can be met by existing permitted quantities of 141.69 mgd. Reclaimed water projects or growth in existing facilities, combined with agricultural and non-agricultural conservation projects under development will add an additional 10.53 mgd for water supply or resource benefit (see Table 3). The continued development of regional water supply and transmission systems will enable utilities to meet public supply needs from multiple sources. Reductions in agricultural water use through Facilitating Agricultural Resource Management Systems (FARMS) projects will continue to be very significant for the planning region in order to meet the demands of agriculture and environmental restoration for the SWUCA Recovery Strategy. Other potential project options for additional water supply could include up to 23.90 mgd of reclaimed water, 7.67 mgd of non-agricultural water conservation, and 14.06 mgd of agricultural water conservation that could be developed by 2040 (see Table 2).

Tampa Bay Planning Region

The 2015 to 2040 increase in water demand in the Tampa Bay Planning Region is projected to be 76.03 mgd. As of 2020, it is estimated that most or all of this demand has either been met or will be met by existing permitted quantities of 104.27 mgd. Infrastructure improvement projects are necessary in some instances to fully utilize these resources, with Tampa Bay Water identifying such projects as part of its 2018 Long-term Master Water Plan update. Reclaimed water projects or growth in existing facilities, combined with agricultural and non-agricultural conservation projects under development will add an additional 12.55 mgd for water supply or resource benefit (see Table 3). Other potential project options could include up to 104.07 mgd of reclaimed water, 40.19 mgd of non-agricultural water conservation, and 4.78 mgd of agricultural conservation (see Table 2). A projected reduction in agricultural demand by 9.95 mgd in the planning region could be permanently retired to help achieve the saltwater intrusion minimum aquifer level and/or used to allow development of a limited amount of fresh groundwater by mitigation.

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Table 2. *Potential additional water availability in the District from sources in each planning region through 2040 (mgd)*

Planning Region	Surface Water		Reclaimed Water	Desalination		Fresh Groundwater		Water Conservation		Total
	Permitted Unused	Available Unpermitted	Post-2015 Benefits[4]	Seawater	Brackish Groundwater[1]	Surficial and Intermediate	Upper Floridan Permitted Unused	Public Supply	Agricultural[5]	
Heartland	0.46	4.20	23.77	0.00	0.00	1.60	30.43	8.70	8.06	77.22
Northern[2, 3]	0.54	49.70	5.67	15.00	0.00	0.00	15.86	10.87	3.25	100.89
Southern	106.56	88.10	23.90	40.00	14.91	12.50	7.72	7.67	14.06	315.42
Tampa Bay	91.50	6.40	104.07	35.00	2.44	4.80	5.53	40.19	4.78	294.71
Total	**199.06**	**148.40**	**157.41**	**90.00**	**17.35**	**18.90**	**59.54**	**67.43**	**30.15**	**788.24**

[1] The Brackish Groundwater quantities shown include permitted but currently unused capacity. Additional quantities from identified project options will require evaluation similar to fresh groundwater.
[2] Groundwater quantities shown only include permitted but unused groundwater from the UFA. The Northern Planning Region is the only region where groundwater from the UFA will be available in quantities sufficient to meet the 2040 demand, provided existing and anticipated local impacts are mitigated or avoided. It is anticipated that the District's efforts to aggressively promote and develop reclaimed water and conservation will significantly reduce the amount of groundwater needed to meet the projected demand.
[3] Fresh Groundwater does not include quantities potentially available from the LFA in portions of the planning region. These quantities will be further evaluated in future updates of this RWSP for the Northern Planning Region.
[4] Post-2015 reclaimed water benefits estimated at 75% utilization and 75% efficiency. Water resource benefit is the amount of potable-quality groundwater or surface water that is replaced by reclaimed water usage or the amount of reclaimed water used for environmental enhancement.
[5] These values represent conservation potential (gains in efficiency). There is an estimated potential 23.98 mgd District-wide for AWS (tailwater recovery) ag projects based on extrapolation from historical FARMS participation.

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Chapter 5. Overview of Water Supply Development Options

The water supply development component of the RWSP requires the District to identify water supply options from which water users in each planning region can choose to meet their individual needs. In addition, the District is required to determine the associated costs of developing these options. As discussed in Chapter 4, the sources of water that are potentially available to meet projected water demand in the District include surface water, stormwater, reclaimed water, seawater desalination, brackish groundwater desalination, fresh groundwater and conservation. Investigations were conducted to identify reasonable options for developing each of the sources, to provide planning level technical and environmental feasibility analyses, and to determine costs to develop the options.

Where applicable, water supply options developed through regional planning efforts conducted by Polk County, TBW, the Withlacoochee Regional Water Supply Authority, and the Peace River Manasota Regional Water Supply Authority (PRMRWSA) are incorporated into the RWSP for each planning region. These options are not necessarily the District's preferred options but are provided as reasonable concepts that water users in the region may pursue in their water supply planning efforts. A number of the options are of such a scale that they would likely be implemented by either a regional water supply authority or a group of users. Other options, such as those involving reclaimed water and conservation, could be implemented by individual utilities, farmers or other permittees. It is anticipated that users will choose an option or combine elements of different options that best fit their needs for water supply development, provided they are consistent with the RWSP. Following a decision to pursue an option identified in the RWSP, it will be necessary for the parties involved to conduct more detailed technical assessments to provide the necessary support for developing the option. See Chapter 5 in each planning region's respective RWSP for a complete listing of water supply development options in the District.

A brackish groundwater treatment facility constructed in Clearwater with cooperative funding by the District

The CFWI is identifying both traditional source water availability and additional alternative water supply development options for the collaborative planning region, including those portions of Polk and Lake counties within the District. These options include use of brackish groundwater, surface water, reclaimed water, and water management strategies such as conservation. The CFWI RWSP may contain additional information regarding the water supply options available to those counties.

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Chapter 6. Water Supply Projects Under Development

This chapter is an overview of water supply projects that are under development in the planning regions. Projects under development are those the District is co-funding and either (1) were completed since the year 2015, the base year for the 2020 RWSP; (2) are in the planning, design or construction phase; or (3) are not yet in the planning phase, but are at least partially funded through the 2020 fiscal year (FY). Below are brief summaries of the planning regions' water supply projects under development. The anticipated benefits from the numerous reclaimed water and conservation projects are provided in Table 3. See Chapter 6 in each planning region's respective RWSP for a complete listing of water supply projects under development in the District.

The District provides funding for IFAS to investigate a variety of agriculture/ urban issues that involve water conservation. There are 10 ongoing IFAS research and education projects under development that will result in water savings throughout the District. These projects involve best management practices to increase the efficiency of water use. The total cost of these projects is approximately $1.7 million.

Heartland Planning Region

The PRWC is continuing with conceptual and preliminary design activities for the development of two Lower Floridan aquifer (LFA) brackish groundwater wellfield projects. The Southeast Wellfield and West Polk Wellfield projects will collectively provide up to 45 mgd of alternative water supply to serve the PRWC's member governments, helping to reduce reliance on increasingly constrained Upper Floridan aquifer sources.

Reclaimed water supply projects in the planning region include 10 that are under development and another six which are estimated to experience supply growth. These projects are projected to supply 20.45 mgd of reclaimed water, resulting in 15.69 mgd of potable-quality water benefits at a total cost of more than $122 million.

Non-agricultural water conservation projects in the region include a total of 13 that are under development. These projects involve toilet rebates, rain sensors, irrigation evaluations, advanced metering analytics, line looping (to reduce flushing), Florida Water Star rebates, and demand management planning. These projects will save more than 599,918 gallons per day (gpd) at a cost of approximately $2,496,790. These savings are more than double those of the prior 5-year period. There are eight agricultural water conservation/water development type projects within the region. The combined water resource benefits of these projects are expected to be 440,000 gpd and have a District cost share of approximately $1,450,951.

Northern Planning Region

Reclaimed water supply projects include three under development and another six that are estimated to experience additional future supply growth. These projects will supply more than 6.45 mgd of reclaimed water that will result in 5.07 mgd of potable-quality water benefits at a total cost of approximately $16 million.

Non-agricultural water conservation projects include 16 that are under development in the planning region. These projects involve toilet rebates, rain sensor replacements, smart irrigation

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controllers, and irrigation evaluations. The projects will save more than 280,059 gpd at a cost of approximately $989,580.

There are two agricultural water conservation/water development type projects underway within the region. The combined water resource benefits of these projects are expected to be 50,000 gpd and have a District cost share of approximately $510,247.

Southern Planning Region

Reclaimed water storage tank completed as part of a project in the Southern Planning Region

The PRMRWSA is continuing the development of its Regional Integrated Loop System, which includes a series of transmission pipelines to regionally transfer and deliver water from existing and future alternative supplies to demand centers within its four-county service area. Three of the loop system phases are complete (Phases 1A, 2, 3A). As part of the PRMRWSA's 2020 Integrated Water Supply Master Plan Update, project phasing was revised to improve sharing of capacity and utilize existing infrastructure.

Reclaimed water supply projects include five under development and another two that are estimated to experience additional future supply growth. These projects will supply 8.23 mgd of reclaimed water and provide 7.12 mgd of potable-quality water benefits at a total cost of approximately $16 million.

A total of 15 non-agricultural water conservation projects are under development in the planning region. These projects, which include toilet rebates, line looping (to reduce flushing), and soil moisture sensors will save in excess of 361,389 gpd at a cost of approximately $3,099,389.

There are 31 agricultural water conservation/water development type projects within the region. The projects combined water resource benefits are expected to be 3,049,000 gpd and have a District share of approximately $7,724,705.

Tampa Bay Planning Region

The planning region includes 22 reclaimed water supply projects under development and at least one other that is estimated to experience additional future supply growth. When complete, these projects will supply approximately 14 mgd of reclaimed water, resulting in 12 mgd of potable-quality water benefits at a total cost of approximately $103 million.

A total of 24 non-agricultural water conservation projects are under development in the planning region. These projects include toilet rebates, landscape irrigation evaluations, soil moisture sensors, satellite-based leak detection, and an irrigation system upgrade for a golf course. The projects will save nearly 818,998 gpd at a cost of approximately $2,955,987. These savings are more than double those of the prior 5-year period.

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There are 12 agricultural water conservation/water development type projects within the region. The combined water resource benefits of these projects are expected to be 530,000 gpd and have a District share of approximately $2,143,200.

Table 3. *Reclaimed water and water conservation benefits from projects that meet the District's definition of being under development*

Planning Region	Reclaimed Water (mgd)	Water Conservation (mgd)		Total (mgd)
	Post-2015 Benefits	Non-Agriculture	Agriculture[1]	
Heartland	15.69	0.599	0.437	16.726
Northern	5.07	0.280	0.050	5.400
Southern	7.12	0.361	3.049	10.530
Tampa Bay	11.82	0.819	0.530	13.169
Total	**39.70**	**2.059**	**4.066**	**45.825**

[1] The FARMS projects calculated were specific projects of the FARMS water resource development program that were budgeted from 2015 through 2019. Benefits were calculated from anticipated savings.

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Chapter 7. Water Resource Development Component

The intent of water resource development components described in this chapter is to enhance the amount of water available for water supply development. The District classifies water resource development projects into two broad categories. The first category encompasses data collection and analysis activities that support water supply development by local governments, utilities, regional water supply authorities and others. The second category includes projects that meet the more narrow statutory definition of water resource development, i.e., "regional projects designed to create from traditional or alternative sources an identifiable, quantifiable supply of water for existing and/or future reasonable-beneficial uses."

The data collection and analysis activities conducted by the District support the health of natural systems and the development of water supplies. The activities include a comprehensive hydrologic conditions monitoring program to assemble information on key indicators as rainfall, surface and groundwater levels and water quality, and stream flows. Data collected allows the District to gage changes in the health of water resources, monitor trends, identify and analyze existing or potential resource problems, develop programs to correct existing problems, and prevent future problems from occurring. The data collection also supports District flood control structure operations, water use and environmental resource permitting and compliance, MFL status evaluation, recovery strategies, modeling of surface water and groundwater systems, and numerous resource evaluations and reports.

Agricultural water supply projects use conservation strategies to increase efficiency and restore water resources

The District has 20 projects that meet the definition of water resource development. These projects include (1) alternative water supply research, restoration and pilot projects that further the development of innovative technologies to produce water from alternative sources and achieve hydrologic restoration; (2) agricultural water supply/ environmental restoration projects including the FARMS Program that employ agricultural water conservation strategies to increase the water use efficiency of agricultural operations; and (3) projects to restore minimum flows to impacted water resources. Districtwide, these 20 projects will produce or conserve a minimum of 78 mgd at a total cost of approximately $150 million.

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Chapter 8. Overview of Funding Mechanisms

This chapter provides an overview of mechanisms available to generate the necessary funds to implement the water supply and water resource development projects proposed by the District and its cooperators to meet the water supply demand projected through 2040 and to restore MFLs to impacted natural systems.

To estimate capital costs to meet the portion of the 2040 demand that is not yet under development, the District compiled a list of large-scale water supply development projects. The water supply produced from these large-scale water supply development projects, combined with the water supply to be produced from numerous reclaimed water and conservation projects currently under development, will meet approximately 65 percent of the projected demand.

The District anticipates that a large portion of the remaining demand will be met through projects that users will select from the water supply options listed in Chapter 5 of the RWSP for each planning region. Finally, a significant portion of this remaining demand is in the Northern Planning Region. It is anticipated that most of this demand will be met with fresh groundwater from the UFA. To determine the availability of funding to cover the costs of developing alternative water projects, the capital cost of the potential large-scale projects discussed above is compared to the amount of funding that will be generated through 2040 by the various District, state, and federal funding mechanisms.

Water Utility Funding

Water supply development funding has primarily been, and will remain, the responsibility of water utilities and water authorities. Demand increases generally result from new customers that help to finance source development through impact fees and utility bills. Water utilities draw from a number of revenue sources such as connection fees, tap fees, development impact fees, base and minimum charges, and volume charges. Impact fees are generally devoted to the construction of source development, treatment and transmission facilities. Base charges generally contribute to fixed customer costs such as billing and meter replacement, but they may also contribute to source development, treatment, and transmission construction cost debt service. Volume charges contribute to source development, treatment, transmission debt service, and operation and maintenance. Financing through volume-related charges is the most economically efficient means to finance new water supply development. Volume charge financing provides consumers and businesses the greatest degree of direct control over water-related costs and a direct incentive to conserve.

Community development districts and special water supply and/or sewer districts may also develop non-ad valorem assessments for system improvements to be paid at the same time as property taxes. Regional water supply authorities are also special water supply districts and are typically funded through fixed and variable charges to the utilities they supply, although they have the ability to levy taxes with county/municipal approval. All of the above have the ability to issue secure construction bonds backed by revenues from fees, rates, and charges.

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District and State Funding

A variety of potential funding sources, such as the District's Cooperative Funding Initiative and District Initiatives, the state's Water Protection and Sustainability Trust Fund, and the state's Springs Initiative were evaluated to create a projection of funding that could be used for water supply and water resource development projects. The results of this evaluation found that a minimum of $2.66 billion could potentially be generated or made available to fund those projects necessary to meet projected water supply demands through 2040 and to restore MFLs for impacted natural systems. This figure may be conservative, since it is not possible to determine the amount of funding that may be available in the future from the federal government and state of Florida legislative appropriations.

Evaluation of Project Costs to Meet Projected Demand

Of the 231.4 mgd of projected demand increases during the 2015–2040 planning period necessary to meet the demand for all users and to restore MFLs for impacted natural systems, it is estimated that 46 mgd, or 20 percent of the demand, either has been met or will be met by reclaimed water and conservation projects that are under development. The total District share of cost for the projects currently under development including regional transmission, ASR, and brackish groundwater treatment systems is $490 million.

To generate an estimate of the capital cost of projects that need to be developed to meet the additional demand, the District compiled a list of large-scale water supply development projects that have been proposed by the Peace River Manasota Regional Water Supply Authority, Tampa Bay Water, and Polk Regional Water Cooperative that will produce an additional 100 to 105 mgd of new water supply and provide regional transmission capacity. These projects, as well as their estimated costs and quantities of water they will produce, are listed in Table 4. The total estimated cost of the 100 to 105 mgd of water supply that will be produced by these projects ranges from $1.79 to $1.81 billion.

For the Northern Planning Region, no major water supply development projects are proposed for development by the Withlacoochee Regional Water Supply Authority through 2040, as traditional sources, conservation, and reclaimed water initiatives are projected to meet demands in the region. Because the District does not fund fresh groundwater projects, matching financial resources may only need to be generated by the District for reclaimed water and conservation projects in the Northern Planning Region.

Evaluation of Potential Available Funding to Assist with the Cost of Meeting Projected Demand

The conservative estimate of $2.66 billion in cooperator and District financial resources that will be generated through 2040 for funding is sufficient to meet the projected $1.79 to $1.81 billion total cost of the large-scale projects listed in Table 4. In addition to these resources, state and federal funding sources may also assist with the remaining and high-end costs for future alternative water supply projects and water conservation measures where fresh groundwater resources are limited. It may also serve as a reserve for the development of projects to replace water supplies that may be reduced as the result of the establishment or revision of MFLs. These financial projections are subject to economic conditions that may affect the level of District ad-

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valorem tax revenue and the availability of state and federal funding; however, such conditions may similarly affect future water demand increases.

For a complete discussion of funding options, see Chapter 8 in each planning region.

Table 4. *Proposed large-scale water supply and water resource development projects to be completed by 2040 (millions of $)*

Project	Entity to Implement	Quantities (mgd)	Capital Costs
Peace River Facility Surface Water System Expansion and Regional Reservoir	PRMRWSA	15	$332
Phase II Capacity Expansion, New RO Water Treatment Plant, and Regional Loop System	PRMRWSA	10	$365
Aquifer Recharge for SWIMAL Recovery at Flatford Swamp with Natural Systems Enhancement	TBD	10	$31
Southeast Wellfield and West Polk County Lower Aquifer Deep Wells	PRWC	45	$650
Big Bend Desalination	TBW	10-12.5	$244
Enhanced Surface Water Expansion from Alafia River	TBW	10-12.5	$88
New Regional Feed Line to Balm Area	TBW	N/A	$76-97
Subtotal Southern Planning Region		**35**	**$728**
Subtotal Heartland Planning Region		**45**	**$650**
Subtotal Tampa Bay Planning Region		**20-25**	**$408-429**
Total – Districtwide		**100-105**	**$1,786-1,807**

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Guiding Principles

The analysis provided in the RWSP is based on a number of important principles that will guide the District's strategies to meet water supply demand through 2040. The principles that follow take into account statutory directives, the hydrologic conditions in the planning regions, existing and potential impacts to natural systems, the characteristics of water user groups, and other factors.

An emphasis on water conservation

Conservation is considered to be a potential source of water for all major use types. Future water demand is projected based on current water use efficiencies. If efficiency is increased through conservation, future demand and the need for more expensive alternative water supply projects will be offset and reduced. Conservation is strongly recommended for all users; however, special emphasis is placed on public supply use in the Northern Planning Region, which has tremendous potential for water savings. Regarding agricultural demand, the District, in cooperation with the FDACS, has developed the FARMS Program to promote agricultural water conservation. The FARMS Program is a cost-share reimbursement program aimed at the implementation of best management practices that conserve water and improve water quality.

An emphasis on reclaimed water

Reclaimed water is an important resource that can help meet future demands in all use sectors. The District's goals are to utilize 75 percent of all reuse flows and to achieve a 75 percent offset of potable sources. To meet these goals, the District will emphasize water-conserving rate structures, wet-weather storage, and system augmentation where appropriate.

Regional cooperation in water supply planning

The District promotes regional approaches to water supply planning and development. The benefits of regional systems include economies of scale, better ability to manage environmental impacts, improved system reliability, operational flexibility and emergency backup capability. Larger regional systems are also able to take advantage of conjunctive use, wherein both groundwater and alternative sources are available and can be managed to mimic natural hydrologic cycles. The primary vehicles for regional cooperation in the District are the CFWI, Polk Regional Water Cooperative and the three regional water supply authorities whose jurisdictions correspond closely with the four planning regions. The RWSP was developed in close coordination with these entities.

Focus on alternative sources

Because three of the four planning regions are subject to MFL recovery strategies due to the effects of groundwater withdrawals, the RWSP focuses on alternative water sources, including surface water, brackish groundwater, seawater desalination, reclaimed water

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and water conservation. Fresh groundwater supplies are available in the Northern Planning Region and could continue to meet demand beyond the 20-year planning period if the region's considerable potential for reuse and conservation is realized.

Meeting future demand through land-use transitions

In the SWUCA, land uses such as agriculture and mining are being displaced by residential and commercial land uses. It is anticipated that the water needs of these new land uses will be met predominately by alternative supplies, such as harvesting and storing the wet-season flow of rivers, reclaimed water and conservation. Because the land uses being replaced rely almost entirely on groundwater, there will be a net reduction in groundwater use. While a portion of this groundwater will be retired to help meet MFLs, the remainder can be used to meet the demands of development in areas where access to alternative supplies is limited.

The role of constraints such as MFLs

In three of the four planning regions, some water resources are not meeting their established minimums. In these areas, it will be necessary to continue implementation of MFL recovery strategies while also identifying potential water supply options to meet future demands. In the Northern Planning Region, it is anticipated that water resources will generally meet their MFLs as they are set. Thus, in the Northern Planning Region, the District's focus is on preventing resource impacts as water demand increases and as additional supplies are developed through 2040.

Weeki Wachee River

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