Northwest Florida Water Management District

2014 Regional Water Supply Plan Update

Region III • Bay County, FL

Program Development Series 14-01

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EXECUTIVE SUMMARY

The Regional Water Supply Plan (RWSP) for Region III of the Northwest Florida Water Management District (NWFWMD) provides a recommended set of near-term and long-term actions to develop and sustain the region's water supplies and related resources through the 2035 planning horizon. The content of the RWSP is defined by section 373.709, Florida Statutes (F.S.), to include water resource development strategies, recommended water supply development projects, supporting data and analysis, and a proposed funding strategy.

This RWSP has been developed pursuant to a recommendation in the District's 2013 Water Supply Assessment Update to continue regional water supply planning for Region III, comprising Bay County. The goal of the plan is to ensure that the region has water supplies that are reliable, sustainable, sufficient, and of suitable quality to meet the needs of the human community and natural systems through the planning period. Supporting objectives include:

- Ensure the dependability and sustainability of Deer Point Lake Reservoir as a regional water supply source.
- Expand water reclamation and reuse to meet non-potable water needs.
- Further develop scientific and data resources needed to support integrated water resource management.
- Improve water use efficiency.
- Protect and, as necessary, restore surface water and groundwater quality and quantity to safeguard public and environmental health and to secure water supplies for their long-term beneficial uses.
- Identify a feasible funding strategy to achieve regional priorities.

By the year 2035, the population of Bay County is projected to reach 209,100 with a total water demand at approximately 88 million gallons per day. These reflect increases of 24 percent and 22 percent respectively over 2010. Deer Point Lake Reservoir, the main water source for the county, has an adequate quantity of water to meet anticipated needs during the planning period; however, there is concern about dependability of the water supply source should a major coastal storm surge cause saltwater intrusion. Continuing water quality protection efforts will be needed to safeguard the resource. This entails protection of surface waters, as well as groundwater from high recharge areas to the north that contributes to Econfina Creek, the main tributary of the reservoir.

Recommended alternative water supply projects include development of an upstream intake for raw water withdrawals by Bay County Utility Services from Deer Point Lake Reservoir, expanded reuse of reclaimed water, and utility interconnections and related infrastructure enhancements. Enhanced water conservation efforts are also identified as an effective tool for demand management.

Water resource development projects incorporated in this RWSP include the following:

- Econfina Creek and Groundwater Recharge Area Protection;
- Hydrologic and Water Quality Data Collection and Analysis;
- Reuse Funding and Technical Assistance;
- Water Conservation Funding and Technical Assistance; and
- Regional Water Supply Planning, Coordination, and Technical Assistance.

Recommended water supply development projects to be implemented in cooperation with local governments and utilities include:

- Development of Upstream Intake for Surface Water Supply;
- Water Reuse Facilities;
- Utility Interconnections and Infrastructure Enhancements; and
- Water Conservation.

It will continue to be important for the District to work closely with regional stakeholders, including the County, municipalities, and water and wastewater utilities, to implement the defined projects; to further define and develop project alternatives; and to more broadly address regional and local scale issues pertaining to the long-term dependability and sustainability of water and related resources.

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1. INTRODUCTION

1.1 Purpose and Scope

The purpose of the Region III Regional Water Supply Plan (RWSP) is to identify actions to develop and sustain water supplies over a 20-year planning horizon. The scope of the plan is defined by section 373.709, F.S., to include a quantification of projected water supply needs, resource analyses and issue identification, consideration of options for traditional and alternative water sources, and recommendations for water resource and water supply development projects that address the issues. The planning horizon spans the years 2015 to 2035. The plan is intended to provide a basis for regional stakeholders to make informed and collaborative decisions and implement integrated actions to increase water supply reliability, enhance water use efficiency, and to protect and improve water resource quality. Local governments can use this plan as a reference for land use and utility planning.

1.2 Plan Goal and Objectives

The goal of the plan is to ensure that the region has water supplies that are reliable, sustainable, sufficient, and of such quality to meet the needs of the community and natural systems throughout the planning period. Supporting objectives are multifaceted and include the following:

- Ensure the dependability and sustainability of Deer Point Lake Reservoir as a regional water supply source.
- Expand water reclamation and reuse to meet non-potable water needs.
- Further develop scientific and data resources needed to support integrated water resource management.
- Improve water use efficiency.
- Protect and, as necessary, restore surface water and groundwater quality and quantity to safeguard public and environmental health and to secure water supplies for their long-term beneficial uses.
- Identify a feasible funding strategy to achieve regional priorities.

1.3 Planning Process

Region III consists solely of Bay County, which is centrally located within the Northwest Florida Water Management District on the Gulf of Mexico. Bay County was established as a separate water supply planning region in 1996, among seven regions in northwest Florida (Figure 1-1), pursuant to Governor's Executive Order 96-297. This order required water management districts to establish planning regions and assess water resources district-wide (Macmillan 1996). The planning regions were defined by county boundaries and similarity of water supply sources and challenges. County boundaries are used because population and agricultural data are readily available at the county level.

Section 373.036, F.S., requires water management districts to evaluate whether existing and reasonably anticipated water sources are sufficient to meet future demands while sustaining water resources and natural systems over the course of a twenty-year planning horizon. The districts are further required to conduct detailed water supply planning for any water supply planning region where such problems are identified (section 373.709, F.S.). The District's 2008 water supply assessment (WSA) concluded that, while the surface water supply source was sufficient to meet projected demands through 2030, regional water supply planning was needed for Region III to address concerns about the reliability of the reservoir – particularly with respect to potential effects of a major hurricane storm surge (Coates et al.,

2008). A RWSP was subsequently developed for Region III to address this need (NWFWMD 2008). An updated WSA has been developed and recommends continuation of regional water supply planning for this region due to the potential vulnerability of the principal source of supply to coastal storm surge (Countryman et al. 2014). This update to the Region III RWSP is based on the results and recommendation of the latest WSA.

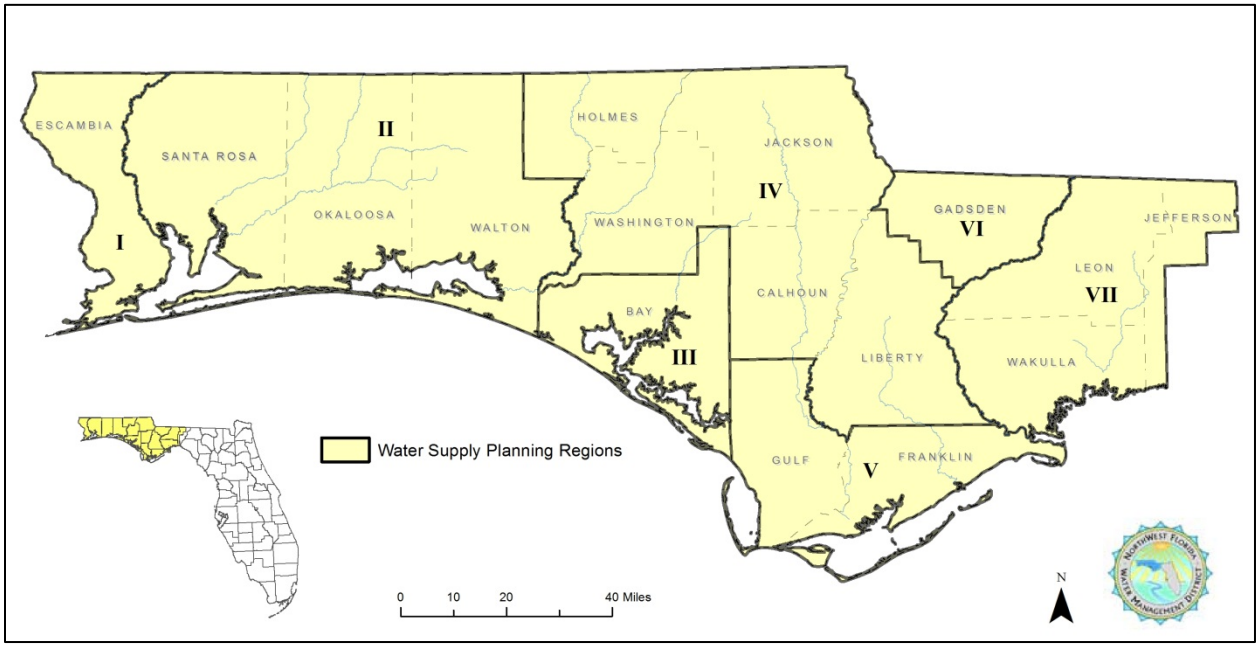

Figure 1-1. Water Supply Planning Regions of the Northwest Florida Water Management District

As outlined in sections 373.036 and 373.709, F.S., development of the RWSP must be conducted through an open public process and in coordination with local governments, regional water supply authorities, government-owned and privately owned water and wastewater utilities, multijurisdictional water supply entities, self-suppliers, reuse utilities, the Department of Environmental Protection (DEP), the Florida Department of Agriculture and Consumer Services, and other affected and interested parties.

The process for updating the Region III RWSP provides for communication and coordination with regional stakeholders and technical and public workshops held prior to plan completion. Comments and recommendations have been solicited from the public and other stakeholders during plan development. All comments received were addressed and incorporated in the final plan and process as appropriate. The final plan is brought before the Governing Board of the Northwest Florida Water Management District in a public hearing for consideration and approval.

Approval and update of a RWSP initiates state requirements for local governments to coordinate land use and water planning, as outlined in sections 163.3177(6)(c) and 373.709, F.S. The District will notify local governments, government-owned utilities, multi-jurisdictional water supply entities, and self-suppliers within six months of approval of the portion(s) of the RWSP relevant to them. Within one year of notification, each of these entities is to inform the District of alternative water supply projects or options that it has developed or intends to develop, an estimate of the quantity of water to be produced, and the status of project implementation. The information is to be updated annually and a progress report submitted to the District by November 15 of each year. The entity may choose to propose a project not identified in the RWSP, and, if so, is to notify the District of such in the same manner. The entity may request the District include the project in the RWSP. Local governments are

required to amend their local comprehensive plans within 18 months of approval of the RWSP to meet water needs and incorporate alternative water supply projects as appropriate.

Subsequent to plan approval, District staff will provide technical assistance to local governments and utilities to support project development and implementation and to assist in incorporating the RWSP and associated projects within local and regional planning processes.

The organization of this RWSP generally follows guidelines developed jointly with DEP and the water management districts (FDEP et al. 2009).

2. PLANNING AREA

2.1 Geography and Water Resources

Water supply planning Region III consists exclusively of Bay County, Florida. Bay County is centrally located within the NWFWMD, bordered on the south by the Gulf of Mexico, on the west By Walton County, on the north by Washington and Jackson counties, and on the east by Calhoun and Gulf counties (Figure 2-1).

Major waterbodies in Bay County include the St. Andrew Bay estuarine system; Econfina, Sandy, Bear, and Cedar creeks; Bayou George; Lake Powell; and Deer Point Lake Reservoir. The region encompasses the majority of the St. Andrew Bay watershed, as well as a portion of the Pine Log Creek basin of the Choctawhatchee River and Bay watershed.

The St. Andrew Bay watershed, including Deer Point Lake Reservoir, is part of a larger regional system that includes a 749,663-acre surface water drainage basin across six Florida counties and the groundwater recharge area for Econfina Creek (NWFWMD 2000; Richards 1997). The recharge area, substantially within the Sand Hill Lakes region of Bay and Washington counties, is an internally drained karst environment. An essential aspect of such an environment with important management implications is the complex and widespread interaction of surface and ground waters. Water that recharges in this area discharges primarily to Holmes and Econfina creeks and the Choctawhatchee River. This high volume of recharge and discharge results in a number of discrete spring vents as well as large areas of more diffuse discharge along Econfina Creek.

Eleven springs or spring groups comprised of more than 36 vents have been identified in the basin (Barrios and Chelette 2004). The Gainer Springs Group, on Econfina Creek, is one of only five first magnitude springs in the District. A dye trace performed in the recharge area (DeFosset 2004) demonstrates the vulnerability of the springs, creek and eventually Deer Point Lake Reservoir to activities within the recharge area. Given the significance and potential vulnerability of these resources, protection of the Econfina Creek recharge area has been a high priority for the NWFWMD. Over 41,000 acres are managed by the District as the Econfina Creek Water Management Area (Figure 2-1), preserving water quality and recharge and providing a regional resource for compatible public recreation. An additional 2,433 acres of private property are under conservation easement with the District. Figure 2-2 illustrates the topographical and hydrological context of the region. The hydrology of Region III is more fully described in the 2013 WSA (Countryman et al. 2014).

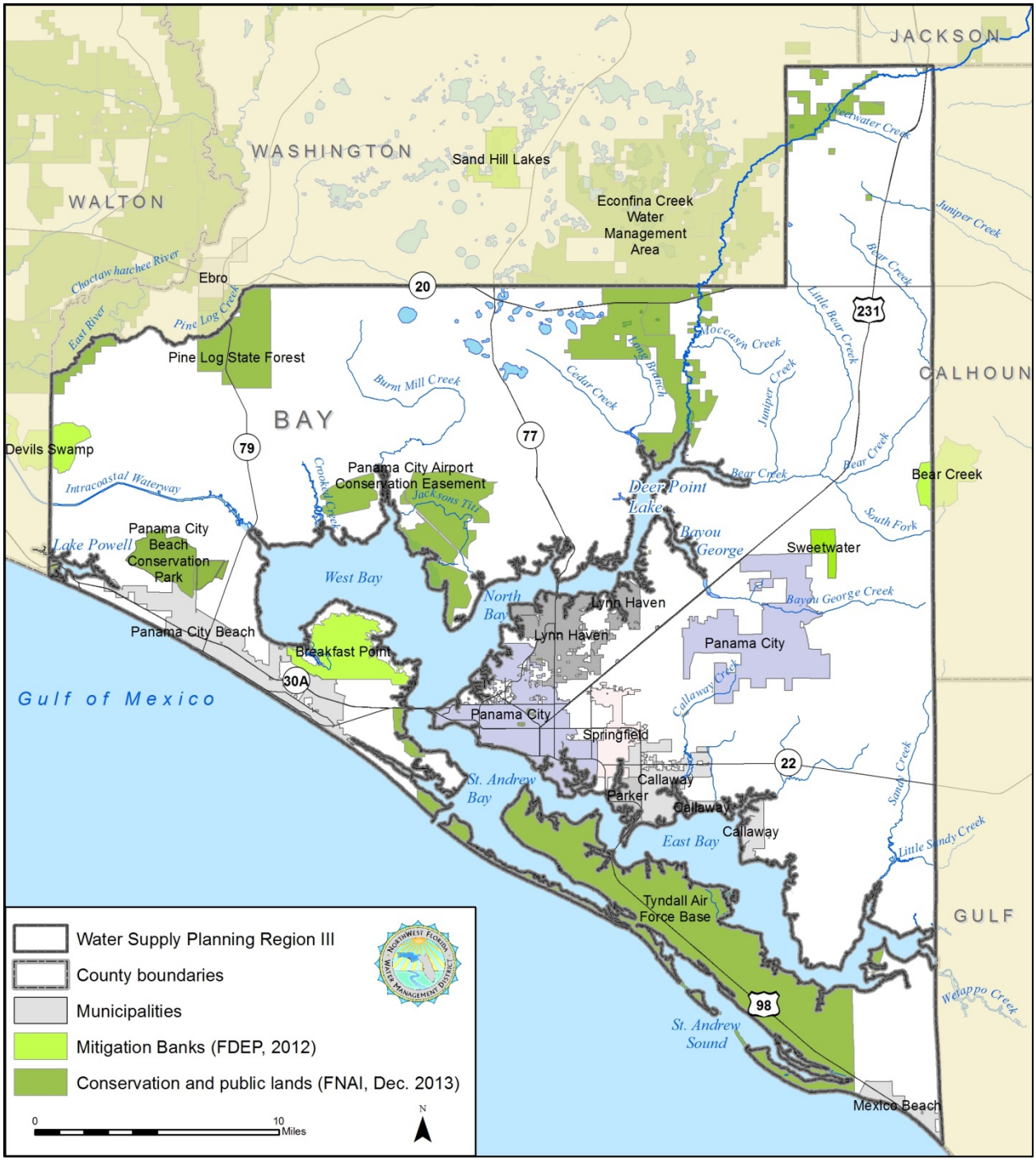

Figure 2-1. Planning Region III

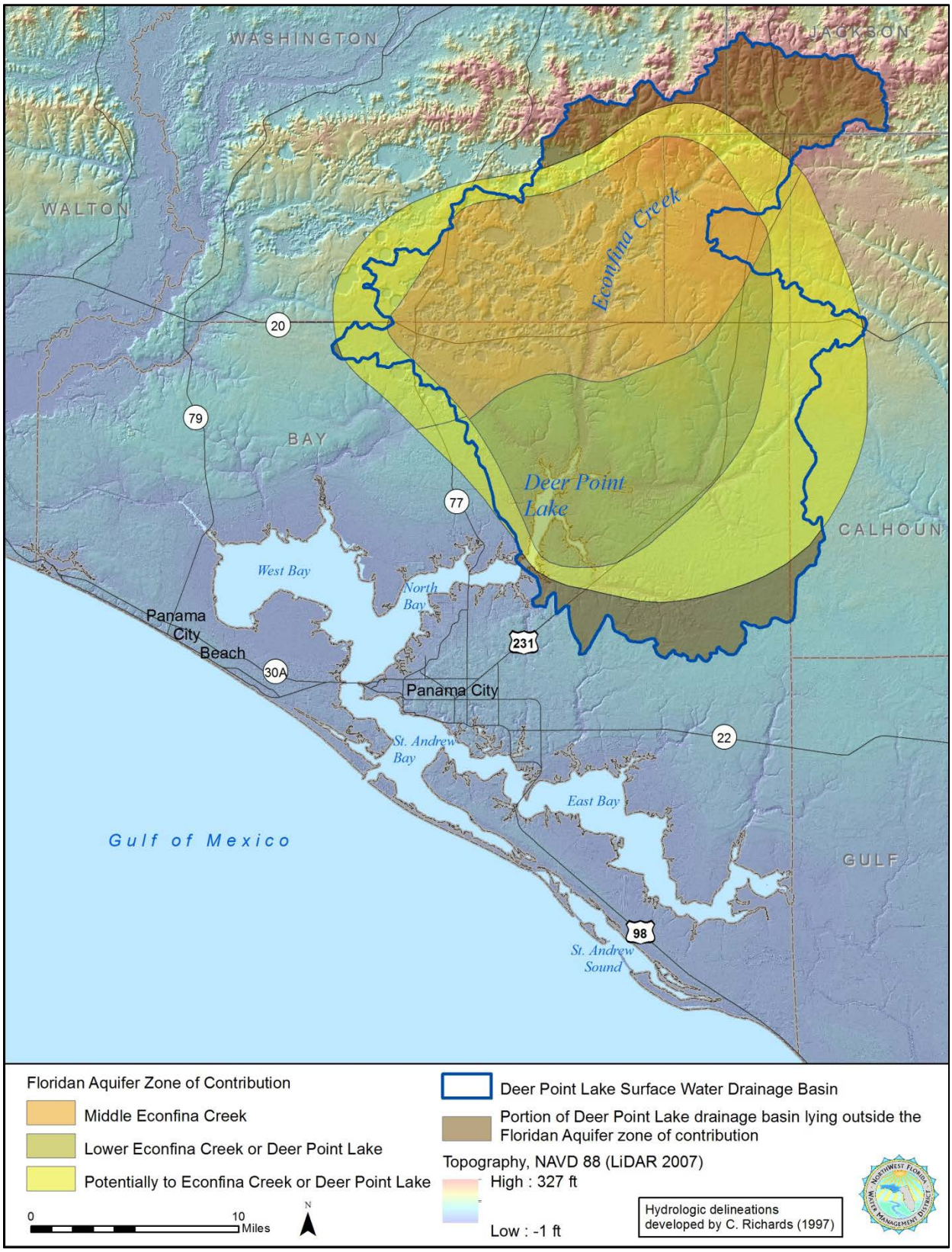

Figure 2-2. Regional Context

2.2 Climate

As described by Crow et al. (2008), the climate of the Deer Point Lake watershed is moderate subtropical. The summers are long, warm, and humid and the winters are mild to cool. The average annual rainfall is approximately 64.75 inches with an annual average temperature of 68°F. Bay County receives almost half of its yearly rainfall from December through April. During the summer, thunderstorms tend to occur one to three days a week. These summer storms typically produce up to three inches of rain. Winter and spring rains are usually not as intense as the summer thunderstorms. The mean annual temperature from June through September is approximately 80°F. Generally, the frost season is from late November to early March. In Bay County, the annual mean wind speed is approximately 7.5 mph with prevailing winds usually coming from the south/southwest in February through October and from the northwest from November through January.

2.3 Regional Development

Bay County is the focus of several planning initiatives of regional importance. Most notable is the West Bay Sector Plan, which encompasses approximately 75,000 acres in the west-central portion of the county (Bay County 2009). The adopted comprehensive plan currently allows up to 27,631 residential dwelling units within the sector plan area, as well as airport, industrial, business, and other development uses. Additionally, the sector plan provides for a major preservation area encompassing much of the shoreline area and immediate drainage to West Bay. In 2013, the St. Joe Company initiated an update and expansion of the West Bay Sector Plan that would extend into Walton County. The conceptual Bay-Walton Sector Plan would add approximately 37,000 acres to the current sector plan area, 23,475 acres of which are in Bay County. The Walton County portion is located in the Region II Regional Water Supply Planning Area. The number of dwellings allowed in the current Bay County portion is subject to change with an amended sector plan and is anticipated to increase.

Other areas of the region that are the focus of planning for significant new development include Bay County's Sand Hills Rural Community Special Treatment Zone (STZ), the Southport Neighborhood Planning Area, and a new urban community planned for the Panama City North Planning Area. In the STZ located in north central Bay County, recent comprehensive plan amendments allow up to four dwelling units per acre where central water and sewer are available and where specified planning best management practices (BMPs) designed to protect water resources are implemented. The Southport Neighborhood Planning Area allows intensive mixed use development served by central water and sewer with up to 15 dwelling units per acre and 75% impervious surface. In the Panama City North Planning Area, Panama City has approved development of up to 4,500 residential dwelling units together with additional commercial, office, and light manufacturing land uses. Central water and sewer are planned for this area. Significant future development is also anticipated in Panama City Beach and the vicinity of Callaway, among other areas. The extent to which these changes are manifested will affect future population and demand for public supply and other categories of water use.

Major transportation developments include the recent construction of the Northwest Florida Beaches International Airport. Among other planned transportation facilities are the West Bay Parkway proposed for the region west of West Bay, which would be a new road footprint in an undeveloped area.

2.4 Population

The University of Florida's Bureau of Economic and Business Research (BEBR) estimated Bay County's 2012 population at 169,392 and further predicted that it will reach 209,100 by 2035 (Smith and Rayer 2013). Municipalities within the county include the cities of Panama City Beach, Panama City, Lynn Haven, Mexico Beach, Parker, Callaway, and Springfield. The 2012 incorporated area population was estimated at 94,975 (OEDR 2013). Within the county, Panama City and Lynn Haven are the most populous municipalities, with an estimated 35,800 and 18,764 persons respectively in 2012 (OEDR 2013). Population data are presented in Table 2-1. The highest population growth is occurring in Lynn Haven and Panama City Beach.

Table 2-1. Bay County Population Estimates

Jurisdiction	2010 Census	2012 Estimate	2035 Projection
Callaway	14,405	14,051	
Lynn Haven	18,493	18,764	
Mexico Beach	1,072	1,095	
Panama City	35,505	35,800	
Panama City Beach	12,018	12,067	
Parker	4,317	4,305	
Springfield	8,903	8,893	
Unincorporated	74,139	74,417	
Total County	**168,852**	**169,392**	**209,100**

For the 2013 WSA, population estimates were developed for areas served by public supply utilities for a base year of 2010 (Countryman et al. 2014). These are estimates of permanent population and do not account for seasonal population. Bay County Utility Services under the authority of the Bay County Board of County Commissioners (BOCC) provides water to retail customers in unincorporated areas (listed below as Bay County BOCC, Cedar Grove, and Gulf Coast Electric Cooperative (GCEC)). Callaway now serves water to the community of Sandy Creek. Population projections for utility distribution areas through the year 2035 were generally based on the BEBR medium growth scenario. The county population not served by public supply utilities is supplied by water from private domestic wells or small public supply systems. Refer to the 2013 WSA for a full description of the methodologies used to develop population estimates and projections. The following tables are taken from information in the 2013 WSA (Countryman et al. 2014).

Table 2-2. Region III Population Estimates and Projections, 2010 - 2035

	Estimated		Projected			
Population	2010	2015	2020	2025	2030	2035
Total Population (BEBR Medium)[(1)]	168,852	174,100	184,500	193,900	202,000	209,100
Population Served, Public Supply	150,960	157,858	166,398	174,928	183,374	191,817
Population Served, Domestic Self-supply	17,892	16,242	18,102	18,972	18,626	17,283

[(1)] Source: University of Florida, Bureau of Economic and Business Research, March 2013: BEBR Estimates of Population by County and City in Florida.

Table 2-3. Region III Public Supply Population Estimates and Projections, 2010 - 2035

	Estimated		Projected			
Utility System	2010	2015	2020	2025	2030	2035
Bay County BOCC	14,327	14,773	15,655	16,453	17,140	17,743
Cedar Grove	4,820	4,970	5,267	5,535	5,766	5,969
GCEC (North Bay, Lake Merial)	4,245	4,377	4,638	4,875	5,078	5,257
Callaway	15,424	15,424	15,424	15,424	15,424	15,424
Sandy Creek Utility Services, Inc.	540	557	590	620	646	669
Lynn Haven, City of	16,219	17,958	20,422	23,099	26,021	29,227
Mexico Beach	4,586	4,586	4,586	4,586	4,586	4,586
Panama City	41,011	42,036	43,087	44,164	45,268	46,400
Panama City Beach	36,341	39,730	43,282	46,725	49,997	53,096
Parker	4,014	4,014	4,014	4,014	4,014	4,014
Springfield	9,433	9,433	9,433	9,433	9,433	9,433
Total	**150,960**	**157,858**	**166,398**	**174,928**	**183,374**	**191,817**

2.5 Water Supply Systems

The primary water supply source for Region III is Deer Point Lake Reservoir. The reservoir was created in 1961 through construction of a dam across North Bay at Deer Point.

Bay County Utility Services Department operates the Williams Bayou Raw Water Pumping Station, from which water is pumped to a water treatment facility located to the east proximate to U.S. Highway 231 (Bay County 2012). Bay County withdrew 45.7 mgd of surface water from Deer Point Lake Reservoir in 2012. Of this, 24.1 mgd were for public supply use, and 21.6 mgd were withdrawn for industrial use.

Water from Deer Point Lake Reservoir is provided to the County's retail water service area customers and as a wholesale supply to municipal utilities. Additionally, the County provides water for industrial uses to the RockTenn Paper Mill and Arizona Chemical Company, and for institutional use at Tyndall Air Force Base (AFB). Bay County provides water from Deer Point Lake Reservoir to these wholesale, mostly municipal public supply customers:

- Callaway
- Lynn Haven
- Mexico Beach
- Panama City
- Panama City Beach
- Parker
- Springfield
- Tyndall AFB

The City of Lynn Haven is the only municipality in the region that does not purchase all of its public supply water from the County's utility. The City operates five Floridan aquifer supply wells and in 2012 purchased about one third of its water supply from the County. The City was granted a permit in November 2013 to install two additional wells that will reduce reliance on purchased water. The Sandy Creek community receives water and sewer service from the City of Callaway.

3. WATER DEMAND ESTIMATES AND PROJECTIONS

Water uses are classified into one of six categories: public supply; domestic self-supply; industrial, commercial, institutional (I/C/I) self-supply; power generation self-supply; recreational self-supply; and, agricultural self-supply. Estimates of 2010 water use and future projections in Table 3-1 below are taken from the 2013 WSA, with 2012 water use estimates added (Countryman et al. 2014). Total water use for the county is expected to increase about 22 percent to 88.4 mgd by 2035. A full explanation of the methodology used to develop estimates and projections, uncertainties of the methods, and 1-in-10 drought projections may be found in the 2013 WSA (Countryman et al. 2014).

Table 3-1. Region III Water Use Estimates and Projections by Category, 2010-2035 (mgd)

	Estimated		Projected				
Water Use Category	2010	2012[(1)]	2015	2020	2025	2030	2035
Public supply	27.20	26.16	28.89	30.83	32.75	34.64	36.51
Domestic self-supply	1.75	1.81	1.59	1.77	1.86	1.83	1.69
Ind./Comm./Inst. (I/C/I)	24.21	22.64	29.76	29.83	29.90	30.11	30.15
Recreational and landscape irrig.	3.67	2.15	3.79	4.01	4.22	4.39	4.55
Agricultural use	2.25	0.24	2.25	2.25	2.25	2.25	2.25
Power generation	13.24	11.89	13.26	13.26	13.26	13.26	13.26
Total	**72.34**	**64.88**	**79.54**	**81.95**	**84.24**	**86.48**	**88.42**

(1) Recreational and agricultural use values are limited to those reported by individual water use permittees. Estimates for general water use permits not performed for these categories.

Public supply is the largest use category in Region III. To account for water transfers between utilities, both the end-user demand and the wholesale withdrawals necessary to meet that demand were evaluated, applying growth rates of the respective utility system service areas to baseline year water demand to get future demand projections. Table 3-2 and Table 3-3 show public supply demand and withdrawal estimates and projections, respectively, as presented in the 2013 WSA, with water use estimates for 2012 added. Bay County's estimated water losses were distributed proportionally to its wholesale and retail customers, so utility system demands shown in Table 3-2 are higher than exported amounts. Exports to Tyndall AFB are included under the I/C/I category. Public supply demand is anticipated to increase by 9.3 mgd by the year 2035, or 34 percent over 2010 demand. Public supply and I/C/I water use, which are substantially dependent on Deer Point Lake Reservoir, are projected to increase by approximately 12.3 mgd over the planning period.

Table 3-2. Region III Public Supply Water Demand Estimates and Projections, 2010 - 2035

	Estimated		Projected				
Utility System	2010	2012	2015	2020	2025	2030	2035
Bay County BOCC	0.96	0.88	0.99	1.05	1.10	1.14	1.18
Cedar Grove	0.48	0.44	0.50	0.53	0.56	0.58	0.60
GCEC (North Bay, Lake Merial)	0.53	0.62	0.55	0.58	0.61	0.64	0.66
Callaway	1.61	1.46	1.61	1.61	1.61	1.61	1.61
Sandy Creek Utility Services, Inc.	0.06	0.07	0.07	0.07	0.07	0.08	0.08
Lynn Haven, City of	2.67	2.98	2.96	3.37	3.81	4.29	4.82
Mexico Beach	0.27	0.36	0.27	0.27	0.27	0.27	0.27
Panama City	6.49	6.35	6.65	6.82	6.99	7.16	7.34
Panama City Beach	12.65	11.40	13.82	15.06	16.26	17.40	18.47
Parker	0.48	0.40	0.48	0.48	0.48	0.48	0.48
Springfield	1.00	1.20	1.00	1.00	1.00	1.00	1.00
Total	**27.20**	**26.16**	**28.89**	**30.83**	**32.75**	**34.64**	**36.51**

Table 3-3. Region III Public Supply Water Production Estimates and Projections, 2010 - 2035

	Estimated		Projected				
Utility System	2010	2012	2015	2020	2025	2030	2035
Bay County BOCC	25.21	24.06	25.93	27.46	28.94	30.35	31.70
Cedar Grove	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GCEC (North Bay, Lake Merial)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Callaway	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sandy Creek Utility Services, Inc.	0.06	0.07	0.00	0.00	0.00	0.00	0.00
Lynn Haven, City of	1.93	2.03	2.96	3.37	3.81	4.29	4.82
Mexico Beach	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Panama City	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Panama City Beach	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parker	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Springfield	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**27.20**	**26.16**	**28.89**	**30.83**	**32.75**	**34.64**	**36.51**

Industrial, Commercial, and Institutional (I/C/I) self-supply represents the second largest water use category in Region III, accounting for approximately 34 percent of the water use in Bay County in 2012. Large I/C/I water users include Arizona Chemical Company, RockTenn corrugated packaging, and Tyndall AFB. While these three water users pump small quantities of groundwater, District records indicate they obtain the majority of their water from Deer Point Lake Reservoir via Bay County Utility Services. About 53 percent of the surface water used by Arizona Chemical is sent to RockTenn for reuse.

Recreational water use consists primarily of water used for golf course irrigation. Sources of irrigation water include the Floridan aquifer, the intermediate aquifer, the surficial aquifer, golf course ponds, and reclaimed water. Approximately 2.15 mgd of ground and surface water were used to irrigate golf courses in 2012.

Reported agricultural water use was 0.24 mgd for 2012 and primarily represented a single sod farm. Agriculture use in Bay County also includes some irrigation for hay and fruit crops, with withdrawals being from the Floridan aquifer.

Consumptive water use for power generation was estimated at 11.9 mgd in Bay County during 2012. The two power generation facilities are the Gulf Power Company Lansing Smith Electric Generating Plant and the Bay County BOCC Waste-to-Energy Facility. The Lansing Smith facility uses groundwater from the Floridan aquifer for steam and plant processes and surface water from Alligator Bayou for cooling the power generation units. Approximately 95 percent of surface water is returned to the source after use. Gulf Power is investigating the use of reclaimed water for cooling purposes. The waste-to-energy plant relies solely on groundwater for steam flow, cleaning processes and capture of waste byproducts. Water from steam flow is recycled in cooling towers but make-up water is needed due to evaporation. Both facilities have been implementing conservation and water recycling measures.

Water demand estimates from 2010 and projections for 2035 by category shown in Table 3-4 are simplified by water source as either groundwater or surface water. Table 3-5 shows currently permitted total amounts in each of these categories by water source.

Table 3-4. Region III Water Demand 2010 Estimates and 2035 Projections by Water Source (mgd)

	Estimated 2010			Projected 2035		
Water Use Category	Ground-water	Surface Water	Total	Ground-water	Surface Water	Total
Public supply	1.99	25.21	27.20	4.82	31.70	36.52
Domestic self-supply	1.75	0.00	1.75	1.69	0.00	1.69
Ind./Comm./Inst. (I/C/I) self-supply	0.28	23.93	24.21	0.46	29.69	30.15
Recreational self-supply	3.31	0.36	3.67	4.10	0.45	4.55
Agricultural use self-supply	2.25	0.00	2.25	2.25	0.00	2.25
Power generation self-supply	0.94	12.30	13.24	0.95	12.31	13.26
Total	**10.52**	**61.80**	**72.32**	**14.27**	**74.15**	**88.42**

Table 3-5. Region III Permitted Water Withdrawals by Category (mgd)

	Permitted ADR		
Water Use Category	Groundwater	Surface Water	Total
Public supply[(1)]	3.29	98.00	101.29
Domestic self-supply	-	-	-
Ind./Comm./Inst. (I/C/I) self-supply	1.41	-	1.41
Recreational self-supply[(2)]	1.58	1.68	1.91
Agricultural use self-supply	1.66	-	1.66
Power generation self-supply[(3)]	1.50	13.70	15.20
Total	**9.44**	**113.38**	**121.48**

(1) Bay County provides raw water for I/C/I customers.
(2) Ground and surface water permitted amounts not additive. Combined withdrawal limits apply.
(3) Amount consumptively used. 95% of surface water returned to source.

4. RESOURCE ANALYSES

4.1 Resource Protection Criteria

Resource protection criteria for Region III include prevention of saltwater intrusion in the coastal Floridan aquifer, protection of lacustrine and estuarine resources associated with Deer Point Lake Reservoir and North Bay, and prevention of harm to wetlands and other water resources.

Protection of Deer Point Lake Reservoir includes water quality protection, which requires appropriate growth management and land development regulation on the part of local governments. Crowe et al. (2008) provides an evaluation of the resource, concluding that managed use of the reservoir, including surface water withdrawals of up to 98 mgd, is sustainable without adversely affecting downstream estuarine habitats. The coastal Floridan aquifer in Bay County is on the District's priority list for development of Minimum Flows and Levels (MFLs), as well as Econfina Creek and Spring Complex and Deer Point Lake Reservoir, as discussed in Section 4.4.

Spring protection, particularly for Floridan aquifer springs discharging into Econfina Creek, is also an important resource protection objective. Eleven springs and spring groups have been identified within the Econfina Creek basin (Barrios and Chelette 2004). Among these is the first magnitude Gainer Springs group. Protection of these springs encompasses management of the recharge area and protection and management of spring banks, spring runs, and other features of the immediate spring environment.

An additional criterion for resource protection important for Region III is the sustainability and reliability of the surface water resource under any reasonably foreseeable condition. This would include tropical storms that have the potential to impact water quality in the reservoir or damage the impoundment structure.

4.2 Groundwater Resources

As described in Countryman et al. (2014), groundwater from the coastal Floridan aquifer historically constituted the traditional water source in Bay County for both public and industrial water supplies. From the 1930s to the 1960s, groundwater withdrawals, particularly for industrial uses, caused a significant cone of depression to form. Due to subsequent concerns about the sustainability and adequacy of the groundwater resource in the region, Deer Point Lake Reservoir was developed as an alternative water supply source and coastal groundwater withdrawals were reduced.

Concerns regarding water quality and potentiometric surface declines constrain the availability of the coastal Floridan aquifer in Region III (Countryman et al. 2014). Use of the Floridan aquifer in the most densely developed, coastal area of Bay County is limited by low transmissivity and by water quality degradation that manifests even at withdrawal rates as low as approximately 5-10 mgd. The potentiometric surface of the Floridan aquifer has largely recovered as pumping has been reduced. In the Panama City Beach area, however, the Floridan aquifer remains depressed slightly below sea level, and the cause is not well understood. While there are some dispersed, low volume withdrawals being made from the aquifer in this area, the pumping as currently understood by the District does not account for this residual depression of water levels. Prior to permitting significant increases in withdrawals in the coastal portion of Region III, this effect must be better understood. The coastal area is susceptible to both lateral saltwater intrusion and vertical upconing of salt water.

While direct withdrawal of groundwater provided less than 15 percent of the total use in Region III in 2010 (Countryman et al. 2014), a significant fraction of the surface water flowing into Deer Point Lake Reservoir is discharged from the Floridan aquifer both within and outside of Region III. This groundwater discharge is conveyed to Deer Point Lake Reservoir primarily via Econfina Creek. Groundwater contributions to the creek are particularly important to the resource during drought periods (Richards 1997).

To protect groundwater recharge and water quality, the District protects over 43,000 acres in Bay and Washington Counties as the Econfina Creek Water Management Area (WMA) (Figure 4-1). The WMA protects the large majority of the recharge area for springs contributing to Econfina Creek and Deer Point Lake Reservoir. The WMA encompasses part of the Sand Hill Lakes area of Bay and Washington counties, which has been identified as vulnerable to contamination of the Floridan aquifer system (Arthur et al. 2005). Development of the Floridan aquifer in the inland portion of the region, if contemplated, would require careful planning and evaluation prior to implementation to ensure that there would not be unacceptable impacts on the discharge volume to Econfina Creek, Deer Point Lake Reservoir, and North Bay.

The surficial aquifer near the coast provides a significant source of irrigation water for golf courses, residential landscaping, and other recreational irrigation. However, this source is subject to water quality decline similar to that seen in the Floridan aquifer as withdrawals increase. Further, withdrawals from the surficial aquifer in any location pose a more direct threat to wetlands and other surface water systems than typical of Floridan aquifer withdrawals in this region. The surficial aquifer is also susceptible to contamination related to land use activities.

A detailed description of groundwater resources in Region III, including regional hydrogeology and historical and current resource conditions, may be found in Countryman et al. (2014).

4.3 Surface Water Resources

Surface water from Deer Point Lake Reservoir is currently the primary water source for Region III for both public supply and industrial water uses. It is estimated that surface water provided 87 percent of the potable water used in the region in 2010, supplying 82 percent of the county population. The reservoir covers between 4,500 to 5,500 acres, depending on the lake stage (Coates et al, 2008). The principal tributaries contributing to the reservoir are Econfina, Bear, Bayou George, and Big Cedar creeks. As described by Countryman et al. (2014), during the period of 1998-2008 – representative of a relatively low flow period – these tributaries together contributed an annual average flow of 423 mgd to the reservoir. Econfina Creek is the major tributary. Due to significant discharges from Floridan aquifer springs, creek flow is relatively stable from year to year, even during drought conditions. It is estimated that the creek contributes approximately 60 percent of the average annual inflow to the lake, with this increasing to nearly 80 percent during low flow conditions (Richards 1997). A detailed description of surface water resources in the region may be found in Countryman et al. (2014) and Crowe et al. (2008).

To minimize water quality impacts from land use activities, source water protection has been provided through several means. The reservoir and tributaries are classified as Class I waters of the state for potable water supply, which has the most stringent water quality criteria. Bay County has established protective measures through overlays in their land development code for the Deer Point Reservoir Protection Zone and the Sand Hills Rural Community Special Treatment Zone (STZ). The function of the protection zone is to protect water quality by limiting the types of allowable land uses, limiting density and impervious surfaces within the designated protection zone, requiring a 75-foot development

setback with natural vegetation, increasing the setback distance for septic systems, and requiring silviculture BMPs. The Sand Hills Rural Community STZ seeks to protect an important recharge area and promote sustainable development through centralized water and wastewater, disallowing industrial land uses, establishing requirements to protect karst features, preservation of native vegetation, limiting fertilizer and pesticide use, and establishing enhanced stormwater treatment requirements. In support of these measures, Bay County has evaluated areas of vulnerability for water quality impacts based on the Florida Aquifer Vulnerability Assessment (FAVA) datasets and has adapted land use management standards accordingly. The District's purchase of the WMA also contributes substantially to the water quality protection of this vital recharge area. Figure 4-1 illustrates these protection areas.

Water quality concerns within the lake include elevated mercury in largemouth bass, invasive aquatic plants, excess nutrients, sedimentation, reduced clarity, turbidity, and reduced biological diversity (Countryman et al. 2014).

Miller (2010) described potential risks to Deer Point Lake Reservoir from major hurricane impacts. The Sea, Lake, and Overland Surge from Hurricanes (SLOSH) model identifies storm surge elevations associated with Saffir-Simpson Scale storm categories. Miller compares SLOSH surge elevations with known elevations of tides and the dam structure and describes the vulnerability of the Deer Point Dam to overtopping by a Category 3 hurricane. It was estimated that such a storm surge could keep water levels above the tide gates for up to three hours. In such a situation, Salt water would be introduced into the reservoir. It could take from two to four weeks or more for salinity to be reduced to drinking water standards, depending on rainfall. There is also risk associated with wind and waves as described by Work (2008) and Miller (2010). The Digital Flood Insurance Rate Map published by the Federal Emergency Management Agency in 2009 indicates a coastal 100-year flood elevation including wave heights higher than the dam.

Miller (2010) also pointed out that a major storm impact, comparable to that of Hurricane Ivan in Escambia County in 2004, could seriously damage the County Road 2321 bridge over the dam and cause much larger volumes of flood waters to enter the lake. Work (2008) noted that Hurricane Ivan (Category 3) produced storm surge of 16 feet in inland bays, well above the base flood elevation corresponding to a 100-year storm event. The top of the tide gates is nine feet North American Vertical Datum (NAVD) (Miller 2010).

Sea level measured in north Florida during the 20th century has increased up to 0.69 feet over 100 years (Department of Commerce et al. 2013). At such a rate, sea level rise is not expected to appreciably alter the relative vulnerability of the reservoir to hurricane impacts, as described above, over the planning horizon.

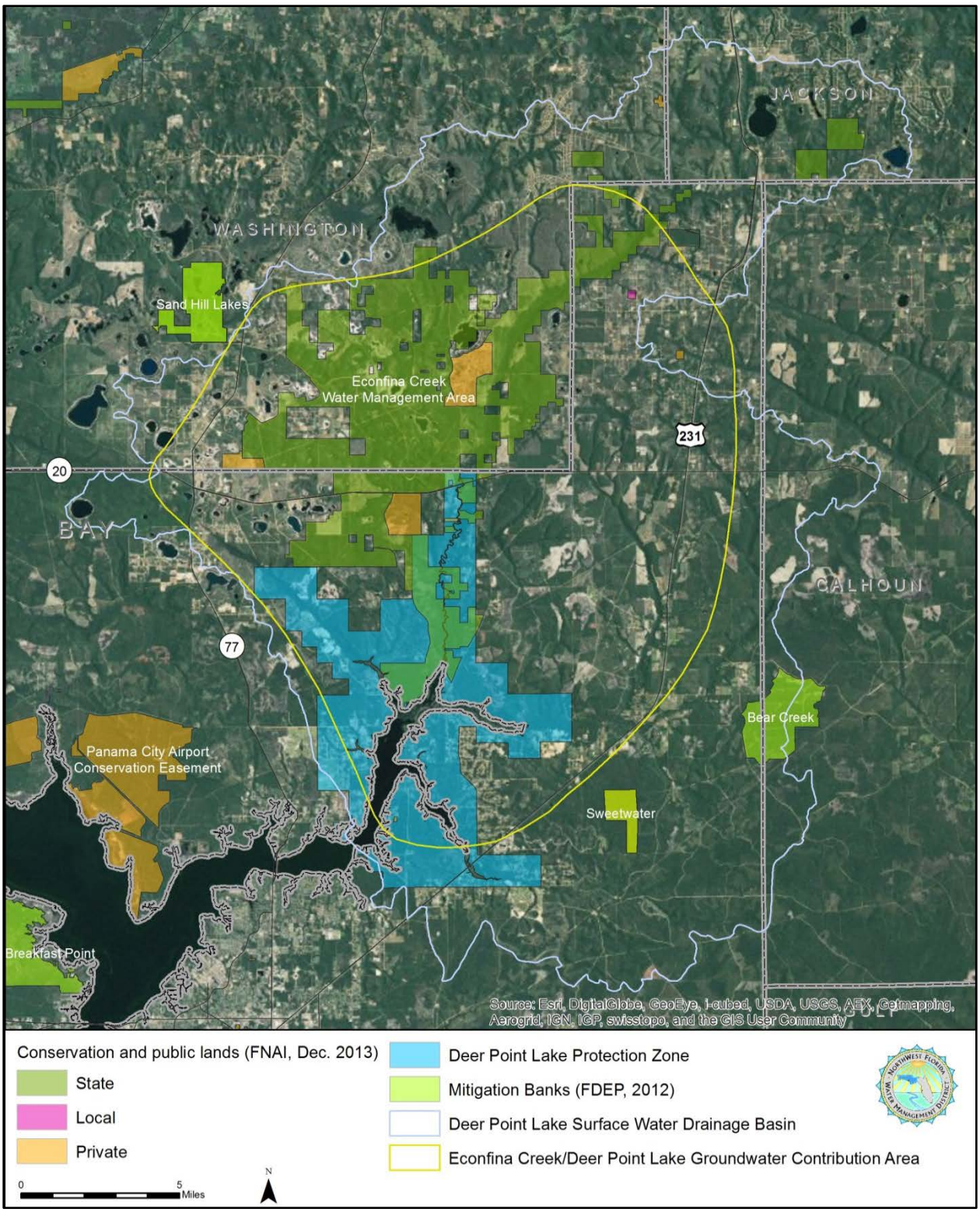

Figure 4-1. Resource Protection Areas of Econfina Creek and Deer Point Lake

4.4 Minimum Flows and Levels and Reservations

The schedule for MFL adoption in Region III is presented in Table 4-1, as updated for 2014 (Steverson 2013). There have been no MFLs established in Region III to date, and thus the necessity for recovery or prevention strategies has not been determined. There have been no water reservations adopted by rule in Region III.

Table 4-1. Minimum Flows and Levels Schedule for Region III

		Estimated Completion	
Water body	MFL Initiation	Technical Assessment	Rule Adoption
Floridan Aquifer – Coastal Bay County	2018	2023	2025
Econfina Creek & Spring Complex	2019	2024	2026
Deer Point Lake	2020	2025	2027

The MFL priority list is updated annually and may be found at www.nwfwmd.state.fl.us/rmd/mfl/mfl.htm.

5. ISSUE IDENTIFICATION

Given the importance of Deer Point Lake Reservoir as the region's primary water supply source, ensuring the dependability and sustainability of the reservoir is a key issue. Major hurricanes present risks to the reliability of the Deer Point Lake Reservoir from both saltwater intrusion and disruption from damage to the dam structure. From the resource perspective, protection of the recharge for Econfina Creek and springs and source protection for Deer Point Lake Reservoir are important for protecting water quality and sustaining the surface water supply source. Careful management of groundwater continues to be an issue both in coastal areas vulnerable to saltwater intrusion and in inland areas.

6. EVALUATION OF WATER SOURCE OPTIONS

6.1 Traditional Sources

Groundwater

As described by Countryman et al. (2014), groundwater is currently of secondary importance as a water supply resource in Region III. The demand for groundwater is limited and is projected to not exceed approximately 17 percent of the total use through 2035 (Countryman et al. 2014). The City of Lynn Haven withdraws approximately two-thirds of the water for their service area from the Floridan aquifer and is planning to add additional groundwater wells to reduce reliance on surface water. Monitoring wells and further resource assessment will be required to ensure that harmful saltwater intrusion does not occur.

Use of groundwater to provide a portion of the existing and future demand is anticipated. However, groundwater withdrawals from either the Floridan or surficial aquifer have the potential to affect water quality, natural systems, and existing legal uses and would thus need to be carefully evaluated. Reliance on any significant amount of water from the Floridan aquifer in the coastal area has the potential to result in the need for extensive treatment of the poor quality water being pumped, possibly through

desalination, and could necessitate expensive mitigation measures should harm to the resource or existing legal uses occur. Use of groundwater from the surficial aquifer near the coast could result in water quality changes similar to those seen in the Floridan aquifer with similar measures required to ameliorate those changes. Withdrawals from the surficial aquifer in any location pose a more direct threat to wetlands and other surface water systems than Floridan aquifer withdrawals. The surficial aquifer is also more susceptible to contamination related to land use activities.

If contemplated, development of the Floridan aquifer in the inland portion of the County would require careful planning and evaluation prior to implementation. As this portion of the County is relatively remote from population centers, development of additional inland water supplies would be expected to require construction of extensive transmission facilities. Concerns regarding impacts to existing legal uses, localized and regional resources and associated environmental systems would need to be addressed through detailed evaluations and planning.

6.2 Alternative Sources

Surface Water

As described above, Deer Point Lake Reservoir was created in 1961 through construction of a low dam across the head of North Bay. The reservoir impounds flow from Econfina, Bear, Bayou George, and Big Cedar creeks and the contributing surface watershed and groundwater contribution area.

The current surface water source from Deer Point Lake Reservoir is sufficient in volume to meet the demands through the 20-year planning horizon, which are projected to be 61.4 mgd. Under agreement between the District and Bay County, the county may withdraw an annual average quantity of up to 98 mgd. Concerns with the proximity of intake structures to the dam and the associated threat of salt water being introduced from North Bay has led the County to consider an alternative source of supply. The County is conducting planning for construction of an alternative intake near the mouth of Econfina Creek. Such a measure is not expected to result in additional impact from withdrawals, as the water level in the lake is maintained by the dam operation. Any withdrawals at the upstream intake would be offset by reduced withdrawals at the intake near the dam.

Water Reuse

The development and expansion of reclaimed water systems have the potential to reduce demand for potable water and to reduce groundwater pumping in the coastal area. Reuse of reclaimed water can also support efforts to protect and restore coastal and estuarine waters by directly reducing wastewater discharges into the environment.

There are eight domestic wastewater treatment facilities in Bay County (Table 6-1 and Figure 6-1), which potentially are sources for reclaimed water. Panama City Beach Wastewater Treatment Plant (WWTP) #1 is the largest facility. Military Point Regional Advanced Wastewater Treatment (AWT) Facility is the second largest and treats wastewater for Callaway, Parker, Springfield, Mexico Beach, Tyndall AFB, and unincorporated portions of Bay County. Three facilities operate reuse systems, as shown in Figure 6-1: Lynn Haven WWTF, Military Point Regional AWT Facility, and Panama City Beach WWTP #1. RiverCamps on Crooked Creek WWTP and Shores WWTF are very small systems that discharge to rapid infiltration basins (RIBs). North Bay WWTF also discharges to RIBS. The Millville and St. Andrews facilities are not currently permitted for reuse. The St. Andrews facility will be upgrading wastewater treatment and doubling capacity in phases over the next 10 years. The Millville facility is aging; the treatment amount will be capped below the permit capacity and excess flows redirected to the St. Andrews WWTF.

Table 6-1. Wastewater Facility Capacities in Region III

Facility Name	Permittee	WWTF Capacity (mgd)	Reuse Capacity (mgd)	Storage Capacity (mgd)	Permitted Discharge (mgd)	RIB Capacity (mgd)
Lynn Haven WWTF	City of Lynn Haven	2.50	1.00	12.00	2.50	
Military Point Regional AWT Facility	Bay County Board of County Commissioners	7.00	1.11		7.00	
Millville AWT Facility	City of Panama City	5.00			5.00	
North Bay WWTF	Bay County Utilities Services Department	1.50				1.50
Panama City Beach WWTP #1	City of Panama City Beach	10.00	10.00	10.00	14.00	
RiverCamps On Crooked Creek WWTP	Bay County Board of County Commissioners	0.07				0.07
Shores WWTF	Homeowners Association of the Shores, Inc.	0.06				0.06
St Andrews WWTF	City of Panama City	5.00			5.00	
Total		**31.13**	**12.11**	**22.00**	**33.50**	**1.63**

Bay County currently operates three wastewater facilities: Military Point Regional AWT Facility, North Bay WWTP, and RiverCamps WWTP. Plans are to decommission RiverCamps WWTP, which is small and expected to approach capacity by 2015. Flow from the RiverCamps WWTP will be redirected to North Bay WWTF. Planning is ongoing to further develop reuse associated with the North Bay WWTF. It is anticipated that two new 1.5 mgd capacity WWTPs will be needed by 2020 to serve new development in the Northeast Bay Service Area along Hwy 231 and the West Bay Service Area (Hatch Mott MacDonald 2012). Reuse infrastructure should be integral in planning for new WWTPs and new development.

Lynn Haven and Panama City Beach have well-developed reclaimed water distribution systems serving residential, commercial, and municipal applications. Types of water reuse practiced, as regulated by corresponding chapter 62-610, F.A.C., are Part III (public access reuse) for irrigation at a golf course, residential areas, and other public access areas, and Part VII for industrial use. Lynn Haven does not charge for reclaimed water. Panama City Beach charges a monthly connection fee and a usage fee.

Four plants dispose of treated wastewater to St. Andrew Bay: Lynn Haven WWTF, Military Point Regional AWT Facility, Millville AWT Facility, and St Andrews WWTF (Table 6-1). Together, these facilities are permitted for an average daily discharge of 19.5 mgd. Panama City Beach discharges excess reclaimed water to a treatment wetland, with the discharge permitted at up to 14 mgd. Redirecting those discharges to beneficial uses on land would serve the dual purposes of reducing pollution in the bay and potentially reducing potable water demand. For facilities that already have reuse programs, finding additional recipient sites could reduce surface water discharges. Military Point Regional AWT Facility does not have any reuse storage, which limits reclaimed water availability and reliability.

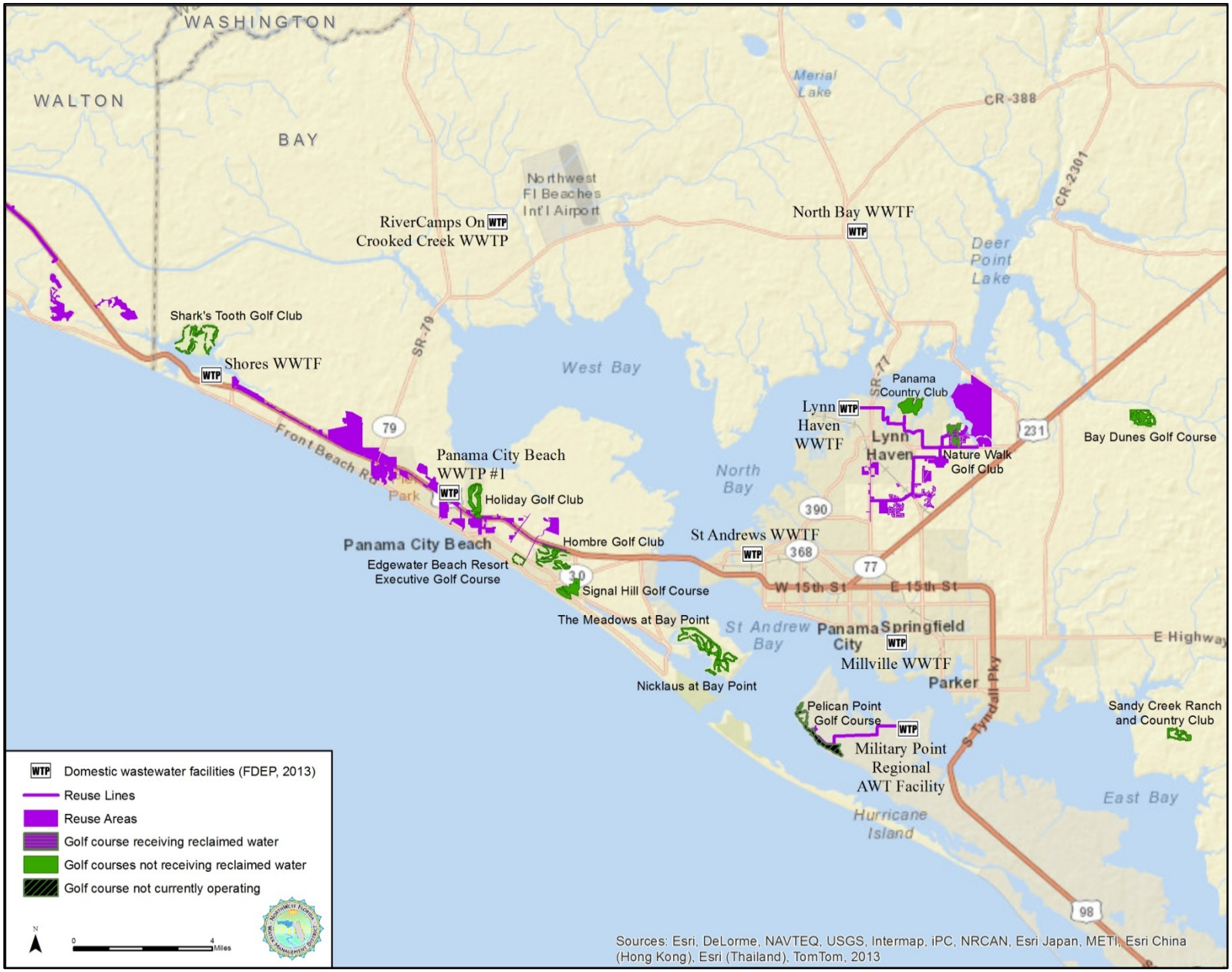

Figure 6-1. Wastewater and Reuse Facilities and Golf Courses in Region III

Projections of future wastewater flows and reclaimed water available to replace potable quality water are provided in the 2013 WSA update. Based on calculations to support the WSA update, it is estimated that an additional 5.2 mgd of reclaimed water will be available by 2035 to offset potable water demand. This number is derived by applying estimated peaking and effective potable water offset factors to projected 2035 wastewater flows. Facility treatment and disinfection levels are shown in Table 6-2.

Table 6-2. Wastewater Treatment and Disinfection Levels

Facility Name	Permittee	Treatment Level	Disinfection Level
Lynn Haven WWTF	City of Lynn Haven	WWTP	High
Military Point Regional AWT Facility	Bay County Board of County Commissioners	Advanced WWTP	High
Millville AWT Facility	City of Panama City	Advanced WWTP	
North Bay WWTF	Bay County Utilities Services Department	Advanced WWTP	
Panama City Beach WWTP #1	City of Panama City Beach	Advanced WWTP	High
RiverCamps On Crooked Creek WWTP	Bay County Board of County Commissioners	Secondary WWTP	
Shores WWTF	Homeowners Association of the Shores, Inc.	WWTP	
St Andrews WWTF	City of Panama City	Advanced WWTP	

In 2012, RockTenn used 2.4 mgd of reuse water from Arizona Chemical to supply 14% of its 17.1 mgd of water used. Gulf Power Company is investigating conversion to reclaimed water for plant cooling. Brackish water currently being used is corrosive to equipment making it costly to maintain, so a freshwater source is preferred. Wastewater treatment facilities being evaluated include those operated by the City of Lynn Haven, Panama City, and Bay County. Discharge of reuse water to St. Andrew Bay proximate to the power plant site is considered not to be environmentally feasible due to Florida's antidegradation policy for discharges to surface waters. Gulf Power was issued a permit by FDEP in 2013 to construct and test underground injection wells to be used for disposing reused water.

Golf courses are typically large consumers of water for irrigation and, as they do not require potable-quality water, are excellent candidates for receiving reclaimed water. Of Bay County's 12 golf courses (Figure 6-1), only one currently receives reclaimed water for irrigation: Nature Walk Golf Club in Lynn Haven. Several golf courses that had been using reclaimed water no longer do, due to wastewater plant or course closures. These include the Pelican Point Golf Course at Tyndall AFB, Sandy Creek Ranch and Country Club, and the Bay Point Golf Club.

Seven golf courses are in the vicinity of Panama City Beach where the coastal Floridan aquifer is depressed and may provide an opportunity to offset surface and groundwater withdrawals by converting to reclaimed water. Edgewater Beach Resort Executive Golf Course, Holiday Golf Club, and Hombre Golf Club are adjacent to Panama City Beach reclaimed water lines, although there may be insufficient capacity to serve the Hombre Golf Club. Signal Hill Golf Course is less than one mile from Panama City Beach's reclaimed water line. Shark's Tooth Golf Club is near the Shores Wastewater Treatment Facility, although facility capacity for the homeowners association is small and it may not be

economically feasible to make facility and staffing upgrades to produce public access quality water. The Meadows at Bay Point is approximately four miles from the nearest reuse line at Panama City Beach, and the adjoining Nicklaus at Bay Point is approximately 3.3 miles from a reuse line across St. Andrew Bay at Tyndall AFB. Panama Country Club is near the Lynn Haven WWTF, although reuse at this site may not be environmentally feasible due to the potential for stormwater from storage ponds to discharge to adjacent approved shellfish harvesting waters.

Future developments are excellent candidates for reuse, as installation of reclaimed water infrastructure can be performed concurrent with construction of water and wastewater facilities. Land development codes can require reuse facilities for new development. Lynn Haven has such a policy, and it is expected that the nearby Mill Bayou development will be installing reuse lines.

Additional potential recipient sites are irrigated public areas, such as recreational fields and landscaped areas of government-owned facilities and linear infrastructure (e.g., roadway medians, greenway trails), and irrigated agricultural fields such as sod farms and nurseries. There may also be the potential to develop additional satellite water reclamation facilities that would provide sub-regional treatment systems, particularly for developing areas.

Recommendations for water reuse in Region III include:

- Cooperative efforts between local governments, utilities, and self-suppliers to identify near-term and longer term reuse projects, as well as associated funding needs.
- Evaluate additional reclaimed water storage needs and reuse possibilities associated with the Military Point WWTP.
- Promote reuse tie-ins for golf courses in Panama City Beach and coastal area.
- Develop water reclamation and reuse for the St. Andrews WWTP.
- Identify additional facilities that would increase reuse, including storage facilities, reuse pipeline extensions, and potentially including satellite facilities if economically feasible.

Aquifer Storage and Recovery

Aquifer storage and recovery (ASR) is the process of injecting water from a source of supply into an aquifer for temporary storage and later retrieval and use. This water is generally injected into the subsurface at times when water from the source is available in sufficient quantity and quality. When water supplies subsequently become low or when demand increases on a temporary or seasonal basis, the previously injected or stored water is withdrawn. This is usually done on a cyclic (typically seasonal) basis where it is possible to reasonably predict periods of wet and dry conditions.

There are a number of potential advantages of using ASR including: (1) water may be stored and then withdrawn to meet peak or seasonal demands; (2) it may be used as a salinity or recharge barrier to protect existing groundwater supplies.

Storage of substantial volumes of treated surface water or reclaimed water may be feasible, depending on hydrogeologic conditions. The cost of storage is typically quite low on a per unit basis as land requirements are minimal and environmental impacts associated with storage tanks or surface water reservoirs are avoided. Affordable storage is critical to the successful expansion of reuse. With sufficient storage, reclaimed water can be harvested and stored during wet periods—when demand is low and flows are high—for use during dryer periods—when demand is high and flows are reduced.

Hydrogeologic and engineering evaluations would need to be performed to determine appropriate aquifers or zones in which storage and withdrawal can be accomplished. Operational functionality and water quality are both considerations when investigating locations for ASR. The geologic formation must have a high enough conductance to allow for efficient injection and recovery but must also be confined enough that the injected water does not substantially migrate during storage. ASR of reclaimed water is also limited to aquifers or zones that are not designated as Class I water bodies capable of providing potable supply. Water injected for ASR, particularly for public supply, is subject to extensive treatment requirements, both prior to injection and upon recovery, to meet water quality standards. Technical evaluations need to be performed to demonstrate that injection of reclaimed water will not harm the resource or nearby existing legal uses.

Desalination

Desalination is a process by which impurities, particularly soluble salts, are removed from water, usually in order to make it fit for human consumption. Desalination is primarily performed by reverse osmosis (also known as membrane filtration). Although reverse osmosis can be used to process water containing very high levels of dissolved solids such as sea water, processing becomes more effective and less expensive as concentrations of dissolved solids in the raw water source decrease. The lowest cost per unit of water is achieved using brackish groundwater as a source. For proper disposal of the concentrated brines that are the waste product of reverse osmosis, a naturally salty environment—such as sea water or a brine aquifer—is typically required.

Desalination of lower quality water from non-potable zones of groundwater may be able to supply some portion of overall future demand but is not anticipated at this time to represent a cost-feasible alternative currently or within the 20-year planning horizon. Feasibility studies would need to be performed to determine exact cost of treatment of specific sources, as well as disposal options and costs.

6.3 Water Conservation

There is considerable opportunity for expanding water conservation within Region III. Water conservation efforts help sustain water supplies and generally are less costly than other source options. Implementing effective conservation measures may limit needs for infrastructure upgrades, construction of additional facilities, and development of more costly supply options.

Water conservation efforts vary by implementing utility. Strategies currently being pursued by municipal utilities in Region III are primarily water loss control programs that seek to minimize unbilled water, replacement of aging and potentially leaking distribution infrastructure, and implementation of advanced supervisory control and data acquisition (SCADA) systems. Bay County has implemented a conservation oriented rate structure for its retail service area, and the City of Panama City conducted a detailed water audit based on calendar year 2008 to address water distribution system losses. Recommended water loss control actions included improved accounting of unbilled usage, replacing water meters, and performing annual leak detection and repair (Water Systems Optimization, Inc. 2010).

The 2013 WSA Update (Countryman et al. 2014) estimated gross per capita water use in Bay County at 180 gallons per person per day (gpcd) in 2010, averaged across all public supply utilities. This is the fourth highest among northwest Florida's 16 counties. The calculated rates varied among utilities, ranging from 59 for Mexico Beach to 348 gpcd for Panama City Beach (Table 6-3). The gross per capita rate is calculated as the sum of the total withdrawals plus imports/purchased water, less exports/sold

water, and divided by permanent population. It should be recognized that water use by seasonal and tourist populations significantly affects this calculation, particularly in areas such as Panama City Beach.

Table 6-3. Region III Public Supply Gross per Capita Usage, 2010

Utility System	2010 Estimate (gpcd)
Bay County BOCC	67
Cedar Grove	100
GCEC (North Bay, Lake Merial)	126
City of Callaway	104
Sandy Creek Utility Services, Inc.	111
City of Lynn Haven	165
City of Mexico Beach	59
City of Panama City	158
City of Panama City Beach	348
City of Parker	119
City of Springfield	106
Weighted Average	**180**

For public supply, a number of potential strategies may be pursued to further develop water conservation. These include:

- Utility tracking of per capita water use.
- Adoption by utilities of inclining block rate structures.
- Utility billing practices that show customer water use in comparison with peers.
- Discontinuance by utilities of separate irrigation meters for outdoor water use unless rate structures for those meters promote water conservation.
- Application of the EZ Guide online tool developed by the Conserve Florida Water Clearinghouse, available at www.conservefloridawater.org/ezguidedescription.asp, to identify customer-specific water conservation practice options that have measurable water savings and associated costs. Utilities can implement any of these practices to reduce per capita usage.
- Implementation of conservation-oriented certification programs for new development.
- Establishing Florida Friendly or other water conserving landscape standards for future and existing development through local ordinance.
- Providing assistance for in-home water use or landscape irrigation improvement, such as through plumbing fixture retrofits and rain barrel programs, by utilities.
- Public outreach and education by utilities.

As noted below, implementation of conservation oriented rate structures is a requirement under section 373.707(8)(j), F.S., for utilities to receive state financial assistance for alternative water supply development projects under the Water Protection and Sustainability Program.

There may be comparable potential for other water use sectors, although optimal strategies vary. The U.S. Environmental Protection Agency (EPA) has identified water conservation practices for a wide variety of businesses and institutional water users (EPA 2013). Water conservation programs focused on commercial usage associated with tourism may be particularly productive in coastal and other seasonal use areas. Practices applicable to industrial and power generation self-suppliers are also provided by

EPA (2013). Water reuse, as discussed above, can meet certain industrial and power generation needs. Water conservation for domestic self-supply can be addressed through public outreach, building codes, and potentially landscape and building certification measures.

For both agricultural and recreational self-supply, well-developed systems of best management practices (BMPs) have been developed over many years. These can significantly improve water use efficiency while also reducing nonpoint source pollution. Golf course BMPs developed by DEP are available at www.dep.state.fl.us/water/nonpoint/docs/nonpoint/glfbmp07.pdf. Agricultural BMPs developed by FDACS are available for cow/calf operations, citrus, vegetable and agronomic crops, container nurseries, equine operations, specialty fruit and nut crops, and sod operations. Florida agricultural BMPs, program enrollment instructions, and maps showing enrolled parcels are available at www.freshfromflorida.com/Divisions-Offices/Agricultural-Water-Policy.

6.4 Summary of Water Supply Source Options Analysis

Water supply source alternatives are presented in Table 6-4. It is anticipated that water demands through 2035 can be met through existing sources, primarily Deer Point Lake Reservoir (Countryman et al. 2014). However, it is important that the potential vulnerability of the reservoir to the impacts of major hurricanes be addressed. Cost estimates and analysis looked primarily at options to ensure access to the existing surface water source.

The recommended water supply options are development of an upstream surface water intake and further development of water conservation and reuse to reduce potable demand and help sustain water resources.

Table 6-4. Summary of Water Supply Options

Option	Summary
Groundwater	Potential impacts to existing legal users, water resources, and associated natural systems would need to be addressed.
Upstream Surface Water Intake near the Mouth of Econfina Creek	Development of the upstream intake would increase source reliability and minimize the potential for service disruption.
Reclaimed Water	Reuse of reclaimed water for nonpotable purposes limits and offsets the use of potable water. Reuse can also support integrated water resource management, including reducing discharges of wastewater into the environment.
Aquifer Storage and Recovery	Aquifer storage and recovery may enhance reuse efficiency by providing storage; however, feasibility studies are needed to further address technical, environmental, and cost issues.
Desalination	This option appears not to be cost effective given the substantial availability of other, lower cost sources of water. Feasibility studies are needed to further evaluate technical, environmental, and cost issues.
Water Conservation	Costs are variable depending on the number and type of actions taken. Reducing or limiting water demand limits needs for infrastructure upgrades, construction of additional facilities, and development of more costly water supply options.

7. WATER RESOURCE DEVELOPMENT

Water resource development, as described in section 62-40.531(5), F.A.C., refers to projects intended to provide regional benefits as opposed to utility-specific or localized benefits. This includes regional strategies, data collection, structural and non-structural programs, major public works facilities, and technical assistance to governments and utilities, as defined in section 373.019(24), F.S. A project that benefits a specific utility may be classified as a water resource development project if that project provides a regional benefit such as water storage reservoirs, reuse of reclaimed water projects, and water conservation programs to improve water use efficiency.

Section 373.705, F.S., describes water resource development as being primarily the role of the water management district. The District takes the lead in identifying and implementing water resource development projects, and is responsible for securing necessary funding. Local governments, regional water supply authorities, and government-owned and privately owned water utilities may also provide assistance with water resource development.

7.1 Water Resource Development Projects

Water resource development projects defined herein would address the issues identified in Section 5 regarding resource sustainability, reliability, or support for water supply development.

Econfina Creek and Groundwater Recharge Area Protection

This project continues land protection and management of a regionally significant groundwater recharge area, the Econfina Creek WMA. The District manages over 43,000 acres in the WMA to protect water and related resources while also providing public access and a resource for compatible public use and recreation. Land management activities include habitat enhancement and restoration, as well as development and maintenance of public access facilities. Additional acquisitions of inholdings and additions may be planned in the future depending on funding availability. These activities are funded and accomplished through the District's Land Management and Acquisition program. Additional information is available in the District's 2013 Florida Forever Land Acquisition Work Plan (NWFWMD 2013).

Hydrologic and Water Quality Data Collection and Analysis

This project provides the water resource data collection, analysis, and modeling needed for characterizing conditions and evaluating current and potential water supply sources. The project also incorporates long-term monitoring as needed to help ensure future withdrawals are managed to protect water resources and associated natural systems.

In cooperation with Bay County, the District continues implementation of the Deer Point Lake Watershed Hydrologic Monitoring program. This effort includes operation of stream stage/discharge and rainfall monitoring stations that provide a continuous record of precipitation and surface water flows during both dry weather and storm conditions. The District operates additional groundwater level, stream flow, and lake level monitoring sites within the county, all intended to characterize water resource conditions and trends within the region.

Additional evaluations of groundwater flow and saltwater intrusion may be conducted to investigate the persistence of a depression in the coastal Floridan aquifer potentiometric surface despite discontinuation of major groundwater withdrawals on the coast. The work would involve review of

consumptive uses of water and hydrologic data and would be conducted in coordination with the District's MFL program. A groundwater flow model may be developed and applied if necessary.

Reuse Funding and Technical Assistance

Further development of water reuse will extend water supplies and help improve water quality in St. Andrew Bay and coastal waters by reducing wastewater discharges to the environment. District staff will work with utilities and local governments to identify opportunities for expanded water reuse to meet non-potable water needs, as well as feasible funding sources and strategies. This may include assessments matching reclaimed water generators with users, feasibility studies, pilot projects, and demonstration projects. Projects of highest priority to the District are those that offset and reduce the consumption of potable quality water, as well as those that protect natural systems and achieve integrated water resource management.

Water Conservation Funding and Technical Assistance

This project supports conservation and efficiency programs, practices, and measures on the part of local governments and utilities. Water conservation serves the public interest by enhancing efficiency, reducing costs to the public, and limiting impacts to natural resources. Staff will work with local governments and utilities to identify cost effective means of improving water use efficiency for public supply and other water use categories. This strategy may include implementation of pilot and demonstration projects, as well as assistance in identifying funding sources.

Regional Water Supply Planning, Coordination, and Technical Assistance

This project continues funding for the District to manage implementation of the Region III RWSP. The work involves coordinating and tracking projects and programs, completing administrative tasks related to plan implementation, and fulfilling statutory reporting requirements. This project also provides for technical assistance to local governments and water suppliers, educational and outreach materials and programs within the region, and other related tasks and activities.

Tables 7-1 and 7-2 below further characterize the listed projects by describing basic project functions, costs, potential funding sources, responsible parties, and conceptual implementation timelines.

Table 7-1. Water Resource Development Project Functions

Project	Supports Resource Sustainability	Supports Resource Reliability	Supports Water Supply Development
Econfina Creek and Groundwater Recharge Area Protection	Yes		
Hydrologic and Water Quality Data Collection and Analysis	Yes		
Water Reuse Funding and Technical Assistance	Yes		Yes
Water Conservation Funding and Technical Assistance	Yes		Yes
Regional Water Supply Planning, Coordination and Technical Assistance	Yes	Yes	Yes

Table 7-2. Water Resource Development Projects

Project	Estimated Water Made Available (mgd)	Estimated Funding[1]	Potential Funding Sources	Estimated Timeframe	Responsible Entities
Econfina Creek Groundwater Recharge Area Protection	NA	$7,500,000[2]	WMLTF[3]	2014-2019	NWFWMD
Hydrologic and Water Quality Data Collection and Analysis	NA	$165,000	NWFWMD General Fund; WMLTF	2014-2019	NWFWMD; Water Utilities
Water Reuse Funding and Technical Assistance	5.2	$115,000	NWFWMD General Fund; WMLTF	2014-2024	NWFWMD
Water Conservation Funding and Technical Assistance	TBD	$46,000	NWFWMD General Fund; WMLTF	2014-2019	NWFWMD
Regional Water Supply Planning, Coordination, and Technical Assistance	NA	$118,000	NWFWMD General Fund; WMLTF		NWFWMD

[1] Five years of funding estimated for maintaining the project. Actual funding will be provided by the annually updated Water Resource Development Work Program. As there are no construction projects proposed, no capital investment costs are planned.
[2] Work funded separately through the District's land management program
[3] Water Management Lands Trust Fund

7.2 Status of Previously Identified Water Resource Development Projects

In the initial RWSP for Region III (NWFWMD 2008), three projects were proposed to assist in water resource development. Those projects and their status are summarized in Table 7-3 below. Additional information is provided in the District's Fiver Year Water Resource Development Work Program report.

Table 7-3. Status of Previously Identified Water Resource Development Projects (NWFWMD 2008)

Project	Objective	Estimated Time Frame	Status
Hydrologic and Water Quality Data Collection, Monitoring and Analysis	Collect and analyze data to support inland Floridan aquifer development	2008-Present	Continuing project
Water Reuse and Conservation Assistance	Support development and implementation of beneficial reuse and conservation projects	2008-Present	Continuing projects
Regional Water Supply Coordination and Technical Assistance	Program implementation, administration and oversight; water supply planning coordination with local governments	2008-Present	Continuing project

8. WATER SUPPLY DEVELOPMENT

Water supply development refers to activities intended to benefit specific utilities or other users, per section 62-40.531(4), F.A.C. It is defined in section 373.019(26), F.S., as the planning, design, construction, operation, and maintenance of public or private facilities for water collection, production, treatment, transmission, or distribution for sale, resale, or end use. The District's role in water supply development, as defined by section 373.705, F.S., is primarily planning, supportive water resource development, and providing assistance for water supply development. The primary role of local governments, regional water supply authorities, and government-owned and privately owned water utilities is water supply development, including construction, operation, and maintenance of facilities for distribution to end users. Local governments and utilities take the lead in implementing water supply development projects and securing necessary funds for capital and operating costs.

According to section 373.707(8)(j), F.S., for each utility that receives financial assistance for an alternative water supply project, the water management district shall require the appropriate rate-setting authority to develop rate structures for water customers in the service area of the funded utility that will promote the conservation of water and the use of water from alternative water supplies.

8.1 Water Supply Development Projects

The recommended projects described below are regional-scale alternative and traditional water supply development project alternatives that address the issues identified in Section 5 regarding resource sustainability and reliability. Other water supply development project alternatives may be proposed by local governments and utilities, pursuant to Chapter 373, F.S. Specific projects selected for implementation will need to be shown feasible technically, environmentally, legally, and financially. The District recognizes that alternative water supply options for agricultural self-suppliers are limited.

Development of Upstream Intake for Surface Water Supply

Bay County identified this project as the best alternative for addressing vulnerabilities with Deer Point Lake Reservoir and dam. This project entails developing an alternative raw water pump station and an approximately nine-mile force main. The intake structure is planned near the mouth of Econfina Creek where it discharges to Deer Point Lake. The facility will tie in with an existing county raw water main (Hatch Mott MacDonald 2012).

Water Reuse Facilities

This project is intended to support wastewater utilities and local governments in the development of or enhancement of reclaimed water infrastructure leading to reuse the replaces potable quality water. Anticipated benefits include enhanced water use efficiency, improved resource sustainability, and reducing wastewater discharges into surface waters.

Utility Interconnections and Infrastructure Enhancements

This group of projects supports the interconnection of utility infrastructure and transmission systems, including necessary upgrades and improvements. Interconnection of systems within Region III may enhance water system reliability by enabling the transfer of water between systems as necessary to respond to contingencies. Additionally, a high capacity regional interconnect project between Bay

County and Regional Utilities of Walton County has been evaluated. This project would include a 48-inch diameter interconnection between coastal regional suppliers, providing additional redundancy and reliability. The preliminary opinion of probable construction cost for this project is $25,700,000.

Water Conservation

This project provides for implementation of specific conservation and efficiency programs or practices at local utilities that result in quantifiable water savings. Improving water use efficiency can limit expenditures needed for water resource and supply development and enhances the long-term sustainability of water resources and associated natural systems.

A wide variety of water conservation strategies and activities may be employed, tailored to individual utilities and communities based on both regional and local challenges and characteristics. Examples specific to public supply include water loss abatement programs, public education and outreach programs, plumbing fixture retrofits, landscaping guidelines, and inclining block rate structures. Innovative practices and facility designs can also be effective for other water use categories, such Agriculture, Commercial/Industrial/Institutional, and Power Generation. Water conservation programs and practices are implemented by local governments, utilities, and self-supplied water users, with technical assistance provided by the District. Financial assistance may be provided by state and other sources.

Table 8-1. Water Supply Development Projects

Project	Estimated water made available (mgd)	Capital Investment Cost Estimate ($)	Anticipated Implementation Timeframe	Responsible Entities	Potential Funding Sources (Capital Costs)	Operation and Maintenance Cost ($)[1]	Cost per 1,000 Gallons ($)
Development of Upstream Intake for Surface Water Supply	30[2]	$25,000,000	2014-2016	Bay County BOCC	Bay County BOCC WPSPTF[3]	$750,000	$0.52
Water Reuse Facilities	5.2	TBD	2014-2019	Bay County and local waste-water utilities	Local Governments and Utilities State and Federal Grants and Loans WPSPTF	TBD	TBD
Utility Interconnections and Infrastructure Enhancements	NA	TBD	2014-2019	Bay County and local water supply and wastewater utilities	Local Governments and Utilities State and Federal Grants and Loans WPSPTF	TBD	TBD
Water Conservation Projects that Result in Quantifiable Water Savings	TBD	TBD	2014-2019	Bay County and local water supply utilities	Local Governments and Utilities WPSPTF	TBD	TBD

[1] Estimated annual average
[2] Represents anticipated pump station capacity.
[3] Water Protection and Sustainability Program Trust Fund

8.2 Status of Previously Identified Water Supply Development Projects

Three projects were proposed in the initial Region III RWSP (NWFWMD, 2008). They are summarized in Table 8-2.

Table 8-2. Status of Previously Identified Water Supply Development Projects

Project	Objective	Estimated Time-Frame	Status
Inland Groundwater Source Development and Water Supply Source Protection	Develop inland alternative water supply source to meet future demands and abate risks of saltwater intrusion and extreme drought	2008-2012	Water use permit denied at recommendation of Administrative Hearing Officer—project terminated
Utility Interconnections and Infrastructure Enhancements	Assist with delivery system interconnections and facility improvements	2008-Present	Continuing project
Water Reuse Facilities	Construction of water reuse facilities to replace use of potable water for landscape irrigation and other beneficial uses	2008-Present	Continuing project

9. IDENTIFICATION OF WATER SUPPLY DEVELOPMENT PROJECTS THAT CAN BE CONSIDERED ALTERNATE WATER SUPPLY DEVELOPMENT

Section 373.019(1), F.S, defines alternative water supplies as:

> … salt water; brackish surface and groundwater; surface water captured predominately during wet-weather flows; sources made available through the addition of new storage capacity for surface or groundwater, water that has been reclaimed after one or more public supply, municipal, industrial, commercial, or agricultural uses; the downstream augmentation of water bodies with reclaimed water; stormwater; and any other water supply source that is designated as nontraditional for a water supply planning region in the applicable regional water supply plan.

As described above, for the purposes of this plan, nontraditional and alternative water supply sources include surface water, reclaimed water, aquifer storage and recovery, and desalination. Alternative water supply development projects include, but are not be limited to, those listed below.

- Development of upstream intake for surface water supply – Deer Point Lake Reservoir was historically developed as an alternative water supply source, as ground water sources were insufficient to meet public supply and industrial water use demands. Development of the upstream intake will address identified vulnerabilities and ensure the long-term reliability of the resource under reasonably foreseeable conditions.
- Water reuse facilities – Additional reuse of reclaimed water for beneficial purposes has the potential to enhance the sustainability of potable water resources while also helping to achieve other water and related resource protection objectives.

Utility interconnection projects that facilitate transmission of alternative, nontraditional sources of water may also qualify as alternative water supply development projects under section 373.707, F.S. Per the same section, water conservation projects that result in quantifiable water savings may be eligible for state and District alternative water supply funding.

10. IDENTIFICATION OF MULTI-JURISDICTIONAL APPROACHES

Water supply in Bay County is already of a multi-jurisdictional nature. The Bay County BOCC, through its Utility Services Department, serves as a wholesale water supply entity for all municipalities within the county and for large industrial and institutional users.

The County, municipalities, and the District will continue to work cooperatively to proactively address regional and local scale issues. Success in implementing the RWSP plan will depend on a continued cooperative effort. Multi-county and cross-regional coordination also occur, as development trends are increasingly spanning a multi-county area. Additionally, as described above, much of the recharge area for Deer Point Lake Reservoir is within water supply planning Region IV, primarily Washington County.

11. COST SAVINGS AND PUBLIC INTEREST

Section 373.709(2)(e), F.S. requires that the RWSP consider how options under the water supply development component serve the public interest or lessen overall costs by preventing the loss of natural resources or avoiding greater future expenditures. Water supply development projects encompassed within this plan are focused on meeting public supply demands through the planning period in a manner that sustains regional water resources. Sustainable alternative sources that are economical, safe, sustainable, and dependable are the preferred sources for the region. As described previously, surface water and reclaimed water projects are preferred for cost effectiveness and sustainability. Depending on the specific measures employed, water conservation can also be a cost-effective approach for demand management and resource sustainability.

12. RELATIONSHIP OF PROJECTS TO FIVE-YEAR WORK PROGRAM

The District's Five-Year Water Resource Development Work Program (WRDWP) is issued each year to provide the status of projects being implemented under regional water supply plans. Descriptions of activities and associated funding are provided. A draft WRDWP is available in October after adoption of the District's budget, and the final report with updated expenditures for the prior fiscal year is included in the Consolidated Annual Report that is available the following March 1. WRDWPs are provided on the District's web site at http://www.nwfwmd.state.fl.us/pubs/wrdwp/wrdwp.html.

13. FUNDING STRATEGY

13.1 Water Resource Development

Planning, funding, and implementing water resource development projects in Region III are primarily the responsibility of the District (section 373.705, F.S.). The District generally applies and leverages funding from a number of sources. Potential sources of funding to support water resource development include:

- Water Management Lands Trust Fund (WMLTF) – Water resource development in northwest Florida has depended primarily on funding from the WMLTF; however, appropriations for water resource development have been limited in recent years.
- District Ad Valorem Taxes – To the extent possible, the District is applying ad valorem funding to accomplish basic water resource planning functions and augmenting these funds using previously encumbered funds and reserves for priority projects. Unlike other water management districts in Florida, the NWFWMD ad valorem tax rate is constitutionally and statutorily capped at 0.05 mills. This source of revenue is thus not sufficient to fully support ongoing programs and is not available as a significant source of revenue for water supply projects.
- Water Protection and Sustainability Program Trust Fund (WPSPTF) – The WPSPTF, established by the 2005 Florida Legislature, allows the District to provide cost-share assistance for construction of alternative water supply development projects and for priority water resource development and springs protection activities.

- Legislative Special Appropriations – Funding enacted by the legislature may be available for project needs that are of both regional and statewide significance.
- Florida Forever Trust Fund – Florida Forever has supported land acquisition, including in the Econfina Recharge Area. Funding may potentially be available for construction of reclaimed water storage facilities.
- District General Fund – General Fund reserves may augment sources of funding described above. These funds, however, are limited and generally not replenished.
- Federal grant funding may be sought when available.
- Local government and water supply utility cost sharing – Local government and utility funding participation is especially important for several types of water resource development projects, notably reuse of reclaimed water, water conservation, and aquifer storage and recovery. All projects require substantial local investment once they reach the water supply development stage.

Additional information is available in the District's Five Year Water Resource Development Work Program annual report (www.nwfwmd.state.fl.us/pubs/wrdwp/wrdwp.html).

13.2 Water Supply Development

Funding for water supply development is primarily the responsibility of local governments, regional water supply authorities, and government and privately owned water utilities (section 373.705, F.S.). The District may also provide cooperative funding and technical assistance for these projects. A variety of funding sources may be applied. Due to the high costs of these programs, these may be leveraged and combined. Among potential funding sources are the following:

Local Funding Sources

- Water Utility Rate Payers – This represents the primary source of funding for water supply development, as well as operation and maintenance. Funds are raised through user fees, connection fees, and impact fees.
- Local government taxes and fees – Local governments can augment utility funding and provide funding for associated infrastructure and supporting investments. For specified areas, project development or redevelopment funding may also be provided through tax increment financing (for community redevelopment agencies) and municipal service taxing units.
- Local revenue bonds – These are financed by revenues from specific revenue-generating activities, such as cash flows from water rates, fees, dedicated taxes, connection fees.
- Local general obligation bonds – These bonds are backed by the taxing ability of the local government.

State and Water Management District Assistance

- Water Protection and Sustainability Program Trust Fund (WPSPTF) – The WPSPTF is administered by the District in cooperation with DEP to provide cost-share assistance for construction of alternative water supply development projects and priority water resource development and springs protection activities. Alternative water supply development projects must generally be consistent with approved RWSPs.

- Legislative special appropriations may provide opportunities for meeting specific funding needs in cooperation with the legislative delegation.
- Florida Forever – The Florida Forever Trust Fund is a potential source of construction funding for reclaimed water storage facilities. Florida Forever Capital Improvement Grants are administered by the District when funds are available.
- District General Fund grants – To the extent possible, the District is augmenting local, state, and federal funds using previously encumbered funds and reserves for priority projects. These funds, however, are limited and are generally not replenished.

Federal Assistance

- State Revolving Fund – The Drinking Water and Clean Water State Revolving Funds provides federal funding through the state to address priority water supply needs. The program is implemented by DEP, with additional information available at: www.dep.state.fl.us/water/wff/index.htm
- Community Development Block Grants (CDBG) – Administered by Florida's Department of Economic Opportunity for the Small Cities CDBG Program and by the U.S. Department of Housing and Urban Development for Entitlement Communities and other programs. www.floridajobs.org/community-planning-and-development/assistance-for-governments-and-organizations/florida-small-cities-community-development-block-grant-program
- USDA Rural Development – Assistance may be provided through a number of initiatives, including direct loans and grants for rural areas and municipalities with populations not exceeding 10,000, as well as other technical and financial assistance programs. See: www.rurdev.usda.gov/RD_Grants.html.
- Federal Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States (RESTORE) Act – It is anticipated that funding will implement projects addressing multiple purposes within the Gulf of Mexico coastal region. Additional information is available at: www.dep.state.fl.us/deepwaterhorizon/default.htm.

14. SUMMARY AND RECOMMENDATIONS

The Region III RWSP identifies actions to develop and sustain water supplies through the 2035 planning horizon. The scope of the plan includes a quantification of projected water supply needs, resource analyses and issue identification, consideration of options for traditional and alternative water sources, and recommendations for water resource and water supply development projects that address the issues. The goal of the plan is to ensure that the region has water supplies that are reliable, sustainable, sufficient, and of suitable quality to meet the needs of the human community and natural systems through the planning period. Supporting objectives include:

- Ensure the dependability and sustainability of Deer Point Lake Reservoir as a regional water supply source.
- Expand water reclamation and reuse to meet non-potable water needs.
- Further develop scientific and data resources needed to support integrated water resource management.
- Improve water use efficiency.
- Protect and, as necessary, restore surface water and groundwater quality and quantity to safeguard public and environmental health and to secure water supplies for their long-term beneficial uses.
- Identify a feasible funding strategy to achieve regional priorities.

This RWSP for Region III identifies alternative water supply sources to meet and exceed future water supply needs of Bay County. In Region III, public supply is the largest use category, with industrial water use following a close second. Surface water from Deer Point Lake Reservoir is the primary water source for both public supply and industrial water uses. It is estimated that surface water provided 87 percent of the potable water used in the region in 2010, supplying 82 percent of the county population. From 2010 to 2035, overall demand in the region is projected to increase 16 mgd from 72 mgd to 88 mgd. The 2013 WSA concluded that surface water supply sources were sufficient to meet projected demands through 2035, although the source of supply is potentially vulnerable to coastal storm surge events.

Several water resource and supply development projects are outlined, considering current and future water supply needs, water source reliability, characteristics of the various water source options, costs, and public and environmental benefits. Water resource development projects include:

- Econfina Creek and Groundwater Recharge Area Protection
- Hydrologic and Water Quality Data Collection and Analysis
- Reuse Funding and Technical Assistance
- Water Conservation Funding and Technical Assistance
- Regional Water Supply Planning, Coordination, and Technical Assistance

Water supply development projects, to be planned and implemented in cooperation with local governments and utilities, include:

- Development of Upstream Intake for Surface Water Supply
- Water Reuse Facilities
- Utility Interconnections and Infrastructure Enhancements
- Water Conservation

Additionally, as noted above, it will continue to be important for the District, the County, municipalities, water and wastewater utilities, and other regional stakeholders to work cooperatively to address both regional and local scale issues pertaining to the long-term dependability and sustainability of water and related resources. This effort will include implementing the recommended projects, as well as further defining and developing long-term project alternatives.

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APPENDIX A. ACRONYMS AND ABBREVIATIONS

ADR	Average Daily Rate
AFB	Air Force Base
AFSIRS	Agricultural Field Scale Irrigation Requirements Simulation (Model)
AWT	Advanced Wastewater Treatment
BEBR	Bureau of Economic and Business Research, University of Florida
BMP	Best Management Practice
District	Northwest Florida Water Management District
EISA	Energy Independence and Security Act
F.A.C.	Florida Administrative Code
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
F.S.	Florida Statutes
ft^2/day	Feet Squared Per Day
gpcd	Gallons Per Capita per Day
gpm	Gallons per Minute
gpm/ft	Gallons per Minute per Foot
GWUP	General Water Use Permit
I/C/I	Industrial, Commercial, and Institutional Self-Supply
IFAS	Institute of Food and Agricultural Studies, University of Florida
in/yr	Inches per Year
IWUP	Individual Water Use Permit
MCL	Maximum Contaminant Level
MFL	Minimum Flows and Levels
mgd	Millions Gallons per Day
mg/L	Milligrams per Liter
NWFWMD	Northwest Florida Water Management District
PWS	Public Water Supply
RWSP	Regional Water Supply Plan
SWIM	Surface Water Improvement and Management
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
WHPA	Wellhead Protection Area
WRF	Water Reclamation Facility
WSA	Water Supply Assessment
WPSPTF	Water Protection and Sustainability Program Trust Fund
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant