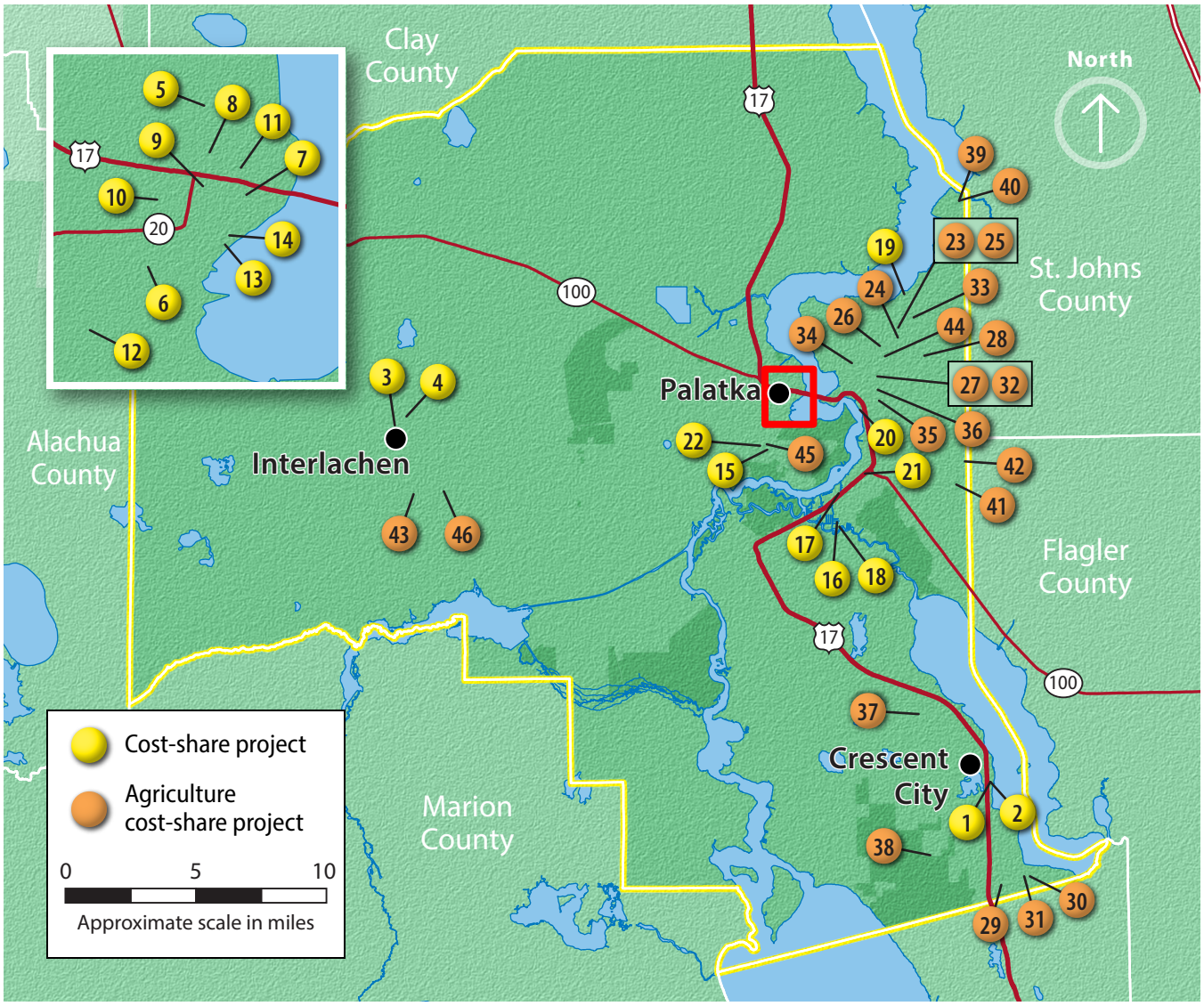
St. Johns River Water Management District

Cost-share and District-led projects in Putnam County

The St. Johns River Water Management District (District) implements a wide variety of projects aimed at protecting water supplies, improving water quality, restoring natural systems, and providing flood protection. A summary of the cost-share projects benefiting Putnam County are described on the following pages. The summary includes a description of benefits for each project, including nutrient load reduction (total phosphorus [TP], total nitrogen [TN] pounds per year [lbs/yr]), alternative water supplied (million gallons per day [mgd]), water conserved (mgd), alternative water storage capacity created (million gallons [MG]), or acres protected from flooding.

Also listed at the end of this document are District-led projects and other efforts benefiting the communities in Putnam County.



Cost-Share Program:

Through the Cost-Share Program, the District and Florida Department of Environmental Protection (DEP) together have awarded approximately $15.3 million for projects in communities throughout Putnam County beginning in fiscal year 2016, leveraging nearly $20.1 million when combined with local matching funds. Putnam County cost-share projects have provided an estimated benefit of 1.2 mgd of alternative water supply, 2.1 mgd of water conserved, 3,650 lbs/yr TN reduction, and almost 580 lbs/yr TP reduction.

1. **Crescent City Crescent Lake Outfall Improvements** — The project included installation of pre-treatment units on Crescent Lake outfalls to decrease sediment and debris from entering Crescent Lake. The estimated nutrient load reduction water quality benefit is 180 lbs/yr of TN and 65 lbs/yr of TP. Project Status: Complete.
2. **Crescent City Prospect Street Water Main Replacement** — The project includes replacement of approximately 6,900 linear feet of aged and deteriorated distribution system piping, hydrants, and services on the city's Prospect Street and Florida Avenue. The estimated water conservation benefit is 0.01 mgd. Project Status: In Progress.
3. **Interlachen Water System Improvements: Phase 3** — The project consisted of replacing approximately 5,740 linear feet (LF) of aged, undersized and leaking water mains, along with installing new valves, fire hydrants and water services. The project also included the construction of 4,800 LF of new water main extension, creating a much-needed looping in the town's Grassy Lakes water treatment plant (WTP) service area. The estimated water conservation benefit is 0.008 mgd. Project Status: Complete.
4. **Interlachen Water System Improvements: Phase 4** — The project includes upgrades to a water distribution supply system by replacing approximately 6,300 LF of aged, undersized, and leaking 1-inch, 1.5-inch, and 4-inch galvanized steel water mains with 6-inch and 8-inch polyvinyl chloride (PVC) water mains, along with new valves, fire hydrants, and water services. The estimated water conservation benefit is 0.012 mgd. Project Status: Complete.
5. **Palatka Booker Park Regional Stormwater Pond** — The project included construction of a stormwater treatment pond to serve an approximately 200-acre residential/commercial area in Palatka that discharged untreated stormwater into the St. Johns River. The estimated nutrient load reduction water quality benefit is 909 lbs/yr of TN and 191 lbs/yr of TP. The project also provides an estimated alternative water supply benefit of 0.041 mgd. Project Status: Complete.
6. **Palatka Heights Phase A Potable Water Project** — The project included replacement of 10,000 LF of old cast iron pipes with PVC pipes. The estimated water conservation benefit is 0.03 mgd. Project Status: Complete.
7. **Palatka Historic District Potable Water Project** — The project included replacing approximately 3,000 LF of failing and aged cast iron pipes with PVC and connecting with the closest, viable, PVC main. The estimated water conservation benefit is 0.4 mgd. Project Status: Complete.
8. **Palatka Madison Street Water Main Improvements** — The project includes replacing approximately 1,981 LF of aged and failing cast iron pipe within Palatka's central downtown area with PVC to eliminate leaks and line breakage. The estimated water conservation benefit is 0.004 mgd. Project Status: In Progress.
9. **Palatka Permeable Paving Improvements** — The project included installing low-impact permeable pavers at street intersections on St. Johns Avenue near the St. Johns River and approximately 21,375 square feet of parking lot. Currently, street runoff discharges directly to the St. Johns River. The estimated nutrient load

reduction water quality benefit to the St. Johns River is 57 lbs/yr of TN and 9 lbs/yr of TP. Project Status: Complete.

10. **Palatka Potable Water Improvements Phases 4 and 7** — The project included replacing approximately 35,532 LF of aged and failing cast iron pipe with PVC and connecting to the closest, viable, PVC water main. The estimated water conservation benefit is 0.02 mgd. Project Status: Complete.
11. **Palatka Potable Water Main Improvements Phase 5** — The project involved the replacement of approximately 3,700 LF of cast iron pipes with PVC. The estimated water conservation benefit is 0.013 mgd. Project Status: Complete.
12. **Palatka Reclaimed Water (RCW) Extension** — The project included the installation of a rotary vacuum filter and chemical backwash pump to the existing RCW holding pond off Mosley Avenue, RCW installation at several locations within the city, and construction of a reuse sprayfield and holding pond. The estimated alternative water supply benefit is 1.089 mgd. Project Status: Complete.
13. **Palatka South Historic District Stormwater Phase 1** — The project included installation of an exfiltration conveyance system and baffle box to provide stormwater treatment for a neighborhood that currently discharges directly to the St. Johns River. The estimated nutrient load reduction water quality benefit to the St. Johns River is 80 lbs/yr of TN and 9 lbs/yr of TP. Project Status: Complete.
14. **Palatka South Historic District Stormwater Phase 2** — The project involved the installation of an exfiltration trench and stormwater conveyance over 11 blocks of the southern historic district of the City of Palatka. The Phase 2 project addressed stormwater discharges to the two remaining discharge points not addressed during Phase 1. The estimated nutrient load reduction water quality benefit to the St. Johns River is 48 lbs/yr of TN and 8 lbs/yr of TP. Project Status: Complete.
15. **Palatka Wastewater Facility Reclaimed Water Project** — The project included purchase and installation of a backup generator to prevent loss of electrical supply to the wastewater treatment plant (WWTP). The estimated water conservation benefit is 1.6 mgd and the estimated nutrient load reduction water quality benefit is 137 lbs/yr of TN and 29 lbs/yr of TP. Project Status: Complete.
16. **Putnam County Horse Landing Septic Phase 1** — The project included decommissioning 21 septic tanks and connecting to central sewer. The estimated nutrient load reduction water quality benefit to the St. Johns River is 208 lbs/yr of TN and 25 lbs/yr TP. Project Status: Complete.
17. **Putnam County Horse Landing-Elsie Drive Septic-to-Sewer Phase 2** — The project was the second phase of the county's septic-to-sewer project. Up to 185 septic tanks in the Horse Landing and Elsie Drive areas were abandoned and the properties connected to central sewer. The estimated nutrient load reduction benefit to the Dunns Creek and the St. Johns River is 1,054 lbs/yr of TN and 107 lbs/yr of TP. Project Status: Complete.
18. **Putnam County Elsie Drive and Horse Landing Road Septic-to-Sewer Phase 3** — The project was the next phase of the county's septic-to-sewer conversions. A total of 30 septic tanks were decommissioned and sewer laterals installed to connect to central sewer. The estimated nutrient load reduction water quality benefit to the Dunns Creek area is 256 lbs/yr of TN and 36 lbs/yr of TP. Project Status: Complete.
19. **Putnam County Port Buena Vista Sewer Plant Conversion** — The project includes conversion of a direct discharge at the Port Buena Vista WWTF to a lift station and transmission of sewage to the Gilbert Road Regional Sewer Treatment Plant. The estimated

nutrient load reduction water quality benefit to the lower St. Johns River is 296 lbs/yr TN and 35 lbs/yr TP. Project Status: Complete.

20. **Putnam Elsie Drive Septic-to-Sewer** — This project involved the connection of 14 septic tanks to sewer. The estimated nutrient load reduction water quality benefit to the St. Johns River is 153 lbs/yr of TN and 18 lbs/yr of TP. Project Status: Complete.

21. **Putnam WWTP Expansion** — The project included removal of the existing Paradise Point WWTP in East Palatka and replacing it with a new pump station and force main system to convey wastewater to the county's existing master pump station. The estimated nutrient load reduction water quality benefit to Dunns Creek is 270 lbs/yr of TN and 45 lbs/yr of TP. Project Status: Complete.

22. **Tater Farms Palatka Ranch RCW** — The project included installation of a pumping station, pipe, and an efficient irrigation system to deliver the treated wastewater to the sod fields. The estimated alternative water supply benefit is 0.08 mgd. Project Status: Complete.

Agricultural Cost-Share Program:

The Agricultural Cost-Share Program provides funding to agricultural operations to conserve water and reduce offsite nutrient loading. Beginning in fiscal year 2014, the District and DEP have provided nearly $3 million in funding for agricultural projects in Putnam County. Putnam County agricultural cost-share projects have provided an estimated benefit of 3.5 million gallons per day (mgd) of water conservation, 77,700 lbs/yr TN reduction, and 10,200 lbs/yr TP reduction.

23. **Boardwalk Farms Irrigation Drain Tile Field 1** — This project involved installation of sub-irrigation drain tile on approximately 100 acres of row crops. The estimated water conservation benefit is 0.013 mgd. The estimated nutrient load reduction water quality benefit to the Lower St. Johns River Basin is 172 lbs/yr of TN and 112 lbs/yr of TP. Project Status: Complete.

24. **Boardwalk Farms Irrigation Drain Tile Field 2** — This project involved converting approximately 50 acres of row crop from seepage to sub-irrigation drain tile. The estimated water conservation benefit is 0.014 mgd. The estimated nutrient load reduction water quality benefit to the Lower St. Johns River Basin is 128 lbs/yr of TN and 83 lbs/yr of TP. Project Status: Complete.

25. **Boardwalk Farms Irrigation Drain Tile Field 3 and Precision Fertilizer Application** — This project involved the conversion from seepage to sub-irrigation drain tile on approximately 47 acres of row crop and the purchase and implementation of precision fertilizer application equipment. The estimated water conservation benefit is 0.024 mgd. The estimated nutrient load reduction water quality benefit to the lower St. Johns is 370 lbs/yr of TN and 203 lbs/yr of TP. Project Status: Complete.

26. **Charles Edward Alford Sr. Irrigation Drain Tile** — This project involved performing an irrigation conversion to sub-irrigation drain tile on approximately 80 acres of row crop. The estimated water conservation benefit is 0.015 mgd. The estimated nutrient load reduction water quality benefit to the Lower St. Johns River Basin is 197 lbs/yr of TN and 128 lbs/yr of TP. Project Status: Complete.

27. **Cracker Swamp Farm Irrigation Drain Tile Field 1** — This project involved performing an irrigation conversion from seepage irrigation to irrigation drain tile on approximately 100 acres of row crops. The estimated water conservation benefit is 0.094 mgd. The estimated nutrient load reduction water quality benefit to the Lower St. Johns River Basin is 1,531 lbs/yr of TN and 390 lbs/yr of TP. Project Status: Complete.

28. **Cracker Swamp Farm Irrigation Drain Tile Field 2** — This project involved the installation of irrigation drain tile on approximately 80 acres of farmland. The estimated water conservation benefit is 0.150 mgd. The estimated nutrient load reduction water

quality benefit to the Lower St. Johns River Basin is 197 lbs/yr of TN and 128 lbs/yr of TP. Project Status: Complete.

29. **Crescent Lake Farms Irrigation Retrofit** — This project involves performing an irrigation retrofit to replace an existing system with a higher efficiency irrigation system on approximately 12.2 acres of cut foliage. The estimated water conservation benefit is 0.03 mgd. The estimated nutrient load reduction water quality benefit to Crescent Lake is 229 lbs/yr TN and 45 lbs/yr TP. Project Status: Complete.

30. **Crescent Lake Farms Precision Fertilizer** — This project involves purchase of precision fertilizer application equipment on approximately 350 acres of potatoes benefitting the Lower St. Johns. The estimated nutrient load reduction water quality benefit is 4,963 lbs/yr of TN and 664 lbs/yr of TP. Project Status: Complete.

31. **Crescent Lake Farms Precision Fertilizer Application** — This project involves the purchase and implementation of precision fertilizer equipment on approximately 350 acres of corn and potatoes benefitting the Lower St. Johns Basin. The estimated nutrient load reduction water quality benefit is 6204 lbs/yr of TN and 830 lbs/yr of TP. Project Status: Complete.

32. **L & M Farms of North Florida Pipe Drops and Leveling** — This project involves the installation of pipe drops with precision land leveling on approximately 831 acres of row crops. The estimated nutrient load reduction water quality benefit to the Lower St. Johns is 4093 lbs/yr TN and 764 lbs/yr TP. Project Status: In Progress.

33. **L & M Farms of North Florida Pipe Drops and Precision Fertilizer** — This project involves precision land leveling with pipe drops on approximately 158 acres of row crops and purchasing precision fertilizer equipment for approximately 1757 acres of row crops benefitting the Lower St. Johns River Basin. The estimated nutrient load reduction water quality benefit is 6125 lbs/yr of TN and 90 lbs/yr of TP. Project Status: Not Started.

34. **L & M Farms of North Florida Precision Fertilizer Equipment** — This project involved the purchase and implementation of precision fertilizer equipment and nurse tank on approximately 1,600 acres of row crops. The estimated nutrient load reduction water quality benefit to the Lower St. Johns River Basin is 3,632 lbs/yr of TN. Project Status: Complete.

35. **L&M Farms of North Florida Precision Fertilizer Equipment: Phase 2** — This project involved the purchase and implementation of precision fertilizer application equipment on approximately 1,800 acres of row crops. The estimated nutrient load reduction water quality benefit to the Lower St. Johns River is 416 lbs/yr TN and 178 lbs/yr TP. Project Status: Complete.

36. **L & M Farms of North Florida Precision Land Leveling** — This project involves the purchase of precision land leveling equipment on approximately 1,757 acres of row crop in the Lower St. Johns River Basin. The estimated water conservation benefit is 0.282 mgd. The estimated nutrient load reduction water quality benefit is 4,277 lbs/yr of TN and 798 lbs/yr of TP. Project Status: Complete.

37. **Larry Downes Precision Fertilizer Equipment** — This project involved the purchase and implementation of precision fertilizer equipment and soil moisture sensors on approximately 500 acres of sod and pasture. The estimated water conservation benefit is 0.003 mgd. The estimated nutrient load reduction water quality benefit to the Lower St. Johns River Basin is 108 lbs/yr of TN and 42 lbs/yr of TP. Project Status: Complete.

38. **Lennon Grove Service Irrigation Retrofit with Telemetry** — This project involves performing an irrigation retrofit with telemetry on approximately 20 acres of citrus and 15 acres

of hay benefitting the Lower St. Johns. The estimated conservation is 0.004 mgd. The estimated nutrient load reduction water quality benefit is 85 lbs/yr of TN and 13 lbs/yr of TP. Project Status: Complete.

39. **Marineland Aquaponics Recirculating Aquaculture Phase 1** — This project involved converting a flow-through aquaculture system to an aquaponics project employing state-of-the-art recirculating aquaculture systems on approximately 5 acres. The estimated water conservation benefit is 1.394 mgd. The estimated nutrient load reduction water quality benefit to the Lower St. Johns River Basin is 32,455 lbs/yr of TN and 4,550 lbs/yr of TP. Project Status: Complete.
40. **Marineland Aquaponics Recirculating Aquaculture Phase 2** — This project was phase 2 of the conversion from flow-through aquaculture to a recirculating aquaponics system on approximately 5 acres. The estimated water conservation benefit is 1.4 mgd. The estimated nutrient load reduction water quality benefit to the Lower St. Johns River Basin is 4,549 lbs/yr of TN. Project Status: Complete.
41. **Mike Revels Farms Fertilizer Banding Equipment** — This project involved the purchase and implementation of a fertilizer applicator with GPS and tender for use on approximately 600 acres of row crops. The estimated nutrient load reduction water quality benefit to the Lower St. Johns River Basin is 1,323 lbs/yr of TN and 528 lbs/yr of TP. Project Status: Complete.
42. **Mike Revels Farms Irrigation Drain Tile Field 1** — This project involved performing an irrigation conversion from seepage irrigation to irrigation drain tile on approximately 38 acres of row crops. The estimated water conservation benefit is 0.054 mgd. The estimated nutrient load reduction water quality benefit to Crescent Lake and the Lower St. Johns River Basin is 146 lbs/yr of TN and 38 lbs/yr of TP. Project Status: Complete.
43. **Miller Blueberry Plantation Irrigation Retrofit** — This project involved performing an irrigation conversion from overhead to drip on approximately 58 acres of blueberries. The estimated water conservation benefit is 0.033 mgd. The estimated nutrient load reduction water quality benefit to the Lower St. Johns River Basin is 1,867 lbs/yr of TN and 273 lbs/yr of TP. Project Status: Complete.
44. **Robert L. Revels Farms Irrigation Drain Tile Field 1** — This project involved performing an irrigation conversion from seepage irrigation to sub-irrigation drain tile on approximately 32 acres of row crops. The estimated water conservation benefit is 0.01 mgd. The estimated nutrient load reduction water quality benefit to the Lower St. Johns River Basin is 227 lbs/yr of TN and 51 lbs/yr of TP. Project Status: Complete.
45. **Tater Farms Precision Agriculture Equipment 2** — This project involved the purchase and implementation of precision agriculture equipment with GPS on approximately 100 acres of sod. The estimated nutrient load reduction water quality benefit to the lower St. Johns River is 144 lbs/yr of TN and 56 lbs/yr of TP. Project Status: Complete.
46. **Walker Farms Precision Fertilizer Application** — This project involved the purchase and use of a variable rate dry fertilizer spreader and a variable rate hoop boom applicator on 170 acres of blueberries to the Ocklawaha River Basin. The estimated nutrient load reduction water quality benefit is 4,223 lbs/yr of TN and 217 lbs/yr of TP. Project Status: Complete.

District-led projects and other efforts

The District constructs large, regional projects that often benefit multiple counties and benefit more than one of the District's core missions. Some of the efforts in Putnam County include:

Shad harvest in Lake George — District staff identified shad harvesting as a rapid and effective way to reduce phosphorus in Lake George, part of

the St. Johns River system. Water quality data from Lake George suggest the reduction in phosphorus recycling caused by shad removal is roughly seven times the direct phosphorus removal benefit. District shad harvests on Lake George between 2013 and 2018 removed more than 5 million pounds of fish containing a total of 22,312 pounds of phosphorus. Gizzard shad are a native fish found in most Florida waters and account for 5 to 20 percent of the total fish population in healthy Florida lakes. However, in nutrient-rich, algae-dominated lakes, gizzard shad proliferate and can account for more than 90 percent of the total fish population.

Regional stormwater treatment — Runoff of nutrient-rich water in the Tri-County Agricultural Area, which includes Putnam County, for generations entered the lower St. Johns River. The nutrients encouraged algal blooms. To address the excess nutrients, the District designed and built two regional stormwater treatment areas to reduce the amount of phosphorus, nitrogen and suspended solids, filtering the water in a process that mimics nature before flowing into the river. These are Deep Creek West Regional Stormwater Treatment Area and Edgefield Regional Stormwater Treatment Area. The District donated the Edgefield property to Putnam County to help the county meet its obligation under state water quality rules to reduce nutrients entering the St. Johns River. The regional stormwater treatment project reduces annual nutrient loading to the river by approximately 14,300 lbs. of total nitrogen and 5,700 lbs. of total phosphorus.

North Florida Regional Water Supply Partnership — The District is working in partnership with the Suwannee Florida Water Management District, DEP, local utilities and other stakeholders in north Florida to develop joint water resource protection strategies, sharing data and technology, and effective communication with stakeholders across district boundaries. For more information, visit *www.northfloridawater.com*.

Minimum flows and levels (MFLs) program — The District establishes MFLs for priority water bodies within its boundaries. MFLs define the limits at which further water withdrawals would be significantly harmful to the water resources or ecology of an area. MFLs is an effective tool to assist in making sound water management decisions and preventing significant adverse impacts due to water withdrawals.

Hydrologic and water quality data collection — The District operates a network of data collection sites for hydrologic conditions and water quality in many lakes, wetland restoration areas, streams, springs, and wells.

District conservation areas

The District buys land in the course of its work to protect and preserve water resources. These lands also protect plant and wildlife habitat and provide areas for public recreation and environmental education. Virtually all District property is open to the public for activities that are compatible with conservation, though some may be closed during ongoing construction or restoration projects. In Putnam County, District properties include Deep Creek Conservation Area, Lake George Conservation Area, Murphy Creek Conservation Area and Rice Creek Conservation Area. For a current listing of District conservation areas, visit *www.sjrwmd.com/lands*.

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