



Bennett Swamp Rehydration Project

State of Florida
Department of Environmental Protection
Agreement No. LP64095

FINAL REPORT
June 30, 2020
Updated 9/17/2020



Prepared for:

State of Florida
Department of Environmental Protection
Division of Water Restoration Assistance
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Prepared by:

City of Daytona Beach
Grantee

FINAL REPORT

This project and the preparation of this report was funded in part by Line Item 1640 of the FY 15-16 General Appropriations Act.

Land Acquisition Trust Fund

Statewide Surface Water Restoration and Wastewater Projects

The estimated cost of the project was \$5,135,654, of which \$2,567,827 was provided through the Department.

Project Details

Project Location

The project is located north of US 92 and west of LPGA Blvd within the City of Daytona Beach in Volusia County, Florida. The rehydration project encompasses 1,425 acres (flowage easement) of the Tiger Bay State Forest within Bennett Swamp, which is land owned by the Trustees of the Internal Improvement Trust Fund. This land is managed jointly by the St. Johns River Water Management District and the Florida Division of Forestry.

Coordinates

Latitude 29°10'16" N / Longitude 81°08'26" W

Project Background

The Halifax River (Indian River Lagoon) is an adopted Total Maximum Daily Load (TMDL) water body that is on the list of verified impaired waters for nitrogen. The intent of this project is to reduce effluent discharge to the Halifax River from the City of Daytona Beach's wastewater treatment facility resulting in reductions in pollutant loads between 18,000 lbs. at 2 million gallons per day (MGD) and 108,000 lbs. at 12 MGD.



Project Description

Installation of 19,000 linear feet of pipes, dispersal units, flow regulating valves and meters to disperse treated reclaimed water from the City's Westside Regional Water Reclamation Facility (WRF) into Bennett Swamp at a rate of 4 to 6 MGD. Solar-powered satellite telemetry is being used to transmit real-time reuse data to the plant. The project is permitted for 6 MGD and the equipment is sized to handle 12 MGD should that water be available, and the monitoring allow flows at that level.

The actual dispersal rate will be determined by the availability of water from the Westside Regional WRF, rainfall, and swamp hydrology.

With a project flow of 4 MGD to 6 MGD, a total of 36,000 lbs. to 54,000 lbs. of nitrogen will be diverted from the Halifax River to Bennett Swamp. The success of the dispersal of the reclaimed water will be monitored for hydrologic, water quality and biota responses and the flows will be adjusted, as necessary.



Project Timeline

Grant Agreement

The grant agreement was executed March 30, 2017 and expires August 31, 2020. The task deliverables and due dates are as follows:

Task No.	Task or Deliverable	Start Date	End Date	Due Date
1	Design and Permitting	8/1/16	12/31/18	12/31/18
2	Bidding / Contractor Selection	4/1/17	12/31/18	12/31/18
3	Construction of Project	3/30/17	6/30/19	6/30/19
4	Public Education	1/1/17	6/30/20	6/30/20
5	Quality Assurance Project Plan	3/1/17	4/30/17	4/30/17
6	Monitoring	Upon QAPP Approval	6/30/20	6/30/20
7	Final Report	3/30/17	6/30/20	6/30/20

Grant Award Amount: \$2,567,827



Anticipated Benefits

This project has numerous benefits to two natural systems – Bennett Swamp and the Halifax River / Indian River Lagoon. The benefits include water quality, water supply, and wetland restoration.

Water Quality

The Halifax River / Indian River Lagoon is an impaired / total maximum daily load water body for nitrogen. The Environmental Protection Agency Impaired Waters Mandate **requires removal of 45,000 lbs. of nitrogen**. The goal of this project is to reduce between 2 and 12 MGD of effluent discharge to the Halifax River from the City's wastewater treatment facility. **With a project flow of 6 MGD, 54,000 lbs. of nitrogen will be diverted from the Halifax River to Bennett Swamp, potentially exceeding the EPA removal mandate with this project.** The dispersal of the reclaimed water will be monitored for hydrologic, water quality, and biota responses and the flows will be adjusted as necessary.

The water quality / TMDL benefit will grow as more reclaimed water is available to rehydrate the swamp. The pipes have been sized to carry 12 MGD which would potentially remove 108,000 lbs. of nitrogen, far exceeding the EPA Mandate of 54,000 lbs. for this pollutant load. The project also anticipates removal 12,162 lbs. of phosphorus (at 4 MGD).

Water Supply

By rehydrating Bennett Swamp, the project recharges the sole source aquifer. 6 million gallons of recharge is equal to drinking water for 85,000 people. The project provides an additional benefit of 0.11 foot of rebound (8.46% of the recovery needed) to the minimum flows and levels of Indian Lake.

Wetland Restoration

Restoring Bennett Swamp to its natural level of hydration enhances 1,425 acres of wetlands and creates a healthy ecosystem for numerous species.

Have/Will Anticipated Benefits be Realized?

The project is a natural system project in which impacts and benefits are measured over many years as the swamp is restored to its natural hydroperiod. No obstacles have been identified that would thwart the achievement of the anticipated benefits noted above. It appears that the expected benefits will be achieved.

Financial Summary

Actual Total Costs vs. Budget

See below for original (March 2017) and actual costs (as of August 31, 2020).

Task	Grant Agreement Budget			Actual Costs		
	Projected Total Costs	Grant	Match	Actual Total Costs	Grant	Match
Task 1	\$497,880	\$0	\$497,880	\$532,155	\$0	\$532,155
Task 2	\$27,733	\$0	\$27,733	\$21,641	\$4,948	\$16,693
Task 3	\$4,293,322	\$2,567,827	\$1,725,495	\$3,873,428	\$2,193,618	\$1,679,810
Task 4	\$65,000	\$0	\$65,000	\$75,034	\$45,267	\$29,767
Task 5	\$10,000	\$0	\$10,000	\$1,874	\$937	\$937
Task 6	\$210,205	\$0	\$210,205	\$113,398	\$63,995	\$49,403
Task 7	\$31,514	\$0	\$31,514	\$6,300	\$3,150	\$3,150

Total anticipated costs:	\$5,135,654	Actual costs:	\$4,623,830
Grant agreement:	\$2,567,827	Grant:	\$2,311,915
Match:	\$2,567,827	Match:	\$2,311,915

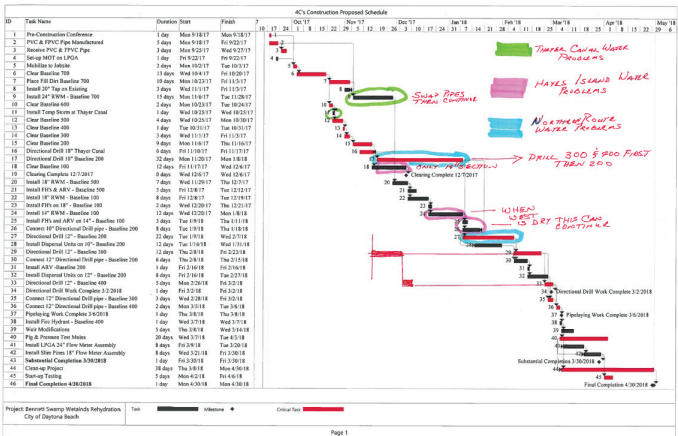
The cost estimate is less than the current budget, primarily due to construction bids coming in lower than anticipated.

Project Schedule vs. Actual Completion

2017



March 2017
Grant Agreement Executed



September 2017
Notice to Proceed for construction issued / Hurricane Irma

To minimize the impact, the City shifted the construction sequence of pipe location.

The City also expedited ordering pipe due to pipe production plant impacts in Texas from Hurricane Harvey.

Hurricane Irma caused peak flows of over 200 cubic feet per second (cfs) at the St. Johns River Water Management District Weir on Rima Ridge Road that did not slow down through the end of 2017. When the flows began to subside, each week the flows dropped by about half. Once it began to drop, it took approximately six weeks for it to subside to the amount of 5 cfs. For perspective, the anticipated flow from the Bennett Swamp Rehydration Project is 9 cfs (at 6 MGD). This caused construction delay well into the first quarter of 2018.



**March 31
2018** Anticipated completion date for construction.

**June 30
2019** Actual completion date for construction.

This was primarily due to weather-related impacts, starting with Hurricane Irma that occurred just as the notice to proceed was issued and continued for months thereafter. These weather-related impacts substantially impeded the ability to access the construction site due to excessive rain and standing water.

2018



**March 19, 2018
Change Order #2
Grant Agreement Executed**

Extended construction due to delays from Hurricane Irma from March 31, 2018 to November 30, 2018.



**October 2018
Change Order #3
Grant Agreement Executed**

Extended the construction completion from November 30, 2018 to June 30, 2019, due to these continued impacts from rainfall and storms over the summer.



**May 2018
Weather Issues**

The next weather-related events were Tropical Storm Alberto and an unprecedented 12-14 inches of rainfall in May of 2018, which raised flows at the Weir to 90 cfs. Once these flows began to subside, it took another month to drop to 5 cfs. The City and contractor continued to creatively assess the construction sequence and approach in an attempt to maintain progress.

2019



**June 2019
Construction Completion**

After October 2018, no further major weather delays were encountered, and construction of the project was completed in June of 2019.



Overall Schedule Changes

Original Executed Agreement

Task No.	Task or Deliverable	Start Date	End Date	Due Date
1	Design and Permitting	8/1/16	4/30/17	4/30/17
2	Bidding / Contractor Selection	4/1/17	7/1/17	7/1/17
3	Construction of Project	Agreement Execution	3/31/18	3/31/18
4	Public Education	1/1/17	3/31/19	3/31/19
4a	Draft Deliverables			9/30/18
4b	Final Deliverables			3/31/19
5	Quality Assurance Project Plan	3/1/17	4/30/17	3/31/17
5a	Draft QAPP			3/31/17
5b	Final QAPP			4/30/17
6	Monitoring	5/1/17	3/31/19	3/31/19
7	Final Report	Agreement Execution	5/31/19	5/31/19
7a	Draft Final Report			3/28/19
7b	Final Report			5/31/19

Current Executed Agreement

Task No.	Task or Deliverable	Start Date	End Date	Due Date
1	Design and Permitting	8/1/16	12/31/18	12/31/18
2	Bidding / Contractor Selection	4/1/17	12/31/18	12/31/18
3	Construction of Project	3/30/17	6/30/19	6/30/19
4	Public Education	1/1/17	6/30/20	6/30/20
5	Quality Assurance Project Plan	3/1/17	4/30/17	
5a	Draft QAPP			3/31/17
5b	Final QAPP			4/30/17
6	Monitoring	Upon QAPP Approval	6/30/20	6/30/20
7	Final Report	3/30/17	6/30/20	
7a	Draft Final Report			4/30/20
7b	Final Report			6/30/20

Summary of Activities Completed

Task No.	Task or Deliverable	Relevant Data / Information
1	Design and Permitting	Completed design of grant, obtained numerous permits simultaneously as provided previously.
2	Bidding / Contractor Selection	Bids were opened July 17, 2017 and 4Cs Trucking & Excavation, Inc. was selected to construct the project for \$3,427,406.55.
3	Construction of Project	Construction included installation of pipes, dispersal units, flow regulating valves and meters to disperse treated reclaimed water from the City's Westside Regional Water Reclamation Facility into Bennett Swamp (a 2,200-acre forested wetland) at a rate of 4 to 8 million gallons per day (MGD).
4	Public Education	<p>4/29/2019 – Educational Handout approved 7/1/2019 – Overview Video approved https://youtu.be/EMu5ikxXxy8 10/30/2019 – Newsletter features approved 6/4/2020 – Episode 1 Video approved https://youtu.be/WMcS1uSVd_M 2/14/2020 – Episode 2 Video approved https://youtu.be/uxTLO-Q7zLs 6/16/2020 – Episode 3 Video approved https://youtu.be/Bq0hLFDccFg</p>
5	Quality Assurance Project Plan	The QAPP was submitted on 4/17/2017 at the kick-off meeting at FDEP in Tallahassee and was subsequently approved.
6	Monitoring	Monitoring activity summary is included below.
7	Final Report	Provided herein

PHOTO DOCUMENTATION

Work Performed in 2017



PHOTO DOCUMENTATION

Work Performed in 2018



PHOTO DOCUMENTATION

Work Performed in 2019



PHOTO DOCUMENTATION

Monitoring Activity 2019-2020



Monitoring Activity Summary

The construction phase of the project was completed in June of 2019. The City remained in a testing phase for the remainder of the year mainly due to high water conditions within the swamp. The City collected nutrient samples on a monthly basis for much of 2019. It should be noted that there were long periods where the flow was constant and high at both outfall locations and coupled with the high water elevations within the swamp indicated that discharging reuse into the swamp at that time would not make best use of the nutrient removal intent of the project as water is constantly leaving and not being held within the swamp. The high water conditions remained into 2020. The City shutdown all non-essential operations in March of 2020 due to the COVID-19 pandemic. The tables below summarize the project results for May 2020.

Summary of Flows May 2020

Description	Precipitation**	Reclaimed Flows	Reuse Flows	Bennett Swamp Flows	Halifax River	Tomoka River
Average Daily	0.11	9.1	4.8	0.1	4.1	0.0
Peak Daily	1.23	14.1	7.8	0.7	13.2	0.2
Low Daily	0.00	7.6	1.0	0.0	0.0	0.0
Total Monthly	3.52	281.4	150.1	3.4	128.0	1.2

*Daily flows expressed as MGD; Monthly flows expressed as MG

**Precipitation expressed as inches

Summary of Loads (LBS Per Month)

Total Days in Month	Maximum Allowable Concentration (mg/L)		Month	Maximum Allowable Loads*		Permitted Loads at Actual Flow		Reuse Load Reduction		Bennett Swamp Load Reduction		Tomoka River Loads		Actual Load to Halifax River		Total Reduction		Available TMDL Cap	
	TN	TP		TN	TP	TN	TP	TN	TP	TN	TP	TN	TP	TN	TP	TN	TP	TN	TP
31	3	1	May 2020	15494	5165	7035	2345	1753	355	40	8	3	1	1253	208	5781	2137	14241	4957

Note: *Maximum allowable load based on 20 MGD discharge to Halifax River

Please note that May was the first month of the year 2020 that Bennett Swamp existing water level was below the Thayer Canal weir. The City discharged 3.4 million gallons of reuse flow for the month of May. The reuse flow did not bring the water level above the Thayer Canal Weir in Bennett Swamp. Additional detail showing daily flows, samples, and loading calculations are referenced in the next three pages.

Monitoring

Water Flows

May 2020

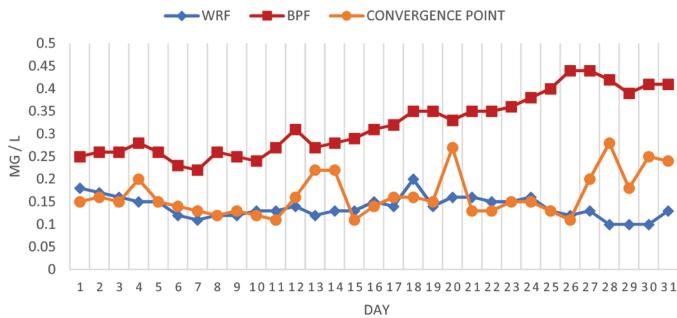
Day	RAINFALL (INCHES)			EFF. FLOW (MGD)			REUSE FLOW (MGD)			SURF. FLOW TO HALIFAX (MGD)				FLOW TO BENNETT SWAMP (MGD)			FLOW TO TOMOKA (MGD)			
	DBIA	BPF	WRF	BPF	WRF	TOTAL	BPF	WRF	TOTAL	BPF	WRF	CONVERGENCE	TOTAL	SWAMP	100.00%	0.00%	THAYER	US-92	TOTAL	
															NORTH	SOUTH				
1	0	0.03	0.00	3.2	5.0	8.23	0.067	4.783	4.85	3.2	0.205	3.38	3.38	0.000	0.00	0.00	0.00	0.00	0.00	0.00
2	0	0.00	0.36	3.9	4.9	8.84	0.973	4.133	5.11	2.9	0.791	3.73	3.73	0.000	0.00	0.00	0.00	0.00	0.00	0.00
3	0	0.00	0.00	3.1	4.9	8.03	0.185	4.872	5.06	2.9	0.027	2.97	2.97	0.000	0.00	0.00	0.00	0.00	0.00	0.00
4	0	0.00	0.00	4.1	4.9	9.07	1.081	3.837	4.92	3.0	1.105	4.15	4.15	0.000	0.00	0.00	0.00	0.00	0.00	0.00
5	0	0.00	0.00	3.8	4.9	8.70	1.441	4.078	5.52	2.4	0.827	3.18	3.18	0.000	0.00	0.00	0.00	0.00	0.00	0.00
6	0	0.00	0.00	3.5	5.0	8.44	0.649	4.510	5.16	2.8	0.455	3.28	3.28	0.000	0.00	0.00	0.00	0.00	0.01	0.01
7	0	0.00	0.00	3.1	4.7	7.76	0.000	4.611	4.61	3.1	0.044	3.15	3.15	0.000	0.00	0.00	0.00	0.00	0.00	0.00
8	0	0.00	0.00	3.1	4.8	7.94	1.490	4.769	6.26	1.7	0.021	1.68	1.26	0.420	0.42	0.00	0.00	0.00	0.00	0.00
9	0	0.00	0.00	3.2	4.8	7.97	1.271	4.716	5.99	2.0	0.034	1.99	1.55	0.442	0.44	0.00	0.00	0.00	0.00	0.00
10	0.01	0.00	0.00	3.2	4.9	8.17	0.000	4.881	4.88	3.2	0.041	3.29	3.29	0.000	0.00	0.00	0.00	0.00	0.00	0.00
11	0	0.23	0.00	3.3	4.9	8.24	0.352	4.827	5.18	3.0	0.081	3.06	2.43	0.627	0.63	0.00	0.00	0.00	0.01	0.01
12	0	0.00	0.00	3.1	4.8	7.91	0.258	4.826	5.08	2.8	0.004	2.83	2.83	0.000	0.00	0.00	0.00	0.00	0.00	0.00
13	0	0.00	0.00	7.0	5.0	12.07	1.202	0.987	2.19	5.8	4.044	9.88	9.88	0.000	0.00	0.00	0.00	0.00	0.00	0.00
14	0	0.00	0.00	3.2	4.8	7.99	2.978	4.827	7.81	0.2	0.000	0.19	0.19	0.000	0.00	0.00	0.00	0.00	0.00	0.00
15	0.02	0.00	0.08	3.5	4.8	8.31	1.669	4.209	5.88	1.9	0.567	2.43	1.85	0.587	0.59	0.00	0.00	0.00	0.01	0.01
16	0.38	0.14	0.10	3.8	4.8	8.65	0.943	4.044	4.99	2.9	0.767	3.66	3.66	0.000	0.00	0.00	0.00	0.00	0.02	0.02
17	0	0.11	0.00	3.3	4.8	8.13	0.000	4.551	4.55	3.3	0.246	3.58	3.58	0.000	0.00	0.00	0.00	0.00	0.04	0.04
18	0	0.00	0.00	3.6	4.8	8.43	1.456	4.417	5.87	2.2	0.395	2.56	1.89	0.671	0.67	0.00	0.00	0.00	0.03	0.03
19	0	0.00	0.00	3.1	4.7	7.72	0.000	4.627	4.63	3.1	0.024	3.09	2.48	0.612	0.61	0.00	0.00	0.00	0.02	0.02
20	0	0.00	0.00	6.6	4.6	11.16	1.192	1.017	2.21	5.4	3.551	8.96	8.96	0.000	0.00	0.00	0.00	0.00	0.01	0.01
21	0	0.00	0.00	3.1	4.6	7.64	3.067	4.551	7.62	0.0	0.000	0.02	0.02	0.000	0.00	0.00	0.00	0.00	0.01	0.01
22	0	0.03	0.00	3.2	4.6	7.77	2.129	4.550	6.68	1.1	0.000	1.09	1.09	0.000	0.00	0.00	0.00	0.00	0.02	0.02
23	0	0.00	0.00	4.0	4.7	8.73	1.257	4.005	5.26	2.8	0.678	3.46	3.46	0.000	0.00	0.00	0.00	0.00	0.03	0.03
24	0	0.00	0.00	4.2	4.4	8.61	0.365	3.652	4.02	3.8	0.776	4.59	4.59	0.000	0.00	0.00	0.00	0.00	0.05	0.05
25	0.33	0.00	0.46	3.3	4.5	7.80	0.757	4.485	5.24	2.6	0.000	2.56	2.56	0.000	0.00	0.00	0.00	0.00	0.09	0.09
26	0.07	0.40	0.43	3.3	4.7	8.03	0.640	4.675	5.32	2.7	0.020	2.72	2.72	0.000	0.00	0.00	0.00	0.00	0.14	0.14
27	0.62	0.34	0.88	4.7	5.3	9.95	0.175	4.188	4.36	4.5	1.081	5.59	5.59	0.000	0.00	0.00	0.00	0.00	0.12	0.12
28	1.23	0.89	0.81	7.2	5.5	12.76	1.304	2.115	3.42	5.9	3.424	9.34	9.34	0.000	0.00	0.00	0.00	0.00	0.12	0.12
29	0.21	0.91	0.62	6.1	5.7	11.81	0.000	3.596	3.60	6.1	2.101	8.21	8.21	0.000	0.00	0.00	0.00	0.00	0.14	0.14
30	0.26	0.22	0.39	6.8	5.6	12.44	0.000	2.862	2.86	6.8	2.768	9.58	9.58	0.000	0.00	0.00	0.00	0.00	0.16	0.16
31	0.39	0.04	0.06	8.6	5.5	14.14	0.000	0.982	0.98	8.6	4.531	13.16	13.16	0.000	0.00	0.00	0.00	0.00	0.14	0.14
# OF STORMS	10	11	10																	
TOTAL	3.52	3.34	4.19	129.66	151.79	281.45	26.90	123.18	150.08	102.76	28.61	131.36	128.00	3.36	3.36	0.00	0.00	0.00	1.19	1.19
AVERAGE	0.35	0.30	0.42	4.18	4.90	9.08	0.87	3.97	4.84	3.31	0.92	4.24	4.13	0.11	0.11	0.00	0.00	0.00	0.04	0.04
PEAK DAILY	1.23	0.91	0.88	8.63	5.70	14.14	3.07	4.88	7.81	8.63	4.53	13.16	13.16	0.67	0.67	0.00	0.00	0.00	0.16	0.16
LOW DAILY	0	0	0	3.07	4.43	7.64	0.00	0.98	0.98	0.02	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Monitoring

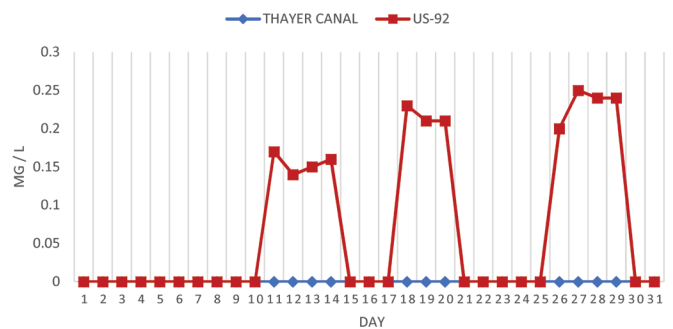
Concentrations May 2020

DAY	BPF		WRF		CONVERGENCE		THAYER CANAL		US-92	
	TN	TP	TN	TP	TN	TP	TN	TP	TN	TP
1	1.07	0.18	1.35	0.25	1.13	0.15	0	0	0	0
2	0.99	0.17	1.4	0.26	1.06	0.16	0	0	0	0
3	0.91	0.16	1.45	0.26	0.96	0.15	0	0	0	0
4	0.94	0.15	1.5	0.28	1.09	0.2	0	0	0	0
5	1.05	0.15	1.55	0.26	1.11	0.15	0	0	0	0
6	1.06	0.12	1.49	0.23	1.13	0.14	0	0	0	0
7	1.07	0.11	1.59	0.22	1.13	0.13	0	0	0	0
8	0.96	0.12	1.52	0.26	1.05	0.12	0	0	0	0
9	0.97	0.12	1.48	0.25	1.02	0.13	0	0	0	0
10	0.97	0.13	1.64	0.24	1.07	0.12	0	0	0	0
11	0.9	0.13	1.18	0.27	0.97	0.11	0	0	0.43	0.17
12	0.89	0.14	1.46	0.31	0.95	0.16	0	0	0.53	0.14
13	0.89	0.12	1.65	0.27	1.27	0.22	0	0	0.53	0.15
14	1.04	0.13	1.7	0.28	1.27	0.22	0	0	0.49	0.16
15	0.97	0.13	1.41	0.29	1.03	0.11	0	0	0	0
16	0.93	0.15	1.65	0.31	1.06	0.14	0	0	0	0
17	0.94	0.14	1.63	0.32	1.09	0.16	0	0	0	0
18	1.14	0.2	1.6	0.35	1.07	0.16	0	0	0.54	0.23
19	1.07	0.14	1.41	0.35	1.13	0.15	0	0	0.54	0.21
20	0.95	0.16	1.55	0.33	1.47	0.27	0	0	0.85	0.21
21	1.06	0.16	1.69	0.35	1.07	0.13	0	0	0	0
22	0.96	0.15	1.49	0.35	1.05	0.13	0	0	0	0
23	0.94	0.15	1.51	0.36	1.25	0.15	0	0	0	0
24	1.49	0.16	1.59	0.38	1.25	0.15	0	0	0	0
25	0.93	0.13	1.8	0.4	1.33	0.13	0	0	0	0
26	0.98	0.12	1.51	0.44	1.12	0.11	0	0	0.55	0.2
27	0.94	0.13	1.33	0.44	1.15	0.2	0	0	0.6	0.25
28	0.9	0.1	1.26	0.42	1.25	0.28	0	0	0.76	0.24
29	0.92	0.1	1.2	0.39	1.12	0.18	0	0	0.82	0.24
30	0.88	0.1	1.07	0.41	1.11	0.25	0	0	0	0
31	0.89	0.13	1.2	0.41	1.02	0.24	0	0	0	0

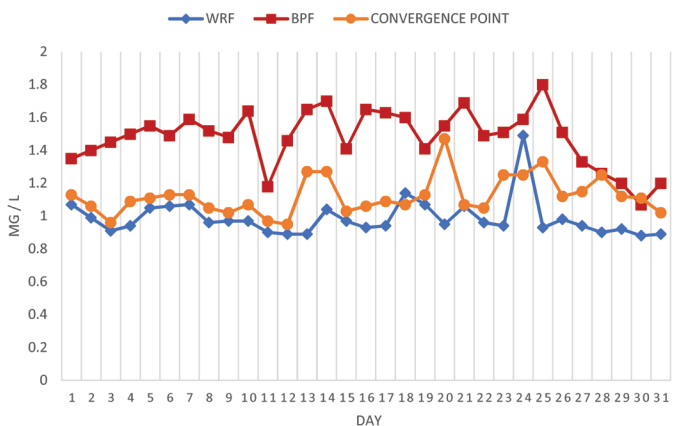
TOTAL PHOSPHORUS WWTP OUTFLOWS



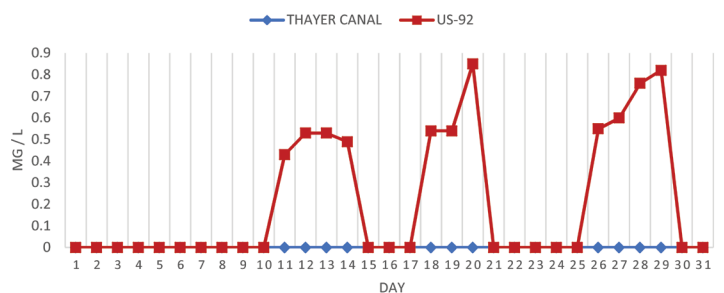
TOTAL PHOSPHORUS BENNETT SWAMP OUTFLOWS



TOTAL NITROGEN WWTP OUTFLOWS



TOTAL NITROGEN BENNETT SWAMP OUTFLOWS



PUBLIC EDUCATION DELIVERABLES

Educational Handout

- Draft Approved by FDEP on: 4-25-19

Number Distributed - 100

Where - Ribbon Cutting / Daytona Beach City Hall

PROJECT OFFERS FAR-REACHING ENVIRONMENTAL BENEFITS

Bennett Swamp Rehydration & Conservation Project

This project was conceived by the City of Daytona Beach in discussion with the St. Johns River Water Management District during the update of the Central Springs and East Coast Regional Water Supply Plan. It is now a component of the City's long-term water reuse approach.

1. Most of the City's reclaimed wastewater effluent is reused for irrigation.

2. During low-demand periods, reuse is stored in the City's two tanks for future use.

3. Previously, any remaining reclaimed water would be discharged to the river.

Now, reclaimed water will be dispersed to the wetland providing multiple benefits and reducing the amount discharged to the river.

Advanced Hydration System

The City constructed an advanced hydration system that is permitted to redirect and disperse 6 million gallons per day of reclaimed water in several locations of Bennett Swamp. The actual dispersal rate will be determined by the availability of water and the monitoring results.

A network of 19,000 l.f. pipes, dispersal units, valves and meters will:

- Regulate flows throughout the system to beneficial levels
- Allow for seasonal resting in zones
- Direct water to areas of the swamp that benefit the most

DYNAMIC MONITORING
REACTIVE WATER FLOW

Front

PROJECT BENEFITS

Welland Restoration

- Creates a healthy ecosystem for numerous species
- Enhances 1,425 acres of Bennett Swamp wetlands

Water Supply

- Recharges the Sole Source Aquifer
- 6 million gallons of recharge = drinking water for 85,000 people
- Provides 0.11 foot of re-charge (8-46% of recovery needed) to the minimum flows and levels of Indian Lake.

Water Quality

- Reduces nutrient loads to the Halifax River / Indian River Lagoon

INDIAN RIVER LAGOON NITROGEN REMOVAL

45,000 lbs. EPA impaired waters mandate

54,000 lbs. removed with 6 MG of reuse in Bennett Swamp

108,000 lbs. potential with 12 MG of reuse in Bennett Swamp

FAST FACTS

- SATELLITE TELEMETRY**
Installed to transmit real-time reuse flow data to the plant
- SOLAR ENERGY**
Used to power the telemetry and pumps in the swamp
- FIRE HYDRANTS**
Installed throughout swamp to aid in the control of forest fires
- 1,425 ACRE FLOWAGE EASEMENT**
Only 2.1 acres temporarily impacted during construction. Project expandable to 12 million gallons per day with no additional construction needed in swamp.
- SATELLITE TELEMETRY**
TOTAL COST **\$5,336,544**
GRANTS AWARDED
SJRWMD: \$1,761,060
FDEP: \$2,567,927

DISPERSAL UNIT

METER ASSEMBLY

PARTNERSHIPS / COLLABORATIVE

- Florida Department of Environmental Protection - Funding Partner (50%)
- City of Daytona Beach - Conceive, Design, Construct, Operate and Monitor Project
- St. Johns River Water Management District - Joint Land Owner - Funding Partner (33%) - Flowage Easement
- State of Florida Trustees of the Internal Improvement Trust Fund - Joint Land Owner - Flowage Easement
- Florida Forest Service (Division of Forestry) - Land Manager: Tiger Bay State Forest

PREPARED BY: **Planning Solutions Corp.** COVER CONTENT 4/25/19 PSC 01-123

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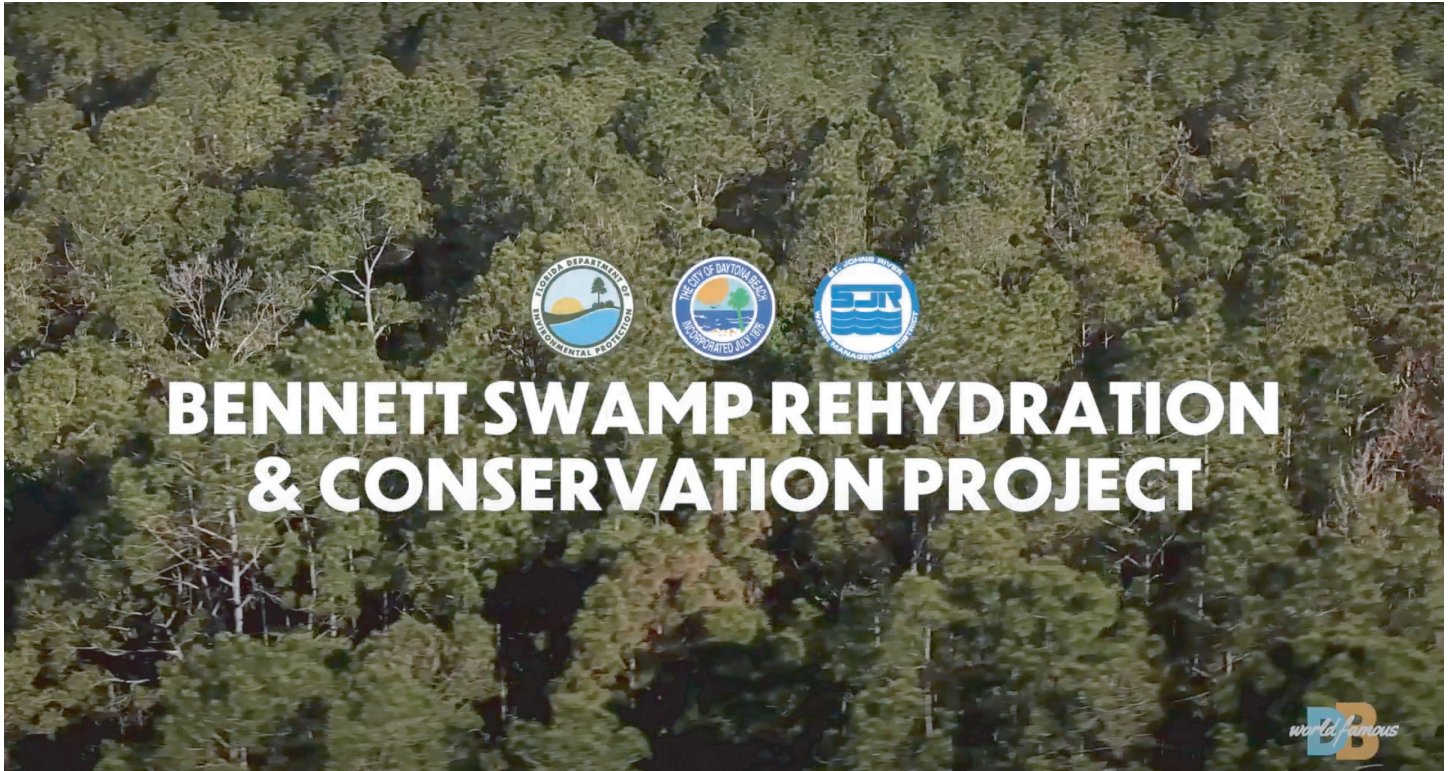
PUBLIC EDUCATION DELIVERABLES

Overview Video

- Draft Approved by FDEP on: 7-1-19

Number Distributed - 100,000 viewer reach

Where - City of Daytona Beach Website, Facebook & City Commission Meeting



Click large video above to watch or watch full video here: <https://youtu.be/EMu5ikxXxy8>

PUBLIC EDUCATION DELIVERABLES

COB Community Newsletter Feature #1
 - Draft Approved by FDEP on: 10-30-19

Number Distributed - 25,000
Where - City of Daytona Beach Utility
 Customer Bill sent via USPS



THE OFFICIAL CITY OF DAYTONA BEACH NEWSLETTER
 VOL. 2 | ISSUE 2 | FEB/MAR 2020

Daytona Beach Police Department Looks To Clean Up Waterways

Through a partnership with the Florida Fish and Wildlife Conservation Commission (FWC), the police department is hoping to remove these derelict vessels from the Halifax River. The city has applied for \$57,000 in grant funding from FWC, which will pay 100% of the removal and demolition cost of the vessels. To learn more about this initiative, visit www.codb.us and click on "View All News."

One-stop Shop for Housing & Financial Information, April 18

Residents are invited to the city's Fair Housing & Financial Wellness Clinic from 10 a.m. to 2 p.m. Saturday, April 18, at the Allen Chapel AME Church located at 580 George W. Engram Blvd. Activities include:

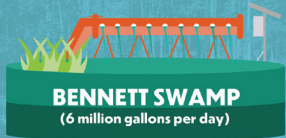
- Free financial literacy classes
- Free onsite legal walk-in clinic
- Free credit reports and credit counseling available
- Homeowners can learn about refinancing opportunities and owner-occupied rehab programs
- A budget and credit class will be offered
- Home buyers can learn about available down payment assistance programs, the home-buying process and evaluating mortgage readiness
- New mortgage loan products and housing programs will be showcased




Front

DID YOU KNOW?

The City of Daytona Beach's **BENNETT SWAMP REHYDRATION & CONSERVATION PROJECT**, funded by the Florida Department of Environmental Protection and the St. Johns River Water Management District, **ENHANCES OUR NATURAL SYSTEMS.**




BENNETT SWAMP
(6 million gallons per day)

Wetland Restoration

- Creates a healthy ecosystem for numerous species
- Enhances 1,425 acres of Bennett Swamp wetlands

Water Supply

- Recharges the Sole Source Aquifer
- 6 million gallons of recharge = drinking water for 85,000 people
- Provides 0.11 foot of rebound (8.46% of recovery needed) to the minimum flows and levels of Indian Lake.



53rd Annual Easter Beach Run, April 4


This year the Easter Beach Run will be a week earlier – Saturday, April 4, due to other major special events happening in the area during the holiday weekend. The race begins on the beach behind the Hilton Daytona Beach Oceanfront Resort located at 100 N. Atlantic Ave. Participants of all ages and fitness levels can enjoy a scenic run on the World's Most Famous Beach while travelling out and back for the 4-mile race, 2-mile fun run or health walk. Kids are also welcome to participate in the 1/4-mile race, 100 and 50-yard dash. Following the race, registered participants can head over to the sponsor Bubba Gump Shrimp Company for their world-renowned shrimp and grits. There also will be fun for the entire family with sponsors and vendors with treats and plenty of prizes. Sign up today at www.codb.us/EasterBeachRun/

Mayor's Literacy Initiative Offers Weekly Fun

Youth between the ages of 5 to 7 years old can get help with reading through the Mayor's Literacy Initiative, which meets from 5:30 to 6:30 p.m. every Thursday at the Yvonne Scarlett-Golden Cultural and Educational Center located at 1000 Vine St. This free weekly program has volunteers who help youth with their reading skills, as well as fun activities and themed parties to help inspire children to develop a sustained interest in reading and math. To register youth for the program, stop by the city's Leisure Services office in City Hall, which is at 301 S. Ridgewood Ave. For more information, call (386) 671-3401.


Wine & Cheese Walk

1 to 6 p.m.
 Saturday, April 4
 Downtown Beach Street
 Enjoy wine and cheese samples as you spend the day by the river.



St. Patrick's Day Celebration

5 to 10 p.m.
 Tuesday, March 17
 Downtown Beach Street
 Enjoy Irish beer and food with Celtic and Irish rock bands.



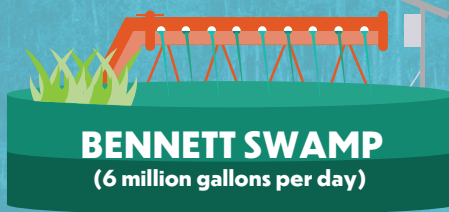
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For more information on the shops and special events in downtown Daytona Beach, visit www.RiverfrontShopsOfDaytona.com.

Back

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Newsletter Feature #1

PUBLIC EDUCATION DELIVERABLES

COB Community Newsletter Feature #2

- Draft Approved by FDEP on: 10-30-19

Number Distributed - 25,000

Where - City of Daytona Beach Utility Customer Bill sent via USPS

world famous
DAYTONA BEACH

THE OFFICIAL CITY OF DAYTONA BEACH NEWSLETTER
VOL. 2 | ISSUE 4 | JUNE 2020

SPECIAL EDITION - IMPORTANT CITY COVID-19 INFORMATION



Fourth of July Fireworks Canceled

The fireworks show for the Fourth of July has been canceled. In addition, Friday and Saturday night concerts at the Daytona Beach Bandshell have been postponed until further notice. For more information, visit www.codb.us.

City parks and pools reopen

The city has reopened many of its parks for passive outdoor recreation including the walking trails, basketball courts, outdoor amenities and restrooms. The playgrounds at the parks remain closed. It is recommended children do not use the playground equipment because it is not being sanitized. Also, the city has reopened its two pools:

- Campbell Aquatic Center**
 - 400 Dr. Martin Luther King Jr. Blvd.
 - Open swim 1 to 4 p.m. Monday through Saturday
 - No cost to swim
- Cypress Aquatic Center**
 - 981 George W. Engram Blvd.
 - Lap swimming 10:30 to 11:30 a.m. and open swim noon to 5 p.m. Monday through Friday.
 - Lap swimming 10 to 11 a.m. and open swim noon to 4 p.m. on Saturday. Closed on Sunday.
 - \$3 for adults, \$2 for children 17 years of age and younger.

For more information about the city's parks and pools, visit www.codb.us.

City Hall update

City Hall offices have reopened to limited foot traffic. Permits & Licensing and Utility Billing are taking walk-ins, while all other departments are available by appointment only. Please call each department directly to schedule an appointment.

City Clerk: (386) 671-8023
 City Manager: (386) 671-8010
 Human Resources: (386) 671-8210
 Leisure Services: (386) 671-8250
 Planning: (386) 671-8120
 Purchasing: (386) 671-8080
 Redevelopment: (386) 671-8180

Customers are encouraged to continue to access city services remotely via email, phone, online and an outdoor dropbox. For a list of city services and contacts, visit www.codb.us/coronavirus and click on "City Online Services."



Registration still accepted for youth summer camps

Registration is still being accepted for the city's popular summer camp program for children ages 5 to 16 years old. The program includes breakfast and lunch, sports, crafts and games. Due to COVID-19, the summer camps have been reduced to 50% occupancy and there are no planned field trips. The summer camps are offered at Sunnyland Park, the Midtown Community Center, YSG Community Center and the Ortona Playground. *Note, Ortona Playground summer camp has a waiting list.* Registration is on a first-come, first-served basis. For more information, call (386) 671-8337.

DID YOU KNOW?

The City of Daytona Beach's **BENNETT SWAMP REHYDRATION & CONSERVATION PROJECT**, funded by the Florida Department of Environmental Protection and the St. Johns River Water Management District, **IMPROVES OUR WATER QUALITY** by reducing nutrient loads to the **HALIFAX RIVER / INDIAN RIVER LAGOON**.

INDIAN RIVER LAGOON
NITROGEN REMOVAL

45,000 lbs.


EPA impaired waters mandate

54,000 lbs.

removed with 6 MG of reuse in Bennett Swamp

108,000 lbs.

potential with 12 MG of reuse in Bennett Swamp



City offers rental assistance through CARE program

The city has expanded its COVID-19 Assistance Recovery Effort (CARE) program and is offering rental assistance to income-eligible residents. Assistance includes rental payments, with a two-month maximum assistance per household. Maximum assistance is capped at \$1,500 per month and \$3,000 total per household. Appointments must be made to submit completed applications and can be made by calling Central Florida Community Development Corporation at (386) 226-1216 or Mid-Florida Housing Partnership Corporation at (386) 274-4441. For more information, visit www.codb.us.

Volusia County assistance available to residents and businesses

Mortgage assistance

Daytona Beach homeowners who have been financially impacted by COVID-19 can apply for mortgage payment assistance through Volusia County's Community Assistance Division. Mortgage assistance is provided to eligible households for up to three months and is capped at \$1,500 a month. The program includes assistance for eligible payment of late, current and, if they remain eligible, future payments. For more information, visit www.volusia.org/coronavirus.

Grants available for small businesses

Volusia County is accepting applications for a \$10 million grant program aimed at helping small businesses recover financially from the COVID-19 pandemic. Businesses that have 25 employees or less may be eligible to receive \$3000 or businesses that have between 26 and 50 employees may be eligible for \$5,000. Applications will be processed on a first-come, first-served basis, with the application posted at the county's website: www.VolusiaBusinessResources.com.

Help make Daytona Beach count in 2020 Census

Residents are encouraged to help Make Daytona Beach Count in the 2020 Census. Your participation will impact our quality of life and influence the funding the city receives for public spaces, infrastructure, education programs, healthcare services and more for the next 10 years. The census also helps determine congressional representation. Please do your part to help the city reach a 100 percent response rate by completing the census at www.my2020census.gov. For more information, visit www.DaytonaBeachCounts.com.



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Front

Back

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Newsletter Feature #2

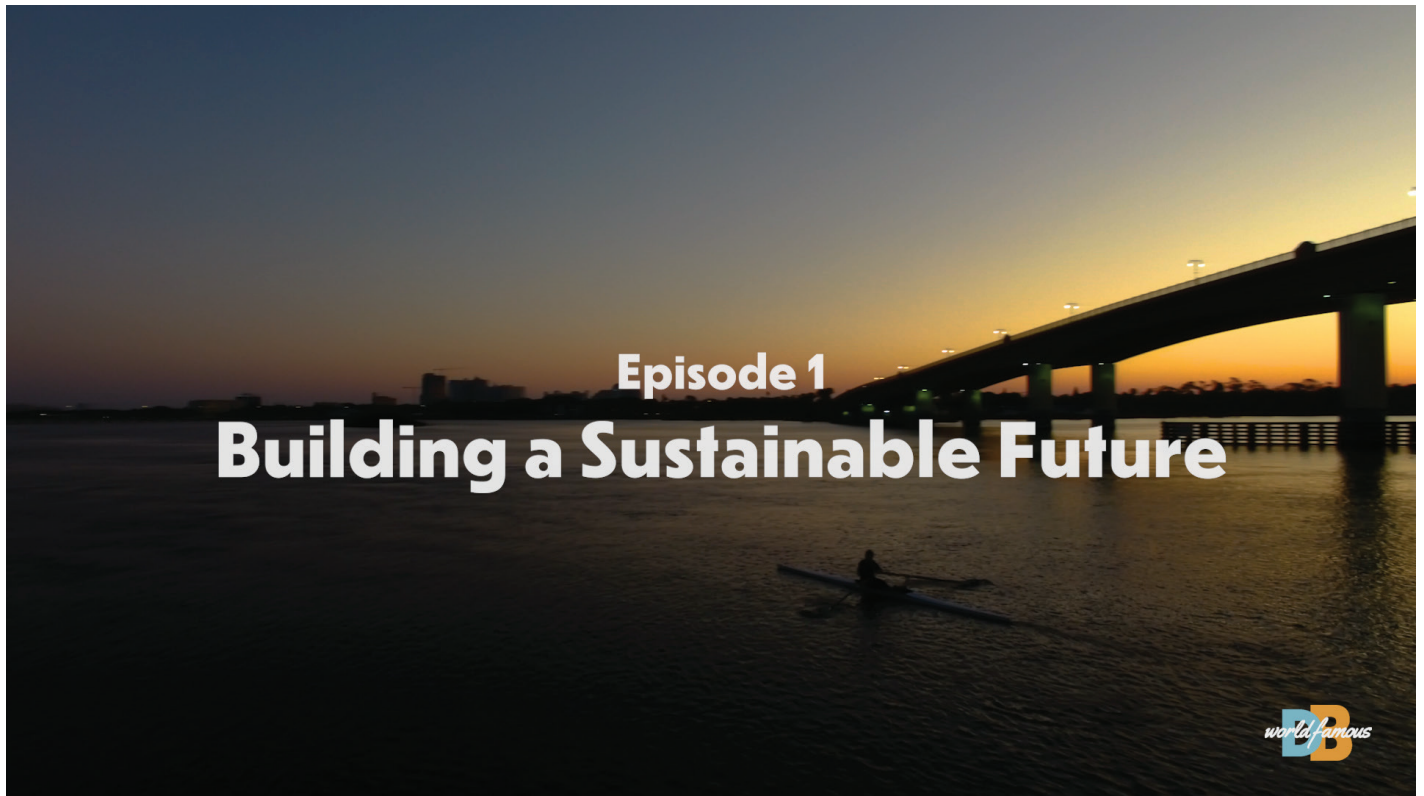
PUBLIC EDUCATION DELIVERABLES

Mini Education Video Series - Episode 1

- Draft Approved by FDEP on: 10-30-19
- Final Approved by FDEP on: 6-4-20

Number Distributed - 1,983 viewer reach /
105,975 viewer impressions

Where - City of Daytona Beach Website, Facebook
& Youtube



Episode 1 - Building a Sustainable Future City Manager James Chisholm, City of Daytona Beach



Click large video above to watch or watch full video here: https://youtu.be/WMcS1uSVd_M

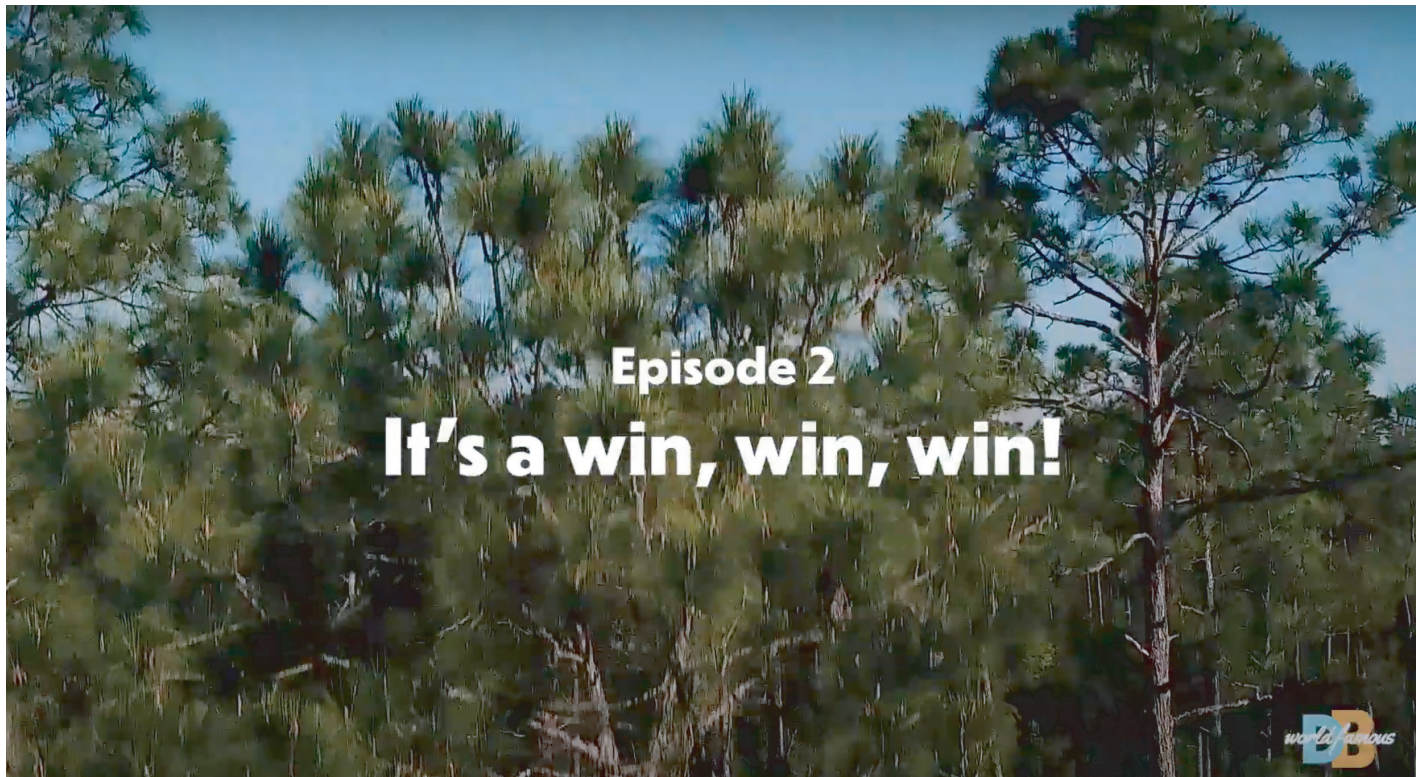
PUBLIC EDUCATION DELIVERABLES

Mini Education Video Series - Episode 2

- Draft Approved by FDEP on: 10-30-19
- Final Approved by FDEP on: 2-14-20

Number Distributed - 5,144 viewer reach /
466,515 viewer impressions

Where - City of Daytona Beach Website, Facebook
& Youtube



Episode 2 - It's a win, win, win! Ann B. Shortelle, Ph.D., Executive Director SJRWMD



Click large video above to watch or watch full video here: <https://youtu.be/uxTLO-Q7zLs>

PUBLIC EDUCATION DELIVERABLES

Mini Education Video Series - Episode 3

- Draft Approved by FDEP on: 10-30-19
- Final Approved by FDEP on: 6-16-20

Number Distributed - 14,932 viewer reach /
1,046,869 viewer impressions

Where - City of Daytona Beach Website, Facebook
& Youtube



Episode 3 - Reclaiming our Fresh Water Aaron Watkins, Central District Director, FDEP



Click large video above to watch or watch full video here: <https://youtu.be/Bq0hLFDccFg>



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