



ADDED ITEM

AGENDA REQUEST FORM

THE SCHOOL BOARD OF BROWARD COUNTY, FLORIDA

MEETING DATE	2020-06-09 10:05 - School Board Operational Meeting
AGENDA ITEM	ITEMS
CATEGORY	EE. OFFICE OF STRATEGY & OPERATIONS
DEPARTMENT	Procurement & Warehousing Services

Special Order Request <input type="radio"/> Yes <input checked="" type="radio"/> No
Time
Open Agenda <input checked="" type="radio"/> Yes <input type="radio"/> No

ITEM No.:
EE-13.

TITLE:

Recommendation to Approve Third Amendment, Renewal and Additional Spending Authority - 59-087C - Broward County NatureScape Program

REQUESTED ACTION:

Approve the recommendation of the above Third Amendment, Renewal and Additional Spending Authority. Contract Term: December 12, 2017 through June 30, 2021, Three (3) Years, Six (6) Months; User Department: Applied Learning; Awarded Amount: \$565,542; New Award Amount: \$801,290; Awarded Vendor(s): Broward County; Small/Minority/Women Business Enterprise Vendor(s): None.

SUMMARY EXPLANATION AND BACKGROUND:

The approval of this item will be the third renewal under the third five (5) year NatureScape Program partnership agreement with Broward County. The term of the agreement commenced on December 12, 2017, and per the agreement, the School Board may elect to renew the agreement for up to four (4) additional one (1) year terms upon the conclusion of the initial twelve (12) month term.
This Agreement has been reviewed and approved as to form and legal content by the Office of the General Counsel.
This Agreement will be executed after School Board approval.

SCHOOL BOARD GOALS:

Goal 1: High Quality Instruction Goal 2: Safe & Supportive Environment Goal 3: Effective Communication

FINANCIAL IMPACT:

The estimated financial impact to the District will be \$235,748. The contract award amount was for \$565,542. The request is to increase the spending authority by \$235,748, bringing the new contract value to \$801,290. The funding source will come from Applied Learning's operating budget of \$150,000 and Title IV of \$85,748. The financial impact amount represents an estimated contract value; however, the amount authorized will not exceed the estimated contract award amount.

EXHIBITS: (List)

(1) Executive Summary (2) Financial Analysis Worksheet (3) Agreement (4) Original Executed Documents (5) Exhibit 1

BOARD ACTION:
APPROVED
(For Official School Board Records Office Only)

SOURCE OF ADDITIONAL INFORMATION:	
Name: Susan Cantrick	Phone: 754-321-1859
Name: Mary C. Coker	Phone: 754-321-0501

THE SCHOOL BOARD OF BROWARD COUNTY, FLORIDA
Senior Leader & Title

Maurice L. Woods - Chief Strategy & Operations Officer

Signature
Maurice Woods
6/8/2020, 11:51:20 AM

Approved In Open Board Meeting On:

JUN - 9 2020

By: *[Signature]*
School Board Chair

EXECUTIVE SUMMARY

Recommendation to Approve Third Amendment, Renewal, and Additional Spending Authority 59-087C – Broward County NatureScape Program

Introduction

Responsible: Procurement & Warehousing Services (PWS)

This request is to approve the Third Amendment, Renewal, and Additional Spending Authority of the Partnership Agreement between Broward County and The School Board of Broward County, Florida (SBBC), for the NatureScape Program. The agreement was approved at the School Board Operational Meeting (SBOM) as Item JJ-1, starting December 12, 2017 through December 11, 2018, with a renewal option for (4) four (1) one (1) year periods, and an approved spending authority of \$222,216. The First Amendment and Renewal was approved at the SBOM as EE-4 on December 4, 2018, with an additional spending authority of \$114,442. The Second Amendment and Renewal was approved at the SBOM as EE-27 on June 11, 2019, with an additional spending authority of \$228,884, bringing the total approved spending authority to \$565,542. Upon approval of this item, the Agreement will expire on June 30, 2021.

The additional spending authority being requested is \$235,748. One hundred fifty thousand dollars (\$150,000) will come from Applied Learning's operating budget, and eighty-five thousand, seven hundred forty-eight dollars (\$85,748) will come from Title IV.

Goods/Services Description

Responsible: Applied Learning

The approval of this item will be the third renewal under the third five (5) year NatureScape Program partnership agreement with Broward County. For the past thirteen (13) years SBBC, working in partnership with Broward County's NatureScape Program within Environmental Planning and Community Resilience Division (EPCRD), has made substantial progress in implementing measures that promote greater environmental sustainability, including the protection and conservation of water resources, landscape and habitat improvements to SBBC facilities. The NatureScape Program has actively engaged the student population, teachers, and staff by instilling values associated with environmental stewardship and sustainability through classroom lessons, outdoor learning opportunities, training, and implementation of best management practices.

In addition, the programs supported by the NatureScape agreement provide engaging, real-world experiences for Broward County students while reinforcing core content skills and creating an awareness of emerging careers in the conservation of the environment.

Environmental Stewardship Policy 7014 requires environmental stewardship as "an economic, environmental, and social priority to be taught, practiced and implemented throughout the District." As in the District's Student Progression Plan (Policy 6000.1), "the concepts and practices of environmental stewardship are embedded into the current character traits and should be reinforced throughout the Character Education curriculum."

Through March of 2020, the program has educated more than eighty-two thousand (82,000) students and provided training for more than two thousand and fifty (2,050) teachers and SBBC staff. Major accomplishments include the delivery of over two thousand seven hundred and fifty (2,750) educational programs, workshops, and staff training. The addition of seven (7) certified school habitats brings the total of National Wildlife Foundation schoolyard habitats to two hundred thirty-six (236). Broward County Public Schools is the largest school district in the nation, certified by the National Wildlife Foundation, based on education and training. The annual District/County joint delivery of the County's premier environmental showcase events, Broward Water Matters Day, the Youth Climate Summit, and the annual P3 Eco-Challenge Awards Ceremony highlight the District's teachers and students for their environmental recognition and achievements.

**Recommendation to Approve Third Amendment, Renewal, and Additional Spending Authority
59-087C – Broward County NatureScape Program
June 9, 2020 Board Agenda
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Conservation of water resources involved an evaluation of seven hundred ten (710) existing irrigation systems at three hundred twenty-eight (328) school facilities as well as indoor water audits and improvements conducted at twenty-six (26) schools.

The overall NatureScape Program effort is guided by SBBC’s Applied Learning and Environmental Conservation/Utility Management departments and the EPCRD’s team of two point five (2.5) Full Time Employees and is supported by additional Broward County technical resources as needed.

**Procurement Method
Responsible: PWS**

Pursuant to the Department of Education, Rule 6A-1.012, 11(b), Florida Administrative Code as authorized by Section 1010.04(4)(a), Florida Statutes, and Purchasing Policy 3320, Section II, H, the requirement for requesting competitive solicitation for commodities or contractual services from three (3) or more sources is hereby waived as for the SBBC’s purchase of educational services.

**Financial Impact
Responsible: PWS and Applied Learning**

The additional spending authority being requested is \$235,748 and based on the contracted prices as demonstrated below:

Service Goods	Not-To-Exceed Amount	New Renewal Expiration Date
Initial Term [one (1) year]	\$55,554 quarterly (\$222,216 term total)	December 2018
1 st Renewal Term [six (6) months]	\$57,221 quarterly (\$114,442 term total)	June 30, 2019
2 nd Renewal Term [one (1) year]	\$57,221 quarterly (\$228,884 term total)	June 30, 2020
3 rd Renewal Term [one (1) year]	58,937 quarterly (\$235,748 term total)	June 30, 2021
4 th Renewal Term [one (1) year]	\$60,705 quarterly (\$242,820 term total)	June 30, 2022
Total Services	\$1,044,110	

Financial Impact Table:

Action	Date	Term (months)	Amount
Original spending authority request	11/7/2017	12	\$ 222,216
1st renewal + additional spending authority	12/4/2018	6	\$ 114,442
2nd renewal + additional spending authority	6/11/2019	12	\$ 228,884
3rd renewal + additional spending authority	6/9/2020	12	\$ 235,748
New Total Contract Amount		42	\$ 801,290

The funding will come from the Applied Learning Department’s operating budget and Title IV funding provided by the State. Upon approval of this item, the newly approved spending authority will be \$801,290. The financial impact amount represents an estimated contract value; however, the amount authorized will not exceed the estimated contract award amount.

**THIRD AMENDMENT TO AGREEMENT BETWEEN BROWARD COUNTY AND
THE SCHOOL BOARD OF BROWARD COUNTY FOR A
NATURESCOPE PROGRAM IN SUPPORT OF ENVIRONMENTAL STEWARDSHIP WITHIN THE
SCHOOL BOARD OF BROWARD COUNTY**

This is the Third Amendment to the Agreement ("Third Amendment"), made and entered into by and between Broward County, a political subdivision of the State of Florida ("County") and The School Board of Broward County, Florida, a political subdivision of the State of Florida ("SBBC") (collectively referred to as "Parties").

RECITALS

- A. County and SBBC entered into an Agreement dated December 12, 2017, ("Agreement"), providing for the implementation of a partnership in support of water conservation, including the NatureScape Broward principles for an Initial Term of one (1) year with SBBC able to renew the Agreement for up to four (4) additional one (1) year terms.
- B. The Parties amended the Agreement on December 4, 2018, through a First Amendment to Agreement that aligned the Agreement's term consistent with SBBC's fiscal year, thereby providing for a term ending on June 30, 2019, with SBBC able to elect up to three (3) additional one (1) year renewal terms.
- C. The Parties amended the Agreement on June 11, 2019, through a Second Amendment to Agreement, recognizing SBBC's desire to exercise the second renewal term option in the Agreement, extending the term of the Agreement through June 30, 2020.
- D. The Parties desire to enter into this Third Amendment to exercise the third renewal term option in the Agreement, extending the expiration date to June 30, 2021.

Now, therefore, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

ARTICLE 1: AMENDMENTS

1.1 The Parties agree that the foregoing recitals are true and correct and that such recitals are incorporated herein by reference.

1.2 The Parties agree to exercise the third renewal term and extend the Agreement, as amended, through June 30, 2021.

ARTICLE 2: ORDER OF PRECEDENCE

2.1 In the event of conflict between the provisions of the Agreement and the provisions contained herein, the provisions of the following documents shall take precedence in this order:

- a. This Third Amendment to Agreement; then
- b. The Second Amendment to Agreement; then
- c. The First Amendment to Agreement; then
- d. the Agreement.

ARTICLE 3: OTHER PROVISIONS REMAIN IN FORCE

3.1 Except as expressly provided herein, all other portions of the Agreement remain in full force and effect.

IN WITNESS WHEREOF, the Parties hereto have made and executed this Third Amendment: BROWARD COUNTY, through its BOARD OF COUNTY COMMISSIONERS, signing by and through its Mayor or Vice-Mayor, authorized to execute same by Board action on the ____ day of _____, 2020, and SBBC, signing by and through its Chair, duly authorized to execute same.

COUNTY

ATTEST:

BROWARD COUNTY, by and through
its Board of County Commissioners

Broward County Administrator, as
Ex-officio Clerk of the Broward County
Board of County Commissioners

By: _____
____ day of _____, 2020.

Approved as to form by
Andrew J. Myers
Broward County Attorney
Governmental Center, Suite 423
115 South Andrews Avenue
Fort Lauderdale, Florida 33301
Telephone: (954) 357-7600
Telecopier: (954) 357-7641

By: _____
Michael C. Owens (Date)
Senior Assistant County Attorney

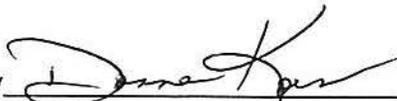
By: _____
Maite Azcoitia (Date)
Deputy County Attorney

THIRD AMENDMENT TO AGREEMENT BETWEEN BROWARD COUNTY AND THE SCHOOL BOARD
OF BROWARD COUNTY FOR A NATURESCAPE PROGRAM IN SUPPORT OF ENVIRONMENTAL
STEWARDSHIP WITHIN THE SCHOOL BOARD OF BROWARD COUNTY

THE SCHOOL BOARD OF BROWARD COUNTY, FLORIDA

(Seal)

THE SCHOOL BOARD OF BROWARD
COUNTY, FLORIDA

By 
Donna P. Korn, Chair

ATTEST:


Robert W. Runcie
Superintendent of Schools

Approved as to Form and Legal Content:



Digitally signed by Kathelyn Jacques-
Adams, Esq. - kathelyn.jacques-
adams@gbrowardschools.com
Reason: Broward County - Third
Amendment - Naturescape
Date: 2020.06.08 09:37:55 -04'00'

Office of the General Counsel

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AGENDA REQUEST FORM

THE SCHOOL BOARD OF BROWARD COUNTY, FLORIDA

MEETING DATE	2017-11-07 10:05 - School Board Operational Meeting
AGENDA ITEM	ITEMS
CATEGORY	JJ. OFFICE OF FACILITIES & CONSTRUCTION
DEPARTMENT	Environmental Health & Safety Department

Special Order Request <input type="radio"/> Yes <input checked="" type="radio"/> No
Time
Open Agenda <input checked="" type="radio"/> Yes <input type="radio"/> No

ITEM No.:
JJ-1.

TITLE:
Partnership Agreement Between Broward County and - The School Board of Broward County, Florida - NatureScape Program

REQUESTED ACTION:
Approve the partnership agreement with the Board of County Commissioners of Broward County for the NatureScape Program.

SUMMARY EXPLANATION AND BACKGROUND:
See Exhibit 1 (Summary Explanation and Background).

SCHOOL BOARD GOALS:
 Goal 1: High Quality Instruction Goal 2: Continuous Improvement Goal 3: Effective Communication

FINANCIAL IMPACT:
Funding for this item totaling \$222,216 (\$55,554. per quarter) is included in the Adopted District's Educational Facilities Plan (September 6, 2017) and in the District's Capital Budget. One-Hundred (100%) percent is funded from EH&S Capital Budget's Environmental Sustainability-Water Conservation. There is a proposed three (3) percent increase for each subsequent term.

EXHIBITS: (List)
(1) Summary Explanation and Background (2) Executive Summary (3) Partnership Agreement (4) Letter from Dr. Jennifer Jurado (5) Return on Investment (6) Tenth Annual Progress Report (7) Collaboration Form

BOARD ACTION:
APPROVED
(For Official School Board Records Office Only)

SOURCE OF ADDITIONAL INFORMATION:

Name: Roger Riddlemoser	Phone: 754-321-4200
Name: Robert Jindracek	Phone: 754-321-4220

THE SCHOOL BOARD OF BROWARD COUNTY, FLORIDA
Senior Leader & Title
Leo Bobadilla - Chief Facilities Officer

Signature
Leo Bobadilla Jr
Thursday, October 26, 2017 4:05:35 PM

Approved In Open Board Meeting On: NOV 07 2017
By: *Abby M. Freedman*
School Board Chair



AGENDA REQUEST FORM

THE SCHOOL BOARD OF BROWARD COUNTY, FLORIDA

ITEM No.:
EE-4.

MEETING DATE	2018-12-04 12:35 - School Board Operational Meeting
AGENDA ITEM	ITEMS
CATEGORY	EE. OFFICE OF STRATEGY & OPERATIONS
DEPARTMENT	Procurement & Warehousing Services

Special Order Request <input type="radio"/> Yes <input checked="" type="radio"/> No
Time
Open Agenda <input checked="" type="radio"/> Yes <input type="radio"/> No

TITLE:

Recommendation to Approve First Amendment and Renewal - 59-087C - Broward County NatureScape Program

REQUESTED ACTION:

Approve the First Amendment and a Six (6) Month renewal partnership agreement with the Board of Commissioners of Broward County for the NatureScape Program; Contract Term: December 12, 2017 through June 30, 2019; User Department: Applied Learning; Awarded Vendor(s): Broward County; Small/Minority/Women Business Enterprise Vendor(s): None.

SUMMARY EXPLANATION AND BACKGROUND:

This is the first of the four (4) potential renewals. The purpose of this partnership is to continue the NatureScape Program in support of Environmental Stewardship. The term of the agreement commenced on December 12, 2017, and per the agreement, the School Board may elect to renew the agreement for up to four (4) additional, one (1) year terms upon the conclusion of the initial twelve (12) month term. With this amendment, the renewal period is being adjusted to align with SBBC's fiscal calendar; therefore, this renewal period is for six (6) months. This Agreement has been reviewed and approved as to form and legal content by the Office of the General Counsel. This Agreement will be executed after School Board approval.

SCHOOL BOARD GOALS:

Goal 1: High Quality Instruction Goal 2: Continuous Improvement Goal 3: Effective Communication

FINANCIAL IMPACT:

Funding for this item, \$114,442 (\$57,221 per quarter) is included in the Applied Learning Department budget. This funding was originally included in the Adopted District Educational Facilities Plan (September 5, 2018) Maintenance Transfer from the EH&S LCIF budget for Environmental Sustainability – Water Conservation. The agreement includes a three (3) percent increase for each subsequent term.

EXHIBITS: (List)

(1) Executive Summary (2) Agreement (3) Financial Analysis Worksheet (4) Exhibit 2 -Signed Agreement with SBBC (5) Exhibit 3 - SBBC_Environmental Partnership Renewal Letter (6) Exhibit 4 - SBBC Environmental Partnership (7) Exhibit 5 - Broward Schools Annual Report

BOARD ACTION:
APPROVED
(For Official School Board Records Office Only)

SOURCE OF ADDITIONAL INFORMATION:	
Name: Susan Cantrick	Phone: 754-321-1859
Name: Mary C. Coker	Phone: 754-321-0501

THE SCHOOL BOARD OF BROWARD COUNTY, FLORIDA
Senior Leader & Title

Maurice L. Woods - Chief Strategy & Operations Officer

Signature
Maurice Woods
11/26/2018, 2:32:46 PM

Approved In Open Board Meeting On: **DEC 04 2018**
By: *Shatara P. Burkwood*
School Board Chair



REVISED

AGENDA REQUEST FORM

THE SCHOOL BOARD OF BROWARD COUNTY, FLORIDA

ITEM No.:

EE-27.

MEETING DATE	2019-06-11 10:05 - School Board Operational Meeting
AGENDA ITEM	ITEMS
CATEGORY	EE. OFFICE OF STRATEGY & OPERATIONS
DEPARTMENT	Procurement & Warehousing Services

Special Order Request	<input type="radio"/> Yes	<input checked="" type="radio"/> No
Time		
Open Agenda	<input checked="" type="radio"/> Yes	<input type="radio"/> No

TITLE:

Recommendation to Approve First Second Amendment and Renewal - 59-087C - Broward County NatureScape Program

REQUESTED ACTION:

Approve the First Second Amendment and Renewal of the above Agreement. Contract Term: December 12, 2017 through June 30, 2020, 2 Years, 6 Months; User Department: Applied Learning; Additional Requested Amount: \$228,884 New Award Amount: \$565,542; Awarded Vendor(s): Broward County; Small/Minority/Women Business Enterprise Vendor(s): None.

SUMMARY EXPLANATION AND BACKGROUND:

This is the second of the four (4) potential renewals. The purpose of this partnership is to continue the NatureScape Program in support of Environmental Stewardship. The term of the agreement commenced on December 12, 2017, and per the agreement, the School Board may elect to renew the agreement for up to four (4) additional, one (1) year terms upon the conclusion of the initial twelve (12) month term. This Agreement has been reviewed and approved as to form and legal content by the Office of the General Counsel. This Agreement will be executed after School Board approval.

SCHOOL BOARD GOALS:

Goal 1: High Quality Instruction Goal 2: Continuous Improvement Goal 3: Effective Communication

FINANCIAL IMPACT:

The estimated financial impact to the District will be \$228,884. The contract award amount was for \$336,658. The request is to increase the spending authority by \$228,884 bringing the new contract value to \$565,542. The funding source will come from Applied Learnings operating budget. The financial impact amount represents an estimated contract value; however, the amount authorized will not exceed the estimated contract award amount.

EXHIBITS: (List)

(1) Executive Summary (2) Agreement (3) Approved ARF 12-04-2018 SBOM EE-4 (4) Approved ARF 11-07-2017 SBOM JJ-1 (5) Financial Analysis Worksheet (6) Memo to Revise

BOARD ACTION:

APPROVED

(For Official School Board Records Office Only)

SOURCE OF ADDITIONAL INFORMATION:

Name: Susan Cantrick	Phone: 754-321-1859
Name: Mary C. Coker	Phone: 754-321-0501

THE SCHOOL BOARD OF BROWARD COUNTY, FLORIDA

Senior Leader & Title
Maurice L. Woods - Chief Strategy & Operations Officer

Signature
Maurice Woods
6/10/2019, 1:56:37 PM

Approved In Open Board Meeting On: JUN 11 2019
By: *Heather P. Brinkwood*
School Board Chair

NatureScape/School Board Environmental Partnership

2020-2021 Strategy

Overall Strategy: In the 2020-2021 fiscal year, the Environmental Planning & Community Resilience Division (EPCRD) is committed to bolstering program outcomes with a strong focus on realized district-wide **cost savings**, augmented **staff training**, and enhanced delivery of **STEM-based activities** in the virtual environment. These efforts will be conducted in close coordination with Energy Conservation & Utility Management (EH&S) and Custodial and Grounds Departments (PPO) and sustained technical and field support to identify, document, and implement recommendations that translate potential water savings to real cost reductions. The EPCRD team will take advantage of reduced student presence during the summer and fall months to expand school audits and landscape assessments, and support operational staff in completing improvements while developing a database of broader investment needs for longer-term prioritization and pursuit of grant funds. The EPCRD will continue to expand upon services supporting the Applied Learning Department, especially the development of e-learning modules highlighting applied use of local environmental data and datasets to expanding on and enhancing, e-learning resources and opportunities for teachers and students. These will include but not be limited to

- Sea level rise local impact resources: videos and lessons for all grade levels for teacher professional learning and student project-based learning (PBL);
- Water quality data dashboard analysis with access to, and curriculum driven by, the actual historical and current county water quality data for authentic PBL experiences;
- Coastal transect video-based lessons where students conduct research for PBL around erosion analysis using actual coastal Broward video data;
- Engaging video-based lessons around local/schoolyard habitats to help support PBL during both remote and in person instruction.

District Facilities (short-term)

Over time, the focus of the partnership with EH&S with regards to water savings has shifted from evaluating all District schools to focusing specifically on high water users and providing quick resolution of acute water losses identified through billing. The EPCRD team has aided the District in resolving issues such as leaky/faulty water meters and large breaks in subterranean irrigation lines.

- These and other repairs saved **23 million gallons** and **\$95,759** in FY '19, and **27 million gallons** and **\$134,000** in FY '20.

While this approach has been effective, in FY '21 the partnership will tackle more systemic water savings opportunities, focused on installation and function of irrigation rain sensors (resulting in a 10% savings), expanded installation of "smart" irrigation controllers, programmable to activate only in response to appropriate environmental conditions, at priority sites (resulting in a 20-30% savings), and resolution of basic irrigation system repairs in coordination with custodial staff at the time of the site visit (resulting in a 20% savings), with emphasis on trouble shooting chronic losses through regular analysis of water consumption trends, in addition to resolution of acute losses. For example, targeted repair of irrigation system and basic repairs at single site (County Isles Elementary) produced \$1,500 per month/\$18,000

per year in water savings. It is expected that similar investments at as few as 7 sites per year would deliver an **additional \$118,000 in annual program/operational savings.**

Recommendation: Based on program performance to date, a proposed combination of targeted acute and chronic system repairs, as described above and involving ground support of District custodial staff, is anticipated to fully offset the annual cost of the partnership agreement. This offset is in addition to the ROI delivered in the form of donations, sponsorship, and grant awards that fully cover the expenses for the academic environmental recognition and events (e.g., Youth Summit, P3 Eco Challenge).

District Facilities (long-term)

The EPCRD team also recommends a strategy for reducing potable water consumption by shifting demands to surface water sources where feasible. An inventory of proposed sites will be developed. Furthermore, it is important to recognize that the District's water billings include charges for wastewater that may or may not be discharged into the wastewater system. Where the District is being charged for wastewater that is associated with irrigation lines, significant cost savings could be realized by installation of sub-meters on potable irrigation lines. Grant funds may be available to support the acquisition of SMART-submeters that encourage conservation through continuous data management. EPCRD will create an inventory of recommended sites and will evaluate grant opportunities.

Indoor water audits and associated improvements offer another means for sustained cost savings with a single investment. A number of schools have already had water audits completed; however, many repairs/retrofits are pending. Of the 23 schools that have had audits completed, only 8 have been able to make retrofits to date for a realized actual reduction of 9,321,870 gallons of water per year, saving **\$102,662** per year.

For the other identified needed interior retrofits, EPCRD will coordinate with District staff to consider strategies for accelerating these improvements, including possible grant funds with the South Florida Water Management District.

Facilities Training: EPCRD will augment training for District facilities staff through virtual delivery and targeted technical workshops designed to expand staff capacity to undertake improvements and increase familiarity with newer technology. Recently, an e-learning training module developed by EPCRD was provided to EH&S staff, a portion of which will be used in the upcoming virtual Custodial Training Rodeo in June. Additional training modules will focus on the use of flowmeters, measuring distribution uniformity/irrigation efficiency, and proper usage, types of irrigation controllers, and their installation, and smart irrigation meters that can be monitored remotely. These instructional workshops and data from field assessments and smart irrigation meters can also provide the basis for class STEM PBL curriculum.

STEM+CS Environmental Stewardship E-learning

Once it was identified that schools would be operating virtually for the remainder of the school year in March, EPCRD approached STEM+CS staff about preparing virtual lessons and modules to be shared with teachers and students. As listed above, a series of modules has already been delivered on topics of water quality data assessments, environmental assessment of the benthic marine environment, and sea level rise planning and adaptation. Each of these modules provides hands-on instruction in the use of local

environmental data and includes student-based activities and assessments adaptable for multiple grade levels. EPCRD staff is committed to developing and refining these and new modules to support STEM curriculum and instructor training to further E-instruction, including expanded resources related to climate change and sea-level rise, NatureScape trainings that have historically been presented on school campuses, and teacher climate change training, including a Game of Floods module currently under development.

Technical Back-Up

Irrigation Evaluations (Actual Water Savings (AWS)):

Date Range	Gallons per Year (AWS)	Annual Cost Savings
July 2018-June 2019	23,767,491	\$ 95,759
July 2019-Mar 2020	27,648,424	\$111,395
Apr 2020– May 2020	10,980,000	\$71,062 (McFatter repair pending)

Case Studies of Specific Savings included in the summary table above:

School Name	Issue Resolved	Gallons per Year (AWS)	Cost Savings
McFatter	Major leak (pipe break) lasting 4 months @90,000 Gallons per day	10,980,000	\$25,843/4 months
Country Isles Elem	Chronic irrigation breaks		\$1,500/month
Stranahan High	Pool leak	30,000 Gallons per day	\$75,000/year
Westglades Middle	Water meter leak	2,102,400	\$12,338/year

The following irrigation controllers/soil sensors were provided by EPCRD to the schools:

Stranahan High School	ESP-SMTe(controller)	\$ 149
Deerfield Beach Elementary School	Rain Bird SMS(soil moisture sensor)	\$99
	ESP-SMTe (controller)	\$ 149
	ESP-SMTe (controller)	\$ 149
Plantation High School	Rain Bird SMS(soil moisture sensor)	\$99
Oakland Park Elementary School	Rain Bird SMS(soil moisture sensor)	\$99

These replacement smart irrigation controllers and soil moisture sensors reduce irrigation water use by conservative estimates of a 20% yearly reduction, per unit over the models that were replaced. Installation of rain sensors only would save at least an additional 247,000 gallons per year at an elementary school, with higher savings for far larger properties, middle and high schools and other larger properties through minor investment and savings, but significant conservation measure for consumptive use permit reporting. Installation of smart controller at a typical elementary school would save an additional 814,847 gallons per year or \$404 per year

standard rate (\$33.67 per month) to \$3,244 per year extreme drought rate (\$270.33 per month). Average water savings realized by the exterior irrigation evaluation program is 33%.

Interior Water Audits

Through interior water audits at 23 schools, 41,128,376 gallons per year (GPY) in potential annual water saving were identified.

individual Actual Water Savings (AWS) numbers from schools that received indoor retrofits:

School Name	Gallons Annual AWS	Annual Actual Water Savings (estimated)
Northside Elementary	503,517	\$4,718
Sunland Park	47,551	\$1,296
Bayview Elementary	279,313	\$2,617
Stranahan High	2,752,206	\$34,045
Driftwood Middle	1,735,891	\$21,473
Maplewood Elementary	1,199,931	\$14,843
Meadowbrook Elementary	895,950	\$2,935
Olsen Middle	1,907,511	\$20,735
TOTAL retrofit savings	9,321,870	\$102,662

Should sub-meters be pursued to separate use potable water and wastewater for further savings, a 2" water meter costs between \$2,000-\$5,000, depending on which municipality/utility installs the meter.